SUNNICA ENERGY FARM
DCO EXAMINATION

COMMENTS ON WRITTEN REPRESENTATIONS

SAY NO TO SUNNICA ACTION GROUP LTD

28 NOVEMBER 2022

Introduction

1. The Say No to Sunnica Action Group Limited (SNTS) is an interested party (ID No 20031080) in the DCO examination.

2. In this document SNTS provides comment on the Written Representations (WRs) submitted at Deadline 2. In doing so, SNTS does not seek to repeat their content or flag where a view expressed in a WR accords or disagrees with SNTS's own WR. Instead, SNTS draws together some of the WRs written by individuals to assist the ExA in identifying evidence that goes to specific points which SNTS has made in its WR. In doing so SNTS does not intend to repeat all the WRs, nor indeed does it consider the RRs (which provide further relevant examples). In addition, SNTS attaches various papers responding to certain documents submitted by the Applicant as part of Deadlines 2 and 3.

3. Importantly, SNTS has not sought to repeat the content of the various Parish Councils WRs[1], which are extensive and provide a full picture of the impact of the scheme on each of the villages in the area. These WRs are important because they bring together community feeling. SNTS associates itself with these WRs as local views and community experience is an important aspect of ensuring consensual development.

4. As appropriate, SNTS will comment further on the WRs as part of its submissions in ISHs. In addition, SNTS notes that many further people made submissions as part of the RRs. This evidence should not be disregarded as, again, it provides significant illumination for the ExA in understanding how the scheme will impact on the location.

Appended Papers

5. Before considering the WRs generally, SNTS notes that the following papers are attached responding specifically to some WRs and documents produced by the Applicant:

    a. A paper by our agricultural advisors providing an updated version of the Stephenson Report [**Appendix A**].

    b. A note from our agricultural advisors on the Applicant's response to the LIRs [**Appendix B**].

    c. A note from our agricultural advisors on the Construction, Operational and Decommissioning Framework Management Plans [**Appendix C**].

    d. A paper by our landscape experts commenting on several new documents provided by the Applicant [**Appendix D**].

    e. A paper from our ecology expert commenting on certain WRs [**Appendix E**].

[1] Nor also the WRs of Newmarket Town Council nor the local Members of Parliament.

Setting of Local Villages and Towns

6. Setting is an important part of SNTS's submissions on the intrinsic and visual impact of the scheme on the lives of residents. These are particularly addressed in sections 2, 3, 8 and 10 of its WRs.

7. In its WRs SNTS noted the harm caused to the setting of local villages and towns by the size and intrinsic cumulative impact of the scheme. In short, it presents as many multiple schemes strewn across the landscape surrounding towns and fundamentally changing the settings of the town from rural and agricultural to developed and industrial. Examples of WRs where locals expressed this concern are numerous, and include:

    a. Alan Smith **[REP2-098a]** describes how routes out of Worlington to the Southwest and North will contact parts of the scheme. This will give the sense when driving to many local attractions (e.g. Fordham, La Hogue Farm Shop, his daughter in Red Lodge) of driving through and being surrounded by an '*industrial complex*'. He is of the view that this will be a stark departure from the current beauty and tranquillity of the Brecks.

    b. Liam and Clare MacGillivray **[REP2-180]** consider the widespread nature of the project which will impact on every village in their local community and almost gives the sense of encompassing as much of them as possible. They describe how every aspect of their life, from going to work to taking the children to school, to going walking or doing Park Run will all take them past the scheme and imbue their life with a sense of being in an industrial estate of solar panels.

    c. Loraine Stone **[REP2-182]** describes how the layout of the sites will '*surround my local rural villages and enclose the vast open space which are a valued feature of this are*'. She notes that she has chosen to live here because of the close-knit communities of local villages connected by productive farmland. The scheme will cut these connections off by interposing between those villages on that farmland.

8. Several the WRs recognise that the small villages around the scheme are interconnected through social and family ties. The setting of these connections, walking and driving to see family and friends, will be similarly altered. Many describe a harm that will diminish these links as people feel less able or desirous of making such journeys due to the change of setting. This is an important harm to the community. Examples of WRs where this harm is expressed include:

    a. Isabel Cross **[REP2-147]** describes the interconnected nature of the villages around the area which generates '*social and supportive community engagement*' in which she regularly meets neighbours and residents on footpaths between villages and walks on the fens. Her position is that the experience of interconnection, visual connectivity and her village's sense of place and belonging will be entirely removed with the construction of the scheme.

    b. Jeanette Malkin **[REP2-157]** considers that the changes brought about by the scheme will have an impact on the wellbeing of local inhabitants as part of the normal way of life is lost in the expansive views of the countryside lost. She notes that '*[t]ravelling between our villages will no longer be a pleasant experience*'.

c. Catherine Judkins **[REP2-128]** describes how views to other villages gives her the sense of connection to local communities around her family. She describes the wider community that she has with people living in the villages around them, including going for walks along the Snailwell footpath or seeing such friends at the La Hogue Farm Shop or Fordham garden centre.

9. The ExA will also note the number of WRs (and RRs) which reference an intention to retire or bring up children in this location because of the rural and agricultural setting. Many locals face a change in the very setting which brought them to this location in the first place. Examples of WRs where this harm is expressed include:

    a. Andrew Munro **[REP2-102]** describes how the changing of the setting of the nearby Chippenham Park through the overtaking of the green fields with solar panels will reduce his quality of life in his retirement that he plans to spend in the area. He sees this as spoiling a loved area that he wishes to live out his life in.

    b. Lucinda Wright **[REP2-184]** describes how she moved out of London deliberately to live in the countryside and bring her children up there. She feels that the scheme is inappropriate because of its size and location which weaves fields of solar among the local villages. She describes going for family walks, horse riding, jogging and riding bikes which will be harmed by the presence of solar panels around her village.

    c. Annette Flindall **[REP2-104]** describes in her WR that her family moved from a London borough to the local area because of a desire to bring her children up in a rural setting. Her children have chosen to remain to bring their children up in that same rural setting. She is of the view that the scheme will harm that rural setting and diminish the desire of her family to remain in the area.

10. For many, these villages around the scheme are strongly connected to their heritage and farming background through their situation in open agricultural land. The move to a development and industrialised setting will harm this. Local residents identify how they feel this setting and sense of connection will change:

    a. Christopher Corbin **[REP2-117]** describes how he feels Isleham is connected to the land around him; how the connection to the landscape imbues the village with agricultural history, particularly with the rich rotation of crops. He sees a degrading of that local experience and setting for their town.

    b. The Isleham Society **[REP2-149]** describe how the scheme will mar cherished historic views connecting across to the different local villages. This includes seeing the markers of church towers and the farming locations around the village.

    c. Justin Fuga **[REP2-172]** describes how he values the connection to the countryside and what it harvests. He values being able to walk in these natural surroundings and see the nature that gives the community a sense of place of agriculture and supports the idea of food sustainability. He sees the scheme as industrialisation.

11. It is important that local residents express these concerns as it grounds why the design of Sunnica in particular is so problematic. It is a specific design choice in this case to have a scheme of such size concentrated in this location and strewn across the landscape in many sections. Were the scheme of a more appropriate size or spread out over a much greater area so as to avoid inter-scheme cumulative impact, the harms identified would be reduced

or avoided. As they stand, many residents face a fundamental and undesirable change in the setting of their lives which marks a significant planning harm that weighs considerably against the granting of consent for the scheme.

Recreation

12. The change of setting described above is not only a harm arising in respect of local towns and villages, but also extends to the recreational opportunities around them. This includes routes and PROWs used by residents and tourists alike.

    a. Isabel Cross **[REP2-147]** notes the role that footpaths play between the towns. There are dog walking groups and cycle groups among the towns and villages. These are things that enrich locals' lives which will be harmed by the change in setting caused by the scheme.

    b. Denis Field **[REP2-124]** describes his family's regular use of the direct links on footpaths lanes and droves to neighbouring villages. He explains how there is currently the pleasure of '*uninterrupted views of this historic landscape*' from these routes which he is now concerned will be completely transformed and severe the local village communities.

    c. Mark Caswell **[REP2-188]** describes his use of many of the local footpaths to walk his dogs including U6006, Snailwell to Newmarket Bridleway 5 Gallops, Chippenham 49/7, and Chippenham 49/1-3. He describes the solar scheme as a serious harm with the setting changes from one of an area of natural beauty to what he describes as an '*eyesore*'.

13. SNTS particularly notes the concerns expressed about U6006, which faces significant harm sat between two solar sites. This route is explored in the LIRs, but various of the WRs also recognise the harm that surrounding this important route will do:

    a. The Newmarket and District Group of the Ramblers **[REP2-219]** recognise the importance of U6006 and its quality as a green lane which is both tranquil and rural. They note that the surrounding of this route with fencing and PV cells represents a significant change in its setting which would harm these features of the route and diminish its recreational enjoyment.

    b. The WR of Sandie Geddes also considers the nature and importance of U6006 in some detail and recognises the harm that the scheme poses **[REP2-236]**.

    c. Fergus Wright **[REP2-135]** describes how one of his favourite rides is Badlingham Lane which he has used for the last 20 years but which he considers will become unusable if there are panels built on both sides of that route due to his concern of horses spooking due to the solar panels.

14. There is also significant recreational use of the Limekilns separate to its use by the horse racing industry. Individuals go to this site to enjoy the long views, the history of the location, and its rural and equine nature. These are all features that will be lost if the setting is significantly changed by the construction of the scheme in the eye line to the north. Examples of those expressing concern about this important site, from their own perspective of the importance of recreation, include:

a. Gavin Hunter **[REP2-141]** has a historic link to the horseracing industry in Newmarket and now returned to live his retirement locally. He enjoys walking on the Limekilns and taking in the views that are steeped in history. He expresses the view that this quality landscape and connection to the horseracing world and history will be lost if the scheme is built.

b. Rebecca Dunlop **[REP2-221]** describes how she enjoys going out with her dogs on the Limekilns and enjoying the natural beauty of those famous gallops and of the surrounding countryside. She describes fellow walkers similarly walking their dogs on this site. She identifies the construction of the solar panels opposite as a degrading of this important recreational and horseracing site.

c. Jane George **[REP2-154]** describes enjoying walking on the Limekilns and enjoying this famous turf training area with uninterrupted views across all of the Suffolk countryside and across to Ely Cathedral. She similarly sees the construction of the scheme as harming this setting of this area.

15. There is also evidence in the WRs of how changes in the location will change how people use horses around the area. This includes impacts on livery yards and their viability, and on the extent to which bridleways are used. Some WRs consider this are:

    a. AG Wright and Sons **[REP2-097]** describe their livery business with 70 horses on the farm. They express the concern that the setting in Badlingham, with its rural location good for hacking, will be harmed and thus the enjoyment of leisure will be harmed.

    b. Mr Rowley Fenwick **[REP2-097d]** describes his concern about the use of horses around the area once the solar panels are built, and particularly the danger of horses being spooked.

    c. The owners of horses at Badlingham Farm **[REP2-097ae]** describe their enjoyment of the local hacking routes which are enjoyable, quiet, and safe. They express the concern that the change to high fences surrounded by solar panels will harm their ability to enjoy local bridleways and lead to the danger of their horses feeling spooked. They express the view they may have to consider whether they keep their horses at the farm if the scheme is built.

16. Recreational routes around this area are relatively limited (e.g. noted by the local Ramblers group **[REP2-219]**). It is important to recognise that much of their value and enjoyment comes from their rural setting. A change to a setting which is developed and industrialised will fundamentally and negatively alter the quality of these routes, as indicated by the many people who currently enjoy them. The changes are significant and a negative which weighs against the scheme in the planning balance.

Tourism

17. A number of the WRs comment directly on tourism and recreation related to tourism, noting how a change in the setting and harm to the horseracing industry will impact negatively on the success of tourism local to Newmarket. These WRs include:

    a. The Royal Worlington and Newmarket Golf Club **[REP2-231]** recognises the difficulty posed for its members and the local community in using Golf Links Road. They also

recognise the importance of the '*peaceful and natural setting*' in which the golf club is placed. They note that the scheme '*if permitted and then poorly designed and managed, has the capacity to damage the standing of our Club of world renown*.

b. A joint letter of the Jockey Club Rooms, Bedford Lodge Hotel, Best Western Hotel, and National Horseracing Museum **[REP2-254]** includes a discussion of the relationship between tourism and horseracing locally (with a particular focus on the Limekilns). They express a concern that harm to the setting will over time damage the success of the industry which will have a knock on effect into tourism. Importantly, they recognise that the harm may be permanent even if the scheme is eventually removed.

c. Discover Newmarket **[REP2-126]** note the importance of the spectacle of horseracing locally to Newmarket and the important attraction this provides for guided tours. They express the concern that a change in the setting of the Limekilns, overlooked by solar cells, will harm tourism interest locally as the rural setting is changed to one of development and industrialisation.

The Timeline of the Scheme

18. In its WR, SNTS notes that the suggestion that the scheme is temporary be given little weight considering the length of time that it is proposed to be in situ (see e.g. para 8.1.14 of **[REP2-240]**). As has already been noted, many people have chosen to retire to this area; for those residents the scheme is not a temporary one as it will exist until after they are dead. Some of the WRs expressly recognise this point:

    a. Denis Field **[REP2-124]** notes that the landscape will be transformed into an industrial one for the rest of his life as he will be dead by the time that the Sunnica scheme is returned to farming.

    b. Andrew Munro **[REP2-102]** notes that, as a result of his age and the length of the scheme (including the construction and demolition period), the scheme will not be temporary to him.

    c. Catherine Judkins **[REP2-128]** considers that she will see the scheme for most of the rest of her life, with her children living alongside it until they are in their 50s.

19. This will be far from a common event. Many of the Parish Councils have included age demographics in their WRs. For a significant proportion, the scheme will outlive them. For many more, it will be present for most of their adult life. In those circumstances, it is inappropriate to give much weight to the suggestion that the scheme is temporary. In any event, even if the scheme is temporary, the harms that eventuate from the scheme may well be permanent.

Agriculture and ALC

20. The ExA will be aware of the significant point of dispute between the Applicant and SNTS on the quality and ALC of agricultural land taken by the scheme. This is dealt with in detail in our WRs and not explored further here. However, important evidence that will assist the ExA

in understanding the position on agriculture is provided in the WRs. First, various parties have provided details on yields in the local area to demonstrate the high quality of the land (considering both yield and crop type):

a. AG Wright and Sons **[REP2-097l]** have provided crop yield statistics for a number of farms in the area. They have also provided crop yield predictions for next year **[REP2-097m]**.

b. Bruce Knight **[REP2-111]** has provided a review of the Defra Basic Payment scheme to provide details of the produce grown in the area.

c. Jack Smith **[REP2-152]** has provided further crop yield statistics for various farms.

21. Various individuals from agricultural industry have also commented on the quality of the land in this area. It is important to recognise the contribution that farming on land in and nearby to the site for the scheme makes to agriculture. Insofar as the land commented on is very close to rather than in the scheme, SNTS say that such information is still important to understand:

a. Various communications are attached to the representation of AG Wright and Sons **[REP2-097]**. This includes correspondence from McCain's **[REP2-097k]**, British Sugar **[REP2-097t]** and Greenvale AP **[REP2-097j]** commenting on the quality of the land for growing good quality packing potatoes using irrigation, and sugar beet supplying the local factory at Bury St Edmunds without irrigation. These soils are giving high yields of valuable crops with flexibility as to time of harvesting. This is indicative of the high quality of the soil in the area, consistent with a high proportion being BMV.

b. There is also correspondence from agronomists commenting on the quality of the soil and the good use of winter fill reservoirs. This includes Mr Williams of Farmacy Plc[2] and Mr Turner of Agri-Tech services **[REP2-097i]**.

c. RF Turner and Son **[REP2-217]** also provide detail of their farming operation and the quality of their soil providing for a rotation of high value crops.

BESS Safety and Hazardous Substances Consent

22. SNTS notes the submissions of Edmund Fordham, including his WRs **[REP2-129]**, his submission following the 1 November ISH on the draft DCO **[REP2-082a]**, and the submissions at that hearing. SNTS associates itself with the work of Dr Fordham on the issue of BESS safety and the requirement for hazardous substances consent.

Hydrology, Flooding and Drainage

23. The issue of water erosion is covered in some detail in the WR of Anne Noble **[REP2-103]**. We associate ourselves with it alongside our deferral to relevant statutory bodies, LPAs and the LIR.

[2] Which document does not currently appear to have an Examination Library Reference. It is appendix 9D to the AG Wright and Sons WR **[REP2-097]**.

Appendix A

Patrick Stephenson Ltd
Agricultural Consultants

Response to Sunnica's response to Joint Councils LIR

The report appended as part of the local MP's LIR was a draft version of my final report which is appended to this document.

The areas surveyed were as close to the DCO proposal as possible given SNTS were denied access by the landowners in the scheme on three occasions.

Sunnica's assertion that the work does not comply with Natural England guidance for ALC surveys given in TIN049 is incorrect. Natural England have confirmed to SNTS that the current guidelines are contained in the: *Agricultural Land Classification of England and Wales: revised guidelines and criteria for grading the quality of agricultural land* (Defra Publications, 1988), as referenced in the report from Reading Agricultural Consultants.

The ALC assessments in the report were done without including the presence of irrigation as a factor – indeed not all fields surveyed had access to irrigation.

This report includes the data points and the laboratory analysis for the fields surveyed with auger borings as well as those surveyed for the pits and a number of other fields in close proximity are appended.

Whilst yields vary from year to year this land is exceptional in being able to grow both early carrots, late harvested sugar beet and a range of high value crops. Most of the farms in the scheme have winter fill reservoirs which are encouraged by the EA and construction of which can be supported by grants from the government. Others have substantial extraction licences.

My experience as an agricultural advisor stretches back 40 years including work for DEFRA.

Patrick Stephenson Ltd
Agricultural Consultants

AGRICULTURAL LAND CLASSIFICATION REPORT

Sunnica Energy Farm

Chippenham

Cambridgeshire

CB7 5PP

Proposed Development

October (Update) 2022

Prepared by: Patrick Stephenson BSc (Hons) Agriculture

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1.0 Introduction

Patrick Stephenson Limited was approached to undertake a detailed Agricultural Land Classification Survey (ALC Survey) of the agricultural land quality at selected fields in and around Chippenham, Cambridgeshire. The envelope covers approximately 80 hectares and is located between the villages of Isleham, Chippenham, and Worlington.

1.1 Method

The method used to create this report was primary research in the form of a detailed-on site Agricultural Land Classification 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
- "Specifications for Topsoil" British Standards Institute 2007.

Survey work was carried out in august 2021 on 80 ha of arable land, as outlined in the plans in Appendix 1. Soils were examined using a one metre handheld Dutch Auger at one hundred metre intervals. Additional borings were made to confirm soil boundaries and profiles. Secondary research was carried out via a desk top survey covering the whole area.

In September 2022 a further survey was undertaken on land previously sampled and further fields adjacent to the Sunnica proposed development. This survey involved the digging of soil pits laboratory analysis and photographs to support the findings. This work was carried by Mr P Stephenson and MR S Franklin. Appendix 4 shows pit locations. We had hoped to be allowed to carry these surveys out on the Sunnica site but were refused access by both landowners and Sunnica.

1.2 Secondary Research

The desk top survey used the following sources:

- Published Agricultural Land Classification (ALC) Grades for the area
- The area viewed on Google Maps (Tele Atlas 2012)
- Natural England MAGIC web site (http://magic.defra.gov.uk/website/magic)
- The British Geological Survey Digital Mapping (70)
- Planning Policy Statement 7 (PPS7) *Sustainable Development in Rural Areas.*
- LA112 population and human health update January 2020
- The National Planning Policy Framework (NPPF July 2018)
- MAFF's *Guidelines for Agricultural Land Classification of England and Wales* (Revised 1988)
- Metropolitan Weather Office data
- Landis Soilscape

- Soil Survey of England and Wales Sheet 4

The research was conducted to establish what the soil quality is in the area and if the development of the proposed site would result in the loss of the 'best and most versatile' agricultural land.

1.3 Planning Policy

Planning policy regarding agricultural land in England has continually evolved. Most recently, from guidance contained in Planning Policy Guidance Note 7 (PPG7), The Implementation of National Planning Policy Guidance in relation to the Diversification of Farm Businesses March 2001 (*The Countryside Environmental Quality and Economic and Social Development*) to the Planning Policy Statement 7 (PPS7) *Sustainable Development in Rural Areas.*

Guidance contained in PPS7 was recently superseded by the National Planning Policy Framework (NPPF July 2018). Whilst reflecting much of the earlier advice the NPPF states that,

> *"Local planning authorities should take into account the economic and other benefits of the 'best and most versatile' agricultural land. Where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of a higher quality*".

The NPPF does specifically classify the 'best and most versatile' agricultural land. Further clarity is provided in MAFF's *Guidelines for Agricultural Land Classification of England and Wales* (Revised 1988) which refers to the 'best and most versatile' land as Grades 1 to 3a. Further modification to the assessment of land and its economic impact is outlined in LA112 Population and Human Health, update January 2020.

2.0 Location

Six fields were initially selected for assessing, these were:-

T3 Surprise Hill TL 6772 8800 approx. 12.00 ha Off Elms Road

T1 Smiths Rectory Farm TL 6843 7197 9.5 ha Off Elm Road

T 25 Beck Road TL6673 8125 approx. 23 ha

Gargett TL 6870 4858 approx. 16 ha Near Badlingham Manor

Havica TL 6870 2040 approx. 14 ha Near Badlingham Manor

Isleham TL 6772 8800 approx. 10 ha off Station Road

Appendix 1 shows the land locations.

2.1 Site characteristics

The Soils of England and Wales (Sheet 4) shows the area to be dominated by two soil series Moulton and Swaffham Prior along with other areas of Newport 4, Reach, Wantage and Adventurers. The Cranfield University Land Information System describes the main two series as follows:-

Moulton

Well drained coarse and fine loamy soils with similar shallow calcareous coarse loamy soils over chalk or chalk rubble in places. This series covers 149 km² (0.1% of England and Wales). In average years the soils are slightly droughty for cereals, oilseed rape and sugar beet, moderately droughty for potatoes and very droughty for grass.

Swaffham Prior

Well drained calcareous coarse and fine loamy soils over chalk rubble covering 693 km² (0.46% of England and Wales). The soils are very easy to cultivate and there are adequate days for spring and autumn cultivation. Yields from direct drilled autumn- and spring-sown crops are like those from conventional techniques. Arable crops including winter and spring cereals, sugar beet, potatoes, peas, and beans are grown

2.2 Climate and Relief

The Metropolitan Weather Office data for the Newmarket area shows an annual average annual rainfall of 580 mm, and the accumulated temperature from the period January to June as 1555 c˚.

The land is flat to gently sloping 0˚- 6° and the Ordinance Survey data shows the land to be between 5m and 19m meters above sea level.

3.0 Land Use

The surveyed area is currently parsnips, potato, and cereal stubbles.

4.0 Land Quality

The quality of land is assessed using the ALC Scheme, established by Defra, which provides a method for assessing the quality of farmland, so informed choices can be made about its future use within the planning system. It also helps underpin the principles of sustainable development.

4.1 Definitions and Grades

The ALC system classifies land into 1 through to 5 Grades, with Grade 3 further subdivided into Grade 3a and 3b, see Table 1. Consistent with national guidance, Grades 1, 2 and 3a represents the 'best and most versatile' land.

The 'best and most versatile' land is considered to be the most flexible, productive and efficient in response to inputs and which can best deliver future crops for food and non-food uses such as biomass, fibres and pharmaceuticals. Current estimates are that Grade 1 and 2 together form about 21% of all farmland in England; Sub-Grade 3a contains a similar amount.

The ALC system is used by Defra and others to give advice to local planning authorities, developers and the public if development is proposed on agricultural land or other 'Greenfield' sites that could grow crops. The General Development (Procedure) Order refers to the 'best and most versatile' land policy in requiring statutory consultations with Defra.

The ALC grading system is also used by commercial consultants to advise clients on land use and planning issues.

The classification 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 Classification 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 ALC Grade.

4.2 Versatility and Yield

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

The ALC gives a high Grade to land which allows more flexibility in the range of crops that can be grown (its 'versatility') and which require lower inputs. These higher Grades (1, 2,3a) also take into account the ability to produce consistently high yields of a narrower range of crops.

Table 1- Definitions of Land Classification Grades

Grade	Definition
Grade 1 – Excellent Quality Agricultural Land	Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.
Grade 2 – Very Good Quality Agricultural Land	Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the Grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.
Grade 3 – Good to Moderate Quality Agricultural Land	Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.
Sub-Grade 3a – Good Quality Agricultural Land	Land capable of consistently producing moderate to high yields from a narrow

	range of arable crops, especially cereals, or moderate yields from a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.
Sub-Grade 3b – Moderate Quality Agricultural Land	Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields from a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.
Grade 4 – Poor Quality Agricultural Land	Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops, the yields of which are variable. The Grade includes very droughty arable land.
Grade 5 – Very Poor Quality Agricultural Land	Land with very severe limitations, which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

Planning Policy Guidance note 7 Annex B paragraph B11 refers to irrigation and its impact on land quality. Land which has a proven supply of water and has irrigation systems operating with secure licenses will be categorised in line with their potential.

5.0 Published Survey Information

The Provisional ALC survey 1968-1972 carried out by MAFF showed the whole site to be Grade 2,3 and 4. It is acknowledged that this survey has limitations as boundaries and soil grades are determined by one sample every 80 ha and there is no sub-grade for Grade 3 lands. Detailed published land classification details show that there are grade 3a, 3b and 2 soils in the vicinity of the proposed development.

6.0 Survey Results

The field survey work was carried out in accordance with the method described in the "Revised Guidelines and Criteria for Grading the Quality of Agricultural Land" (DEFRA 1988).

The following soil grades were found within the survey area. Appendix 3 has a description of the sample point profiles. Table 2 shows a summary of the ALC grades found on the site as shown in Appendix 2.

Table 2 Summary of ALC Grades

Grade/Subgrade	Approximate Area Ha	Area %
2	8.0	10.0
3a	54.4	68.0
3b	15.9	19.9
4	1.7	2.1
Total	80.00	100

The detailed survey showed that most of the topsoil was sandy loam, loamy sand to silty sandy. Topsoil depth varied from 250 mm to 450 mm across the sites. All profiles had a degree of chalk and variable flint content. The main grade limiting factor was soil droughtiness and to a lesser extent soil depth.

Grade 2

This accounted for 10% of the area and was exclusively at the Isleham site. The topsoil was 400mm and had chalk throughout the profile and characterised as sandy loam over sandy silty loam. The main limitation for this grade was droughtiness.

Grade 3

3a Sub-grade

This accounted for 68% of the total and was the main grade across all sites. The soils were predominantly either sandy loam or loamy sand to a minimum depth of 250mm. Sub-soils varied from sandy silt loams, loamy sands to sands. The limiting factors for these soils are primarily droughtiness and to a lesser extent depth of the topsoil.

3b subgrade

This accounted for 19.9% of the area and was the second largest area. This was categorised by droughtiness and limitations to soil depth. The topsoil was commonly loamy sand with sand subsoils.

Grade 4

This area was adjacent to the River Kennet where flooding and wetness were the major characteristic.

7.0 Soil Pits

Soil pits were dug and surveyed on 9th September 2022. Soil pit locations are shown in Appendix 4, descriptions in appendix 5 and a summary of the lab tests in appendix 6.

Complete soil tests from fields adjacent to the site and from the soil pits are attached in appendices 7 and 8.

8.0 Conclusion

The original survey results were confirmed by a secondary survey carried out in September 2022. The area surveyed, which was all adjacent to the Sunnica proposed developments, shows that a significant amount of the land should be classed within grades 2 and 3a.

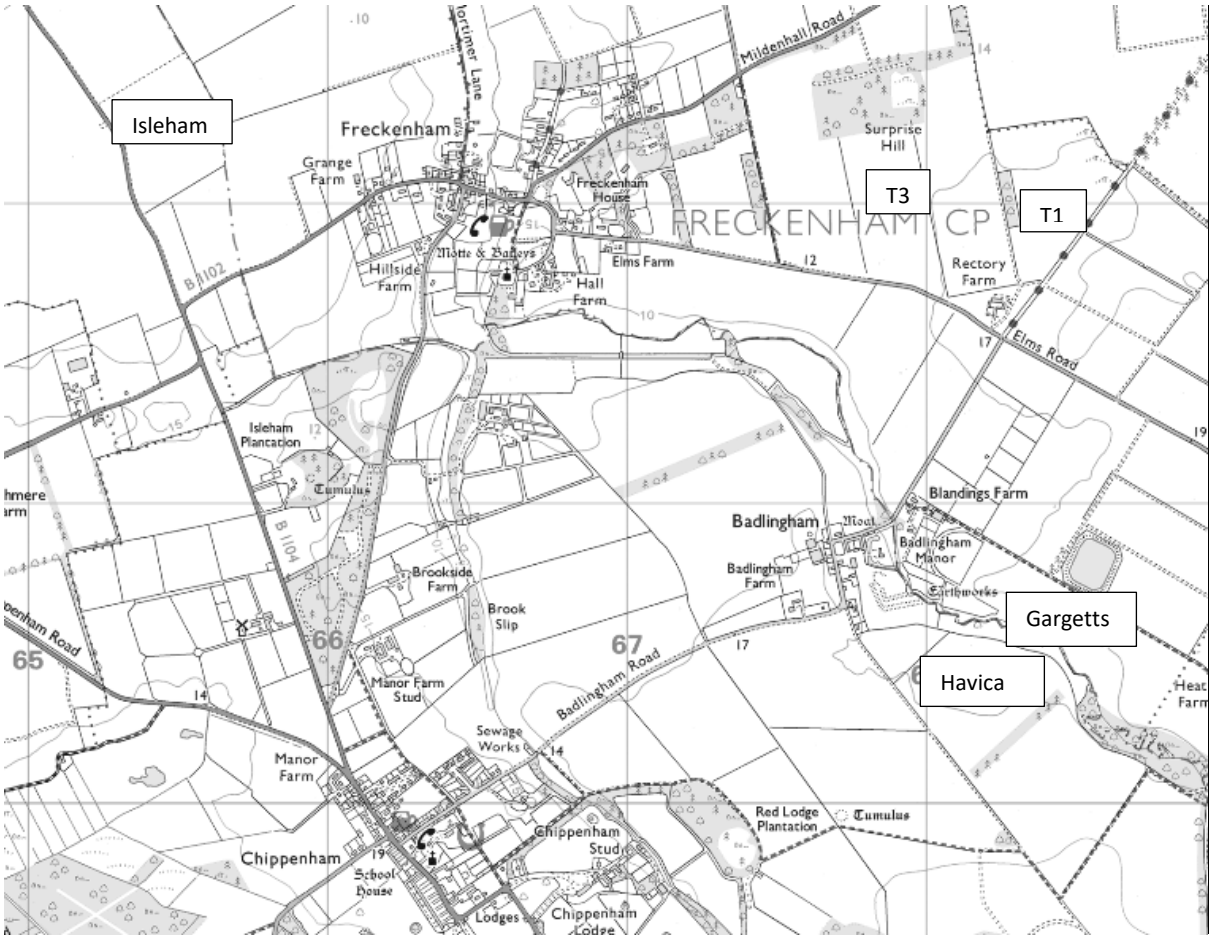
The assumption made in the Sunnica report that the soil grade is primarily due to the irrigation available can be challenged as much of the area would fit the criteria for 'best and most versatile' without irrigation.

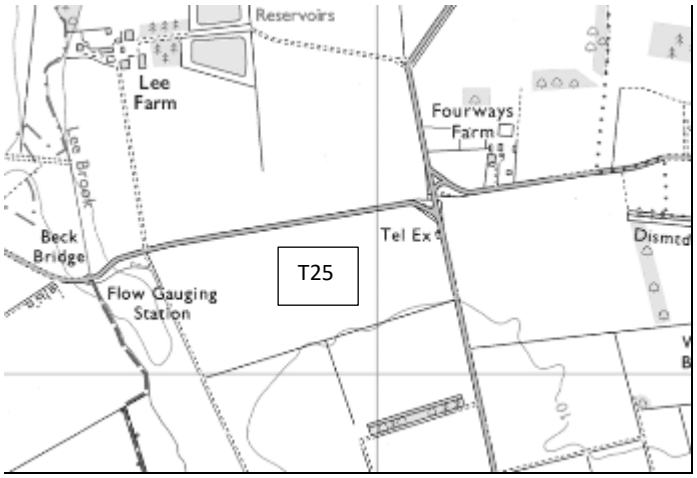
Moisture deficits were calculated taking into account the rootable chalk.

The Sunnica Survey fails to conform to the guidelines for planning officers set out by the **British Society of Soil Science Guidance Document 1 – Assessing Agricultural Land Classification Surveys in England and Wales** which gives a check list of requirements for an adequate survey, and states that, if the answer to any of the checklist questions is 'FAIL', then there may be justification in seeking a professional assessment of the report's quality and reliability. It is very important reports are assessed thoroughly.

Natural England's position on the ALC is based around the Sunnica ALC report which this result contests.

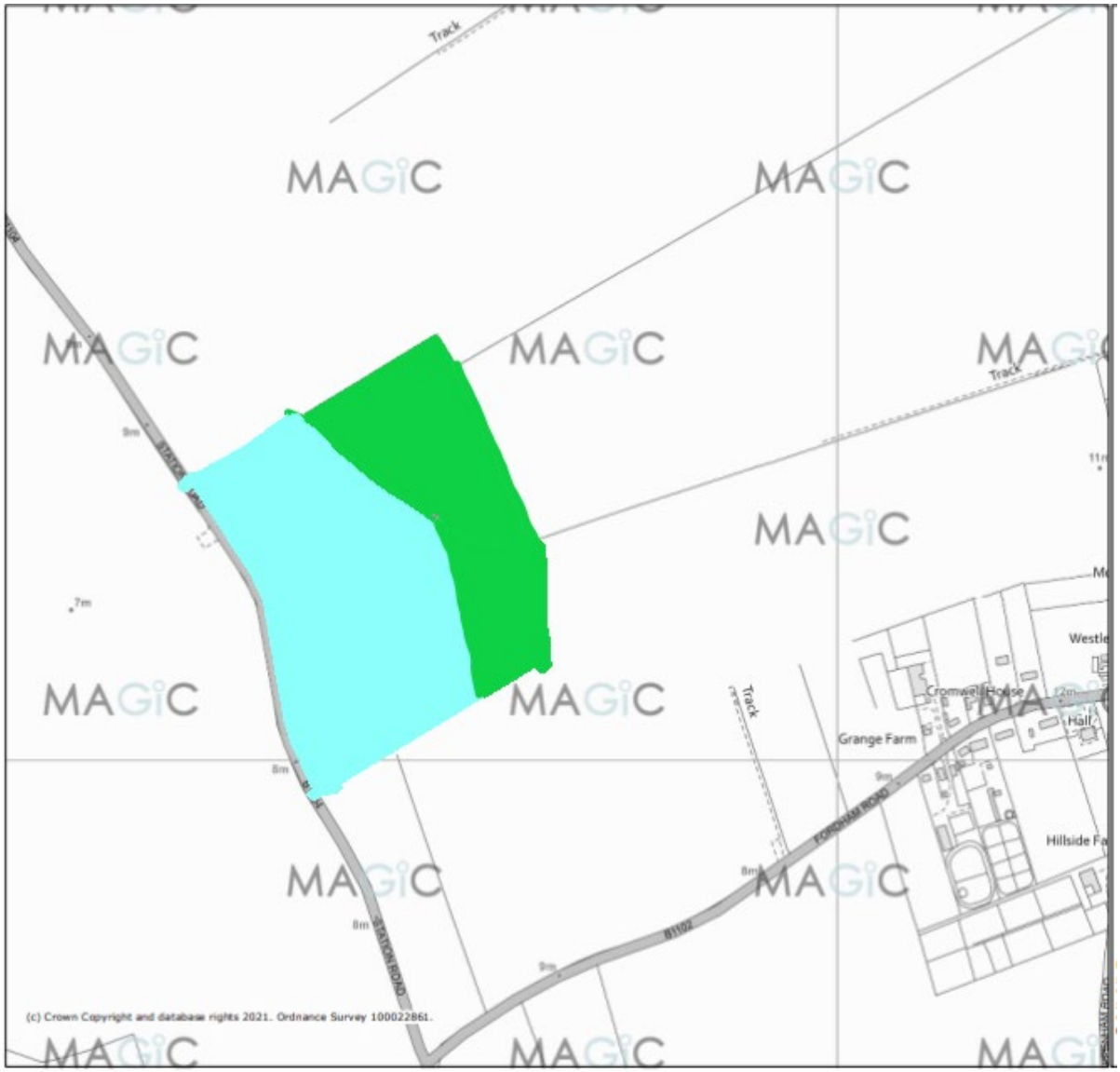
Appendix 1 – Location of Land



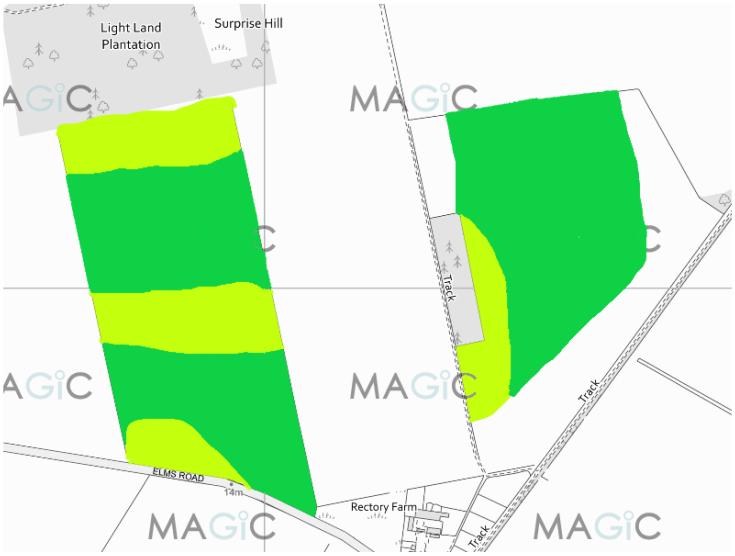


Appendix 2 - Detailed ALC map

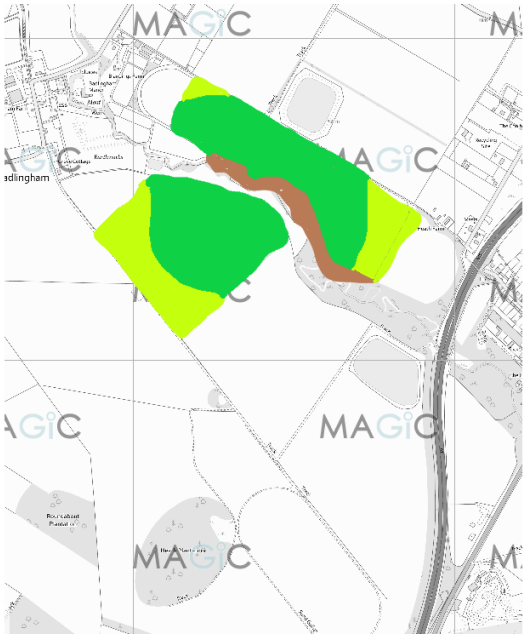
Isleham



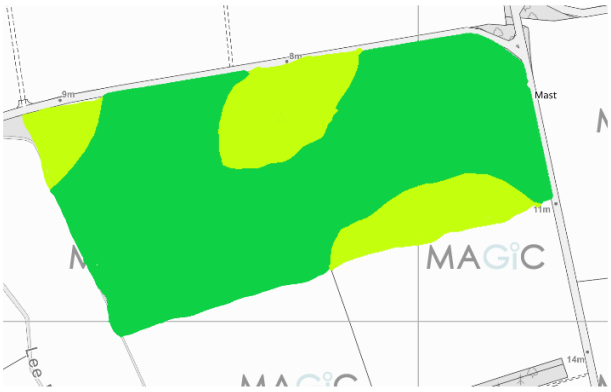
T3 T1



Gargett and Havica



T25



Key

Grade 2	
Grade 3a	
Grade 3b	
Grade 4	

Appendix 3- Sampling 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
	FIELD T3				
1 17m	N5219 078 E000 27 034	SL LS	0-30 30+	CHALK ODD FLINT	I
2	N5219 129 E000 27 809	SL LS	0-35 35+	CHALK	I
3	N5219 181 E000 27 787	SL S	0-30 30+	CHALK FLINT	I
4	N5219 239 E000 27 769	SL LS	0-25 25+	CHALK FLINT	I
5	N5219 295 E000 27 754	SL LS	0-25 25+	CHALK FLINT	I
6	N5219 345 E000 27 739	LS S	0-25 25+	CHALK FLINT	I
7	N5219 336 E000 27 661	LS S	0-25 25+	CHALK FLINT	I
8	N5219 289 E000 27 675	SL	0-30	CHALK FLINT	I

		LS	30+		
9	N5219 242 E000 27 687	SL LS	0-25 25+	CHALK FLINT	I
10	N5219 192 E000 27 703	SL S	0-35 35+	CHALK FLINT	I
11	N5219 144 E000 27 715	SL LS	0-25 25+	CHALK FLINT	I
12	N5219 099 E000 27 729	LS S	0-30 30+	CHALK FLINT	I
	FIELD T1				I
13	N5219 147 E000 28 135	SL S	0-40 40+	CHALK FLINT	I
14	N5219 192 E000 28 124	SL S	0-45 45+	CHALK FLINT	I
15	N5219 243 E000 28 111	SL S	0-30 30+	CHALK FLINT	I
16	N5219 298 E000 28 097	SL SL	0-35 35+	CHALK FLINT	I
17	N5219 348 E000 28 168	LS S	0-45 45+	LOW CHALK FLINT	
18	N5219 301 E000 28 180	LS S	0-45 45+	LOW CHALK FLINT	I
19	N5219 252 E000 28 194	LS S	0-45 45+	LOW CHALK FLINT	I

20	N5219 200 E000 28 211	LS S	0-45 45+	LOW CHALK FLINT	I
	FIELD T25				I
21 7m	N5219 899 E000 27 112	SILTY LOAM SILTY SANDY LOAM	0-25 25+	CHALK FLINT	I
22	N5219 891 E000 27 034	LS S	0-30 30+	CHALK FLINT	I
23	N5219 878 E000 26 954	LS S	0-25 25+	CHALK FLINT	I
24	N5219 865 E000 26 874	LS S	0-25 25+	CHALK FLINT	I
25	N5219 849 E000 26 784	SL S	0-30 30+	CHALK FLINT	I
26	N5219 838 E000 26 710	LS S	0-35 35+	CHALK FLINT	I
27	N5219 827 E000 26 622	SILTY L SL	0-25 25+	CHALK FLINT	I
28	N5219 859 E000 26 565	SL LS	0-30 30+	CHALK FLINT	I
29	N5219 917 E000 26 539	LS S	0-30 30+	CHALK FLINT	I
30	N5219 940 E000 26 605	LS S	0-35 35+	CHALK FLINT	I
31	N5219 895 E000 26 642	LS S	0-35 35+	CHALK FLINT	I

32	N5219 906 E000 26 729	LS S	0-35 35+	CHALK FLINT	I
33	N5219 951 E000 26 718	LS S	0-25 25+	CHALK FLINT	I
34	N5219 963 E000 26 791	LS S	0-30 30+	CHALK FLINT	I
35	N5219 925 E000 26 839	S COARSE S	0-30 30+	CHALK FLINT	I
36	N5219 927 E000 26 914	SILTY L S	0-25 25+	CHALK FLINT	I
37	N5219 977 E000 26 910	SILTY L S SILTY L	0-25 25+	CHALK FLINT	I
38	N5219 983 E000 26 994	SILTY L SL	0-30 30+	CHALK FLINT	I
39	N5219 939 E000 27 019	LS SILTY L	0-30 30+	CHALK FLINT	I
40	N5219 969 E000 27 072	SL S SILTY L	0-30 30+	CHALK FLINT	I
41	N5219 940 E000 27 104	SILTY L S SILTY L	0-25 25+	CHALK FLINT	I
	FIELD GARGETT				
42	N5218 588 E000 27 955	LS S	0-35 35+	CHALK	I
43	N5218 567 E000 28 015	SL S	0-35 35+	CHALK	I
44	N5218 542	SL	0-40	CHALK	I

	E000 28 077	S	40+	FLINT	
45	N5218 513 E000 28 151	SL S	0-45 45+	CHALK FLINT	I
46	N5218 491 E000 28 207	SL S	0-30 30+	CHALK FLINT	I
47	N5218 468 E000 28 270	SL S SILTY L	0-30 30+	CHALK	I
48	N5218 440 E000 28 339	SL S SILTY L	0-30 30+	CHALK	I
49	N5218 411 E000 28 418	LS S	0-25 25+	CHALK FLINT	I
50	N5218 371 E000 28 379	LS SILTY LOAM	0-25 25+	CHALK FLINT	I
51	N5218 400 E000 28 311	LS SILTY LOAM	0-25 25+	CHALK FLINT	I
52	N5218 422 E000 28 251	S SILTY L LS	0-30 30+	CHALK FLINT	I
53	N5218 447 E000 28 188	SILTY L SILT	0-30 30+	CHALK FLINT	I
54	N5218 471 E000 28 124	LS S	0-30 30+	CHALK FLINT	I

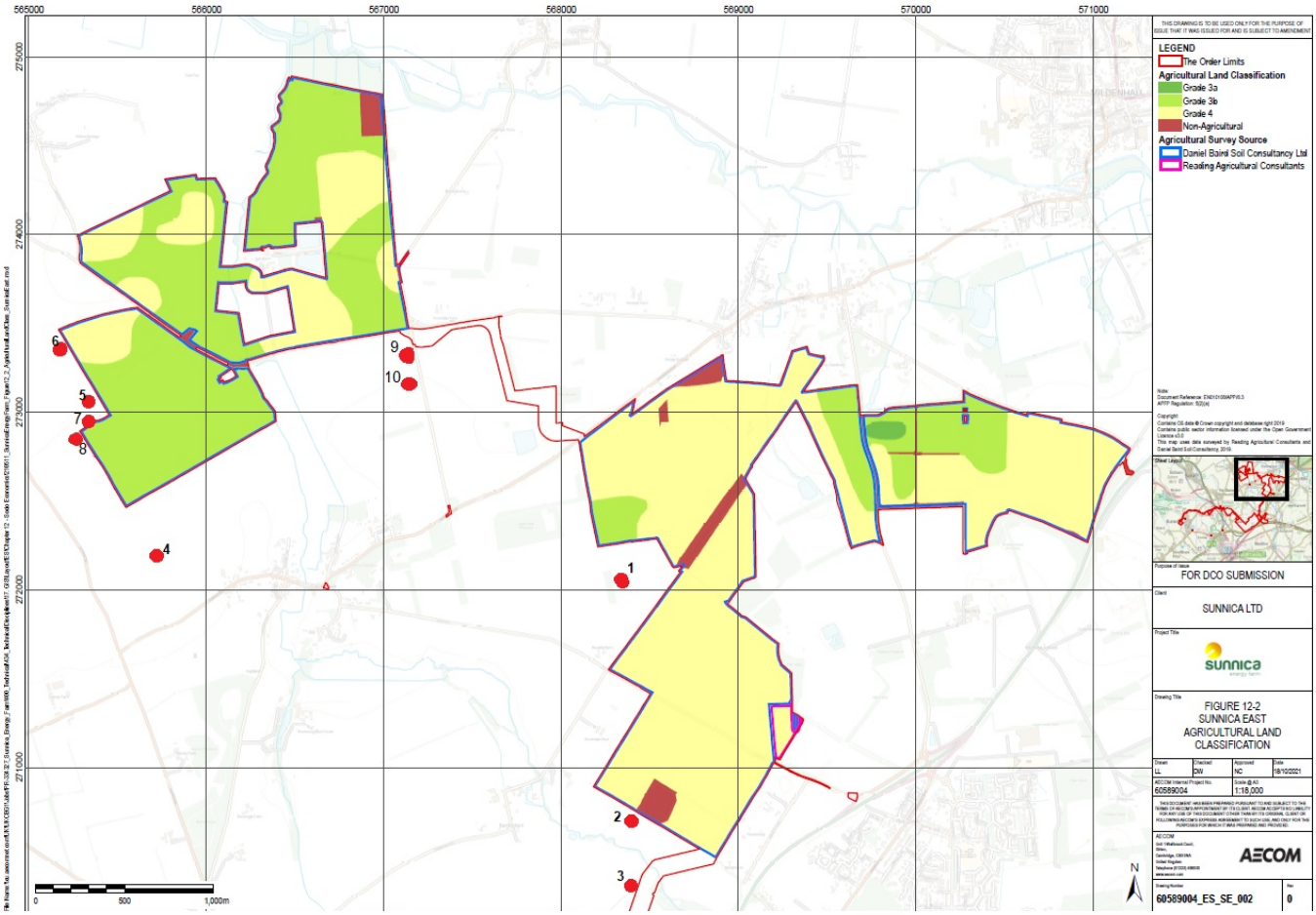
55	N5218 495 E000 28 063	S SILTY L L S	0-30 30+	CHALK FLINT	I
56	N5218 518 E000 28 004	SILTY L S SILTY L	0-30 30+	CHALK FLINT	I
57	N5218 542 E000 27 942	SILTY L S	0-30 30+	CHALK FLINT	I
	FIELD HAVACRE				
58	N5218 297 E000 27 787	SL S	0-25 25+	CHALK FLINT	I
59	N5218 343 E000 27 744	SL S	0-25 25+	CHALK FLINT	I
60	N5218 382 E000 27 796	LS S	0-25 25+	CHALK LOTS OF FLINT	I
61	N5218 403 E000 27 867	LS S	0-30 30+	CHALK FLINT	I
62	N5218 417 E000 27 944	SILTY L SL	0-30 30+	CHALK FLINT	I
63	N5218 409 E000 28 018	SILTY L LS	0-30 30+	CHALK FLINT	I
64	N5218 385 E000 28 095	SILTY L LS	0-30 30+	CHALK FLINT	I
65	N5218 341 E000 28 119	SILTY L S	0-30 30+	CHALK FLINT	I
66	N5218 311	LS	0-30	CHALK	I

	E000 28 063	S	30+	LESS FLINT	
67	N5218 330 E000 27 933	LS S	0-30 30+	LESS CHALK MORE FLINT	I
68	N5218 303 E000 27 930	LS S	0-30 30+	CHALK FLINT	I
69	N5218 260 E000 27 953	SL S	0-25 25+	CHALK FLINT	I
70	N5218 232 E000 27 892	SL S	0-25 25+	CHALK FLINT	I
71	N5218 268 E000 27 843	SL S	0-25 25+	CHALK FLINT	I
	FIELD ISLEHAM				
72	N5219 388 E000 25 477	SCL SILTY L	0-30 30+	CHALK	I
73	N5219 411 E000 25 550	SL S SILTY L	0-30 30+	CHALK	I
74	N5219 433 E000 25 617	SL SL to SAND	0-40 40+	CHALK	I
75	N5219 451 E000 25 685	SL SL to SAND	0-30 30+	CHALK	I
76	N5219 400 E000 25 711	SL SL to LS	0-30 30+	CHALK	I
77	N5219 354 E000 25 719	SL SL to LS	0-40 40+	CHALK	I
78	N5219 332 E000 25 655	SL SL to LS	0-40 40+	CHALK	I

79	N5219 365 E000 25 610	SL LS to SAND	0-40 40+	CHALK	I
80	N5219 300 E000 25 551	SL LS to CHALK	0-40 40+	CHALK	I
81	N5219 338 E000 25 508	SL LS to SAND to CHALK	0-40 40+	CHALK	I

Appendix 4

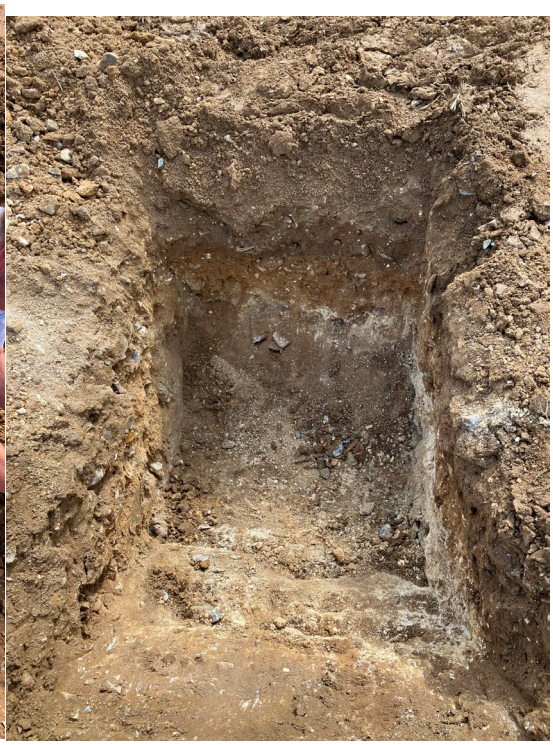
Soil Pit locations



Pit 1 Rectory

Pit 2 Gargetts


Pit 3 Havacre

It 4 Isleham Roy’s field

Pit 5 CCC land

Pit 6 CCC

Pit 8 T25

Pit 9 t25

Appendix 5

Soil Pit descriptions

Field	Location Northing/ Easting	Topsoil	Subsoil 1	subsoil 2	AP WW Pots	Stones top	stones sub
Rectory Fm (1)	52197173/ 00028117	0-50 Sandy loam	50-65 sand		108 100	<5%	<10%
Gargetts	5218814/ 00028178	0-50 sandy loam/sandy clay loam	50-75 sandy loam,	chalk bedrock	163 122	<10% less than 2.5cm	<10% + flints >5cm
Havacre	5218342/ 00028141	0-30 Sandy clay loam,	30-45 silty loam	45-72 chalk	138 107	<10% odd flint> 5cm	<10% + flints >5cm
Isleham	5219469/ 00025691	0-35 sandy loam/sandy clay loam	35-50 sandy loam + chalk	50 + compacted chalk	131 103	<1%	<1%
CCC1	5218822/ 00025566	0-30 Sandy clay loam,	30- compacted chalk		119 91	<1%	<1%
CCC2	5220020/ 00025395	0-30 Sandy loam/sandy clay loam,	30-70 clay loam	70+ chalk	158 118	<1%	<1%
CCC3	5219774/ 00025491	0-30 Sandy loam/sandy clay loam,	30-45 sandy loam	45+ chalk	122 105	<1%	<1%
CCC4							
T25	5219880/ 00027105	0-30 Sandy loam	30-75 loose chalk		130 99	no stones	
T25	5219897/ 00027138	0-45 sandy loam/sandy clay loam	45-150 sandy loam	150 sand	174 135	no stones	

Appendix 6

Laboratory tests

Location	sand	silt	clay	soil type
Rectory	60.55	29.04	10.41	sandy loam
Roys	49.61	31.62	18.77	clay loam
Gargetts	58.25	27.09	14.66	sandy loam
Havacre	36.6	47.67	15.73	sandy silt loam
T25 2	44.88	35.92	19.2	clay loam
T25 1	46.49	38.59	14.92	sandy silt loam
County Council 1	37.1	42.1	20.8	clay loam
CC 2	39.76	41.03	19.21	clay loam
CC 3	44.4	37.18	18.42	clay loam
CC 4	38.75	38.01	23.24	clay loam

	pH	P	K	Mg	Ca	S	Na	B	Cu	Fe	Mn	Mo	Zn		CEC
GUIDE	**6.5**	**16-25 (index 2)**	**121-180 (index 2-)**	**51-100 (index 2)**	**1600**	**10**	**90**	**2.1**	**2.1**	**50**	**110**	**0.04**	**4.5**	**15**	15
			181-240 (index 2+)												
Rectory Top	7.7	48 (3)	89 (2+)	41 (1)	3751	1	22	0.83	3.3	384	108	0.02	3.8		19.5
Roys field top	8.1	16 (1)	203 (2+)	56 (-2)	3112	5	34	2.49	5.3	98	239	0.04	3.5		13.6
Gargetts top	8.2	35 (3)	79 (1)	33 (1)	2100	5	10	0.98	3.6	42	38	0.04	4.5		8.8
havacre top	8.1	23 (2)	185 (2+)	58 (2)	2703	9	16	3.39	3.8	56	86	0.04	6.5		11.8

T25 2 top	8.1	53 (4)	173 (2-)	56 (2)	2457	6	12	1.54	4.4	164	72	0.04	6.4		10.7
T25 1 top	8.1	20 (2)	117 (1)	52 (1)	2272	11	8	1.63	3.6	62	76	0.06	4.6		9.7
county council 1	8.1	27 (3)	210 (2+)	36 (1)	2697	8	12	1.22	3.4	35	62	0.03	3.7		11.6
county council 2	8.2	20	339	46	2950	9	19	1.4	4	37	61	0.03	5.2		13.1
county council 3	8.1	35	181	49	3196	8	17	1.8	4.7	39	55	0.06	4.9		13.8
county council 4 top <35cm	8.1	26	211	60	3238	8	17	2.07	4.9	52	70	0.03	4.3		14.1

Appendix 7

Analysis Results (SOIL)

Customer DEMETER
BADLINGHAM

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref HAVACRE 1

Date Received 16/09/2020 (Date Issued: 23/09/2020)

Sample No E130870/01

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	7.6			
Org. Matter - DUMAS (%)	2.1			
C.E.C. (meq/100g)	24.4			
Soil Respiration (mg/kg)	50			
C:N Ratio	8.9			
Texture Class	SASILO			
Org. Carbon Stock (t/ha)	23.8			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	34						
Potassium (ppm)	275						
Magnesium (ppm)	53						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	4641			
Sulphur (ppm)	3			
Sodium (ppm)	22			
Boron (ppm)	2.70			
Copper (ppm)	5.1			
Iron (ppm)	167			
Manganese (ppm)	217			
Molybdenum (ppm)	0.03			
Zinc (ppm)	6.8			

Released by Chris Lindley.....Laboratory Manager on behalf of Lancrop Laboratories

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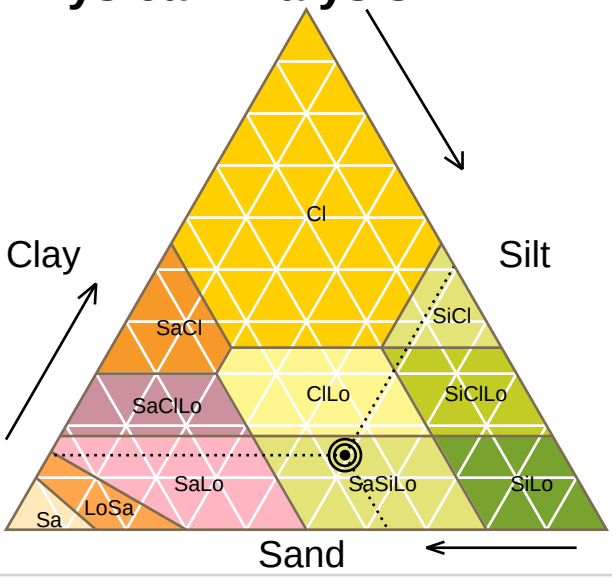
PAAG Professional Agricultural Analysis Group

Analysis Results (SOIL)

Customer DEMETER
Sample Ref HAVACRE 1
Sample No E130870/01
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Physical Analysis



Analysis	Result (%)
Sand	36.40
Silt	49.27
Clay	14.33
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

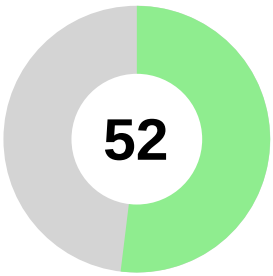
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	50	>70
Organic Carbon (%)	1.2	
Total Nitrogen (%)	0.137	
C:N Ratio	8.9	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	1130
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	34
Soil Assessment Score	52/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
Nutrient cycling drops

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref HAVACRE 1
Sample No E130870/01
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
pH	7.6	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	2.1	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	24.4	15.0	Cation Exchange Capacity indicates a soil with a good nutrient holding ability.
Soil Respiration (mg/kg)	50	70	Slightly low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	8.9	10.0	Low. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 8 - 10 indicates the potential for a rapid decompostion of organic residue and a low retention of applied organic materials.
Texture Class	SASILO		
Org. Carbon Stock (t/ha)	23.8		
Phosphorus (ppm)	34	26	**(Index 3.4)**
Potassium (ppm)	275	241	**(Index 3.2)**
Magnesium (ppm)	53	100	**(Index 2.0)**
Calcium (ppm)	4641	1600	
Sulphur (ppm)	3	10	
Sodium (ppm)	22	90	
Boron (ppm)	2.70	2.10	

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PAAG Professional Agricultural Analysis Group

Analysis Results (SOIL)

Customer DEMETER
Sample Ref HAVACRE 1
Sample No E130870/01
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
Copper (ppm)	5.1	2.1	
Iron (ppm)	167	50	
Manganese (ppm)	217	100	
Molybdenum (ppm)	0.03	0.20	
Zinc (ppm)	6.8	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3 (if an in-lab bulk density has not been performed) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted]

Please Note

Whilst every care is taken to ensure that the Results from Analysis are as accurate as possible, it is important to note that the analysis relates to the sample received by the laboratory, and is representative only of that sample. No warranty is given by the laboratory that the Results from Analysis relates to any part of a field or growing area not covered by the sample received. It is important to ensure that any soil, leaf, silage or fruitlet sample sent for analysis is representative of the area requiring analysis and that samples are obtained in accordance with established sampling techniques. A leaflet containing instructions on how to take soil, leaf, herbage, silage and fruit samples for analysis is available from the laboratory on request. Uncertainty measurements of results are available on request

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PAAG
Professional Agricultural Analysis Group

Analysis Results (SOIL)

Customer DEMETER
BADLINGHAM

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref HAVACRE 2

Date Received 16/09/2020 (Date Issued: 23/09/2020)

Sample No E130870/02

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	7.7			
Org. Matter - DUMAS (%)	2.1			
C.E.C. (meq/100g)	13.3			
Soil Respiration (mg/kg)	38			
C:N Ratio	9.2			
Texture Class	SASILO			
Org. Carbon Stock (t/ha)	23.8			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	19						
Potassium (ppm)	143						
Magnesium (ppm)	51						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	3083			
Sulphur (ppm)	2			
Sodium (ppm)	34			
Boron (ppm)	2.78			
Copper (ppm)	4.4			
Iron (ppm)	64			
Manganese (ppm)	160			
Molybdenum (ppm)	0.05			
Zinc (ppm)	5.0			

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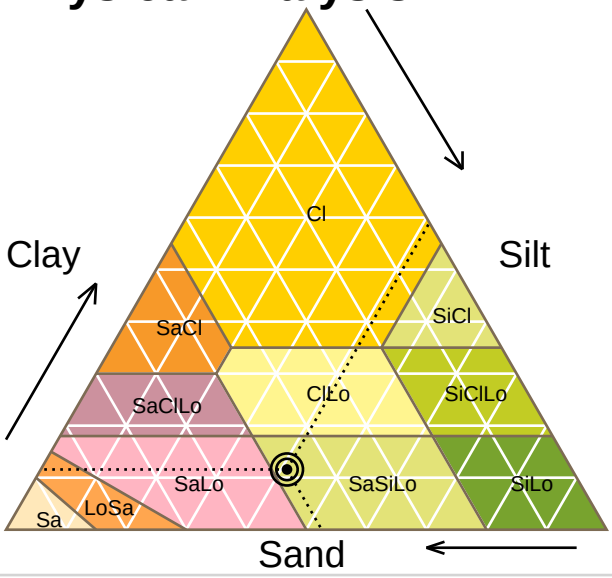
Analysis Results (SOIL)

Customer DEMETER
Sample Ref HAVACRE 2
Sample No E130870/02
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Physical Analysis



Analysis	Result (%)
Sand	47.43
Silt	40.99
Clay	11.58
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

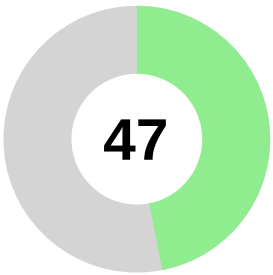
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	38	>70
Organic Carbon (%)	1.2	
Total Nitrogen (%)	0.133	
C:N Ratio	9.2	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	866
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	25
Soil Assessment Score	47/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
Nutrient cycling drops

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref HAVACRE 2
Sample No E130870/02
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
pH	7.7	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	2.1	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	13.3	15.0	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.
Soil Respiration (mg/kg)	38	70	Slightly low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	9.2	10.0	Low. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 8 - 10 indicates the potential for a rapid decompostion of organic residue and a low retention of applied organic materials.
Texture Class	SASILO		
Org. Carbon Stock (t/ha)	23.8		
Phosphorus (ppm)	19	26	**(Index 2.3)**
Potassium (ppm)	143	241	**(Index 2.2)**
Magnesium (ppm)	51	100	**(Index 2.0)**
Calcium (ppm)	3083	1600	
Sulphur (ppm)	2	10	
Sodium (ppm)	34	90	
Boron (ppm)	2.78	2.10	

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref HAVACRE 2
Sample No E130870/02
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
Copper (ppm)	4.4	2.1	
Iron (ppm)	64	50	
Manganese (ppm)	160	105	
Molybdenum (ppm)	0.05	0.20	
Zinc (ppm)	5.0	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3 (if an in-lab bulk density has not been performed) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available a [redacted].

Please Note

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Analysis Results (SOIL)

Customer DEMETER
BADLINGHAM

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref GRANGE

Date Received 16/09/2020 (Date Issued: 23/09/2020)

Sample No E130870/03

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.1			
Org. Matter - DUMAS (%)	2.3			
C.E.C. (meq/100g)	11.7			
Soil Respiration (mg/kg)	46			
C:N Ratio	9.3			
Texture Class	SASILO			
Org. Carbon Stock (t/ha)	26.1			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	23						
Potassium (ppm)	272						
Magnesium (ppm)	69						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	2604			
Sulphur (ppm)	6			
Sodium (ppm)	30			
Boron (ppm)	3.20			
Copper (ppm)	5.5			
Iron (ppm)	70			
Manganese (ppm)	169			
Molybdenum (ppm)	0.07			
Zinc (ppm)	9.0			

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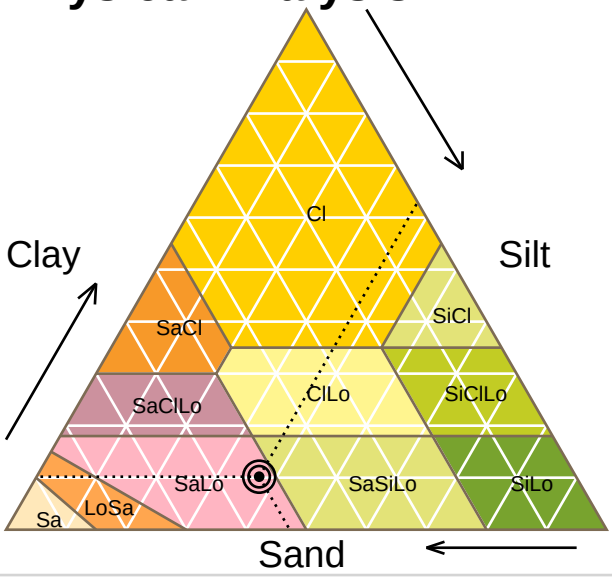
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	GRANGE	**Date Received**	16/09/2020 (Date Issued: 23/09/2020)
Sample No	E130870/03		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	52.76
Silt	37.05
Clay	10.19
Soil Type	SaLo Sandy 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

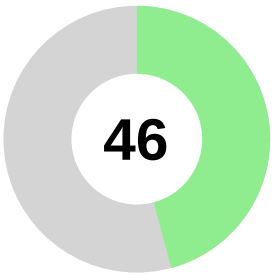
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	46	>70
Organic Carbon (%)	1.3	
Total Nitrogen (%)	0.144	
C:N Ratio	9.3	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	1042
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	31
Soil Assessment Score	46/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
Nutrient cycling drops

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref GRANGE
Sample No E130870/03
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
pH	8.1	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	2.3	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	11.7	15.0	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.
Soil Respiration (mg/kg)	46	70	Slightly low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	9.3	10.0	Low. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 8 - 10 indicates the potential for a rapid decompostion of organic residue and a low retention of applied organic materials.
Texture Class	SASILO		
Org. Carbon Stock (t/ha)	26.1		
Phosphorus (ppm)	23	26	**(Index 2.7)**
Potassium (ppm)	272	241	**(Index 3.2)**
Magnesium (ppm)	69	100	**(Index 2.4)**
Calcium (ppm)	2604	1600	
Sulphur (ppm)	6	10	
Sodium (ppm)	30	90	
Boron (ppm)	3.20	2.10	

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref GRANGE
Sample No E130870/03
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
Copper (ppm)	5.5	2.1	
Iron (ppm)	70	50	
Manganese (ppm)	169	110	
Molybdenum (ppm)	0.07	0.20	
Zinc (ppm)	9.0	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3 (if an in-lab bulk density has not been performed) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted]

Please Note

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Analysis Results (SOIL)

Customer DEMETER
BLANDINGS FM

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref BLANDINGS

Date Received 16/09/2020 (Date Issued: 25/09/2020)

Sample No E204193

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.0			
Org. Matter - DUMAS (%)	1.7			
C.E.C. (meq/100g)	10.5			
Soil Respiration (mg/kg)	32			
C:N Ratio	8.5			
Texture Class	SASILO			
Org. Carbon Stock (t/ha)	19.3			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	28						
Potassium (ppm)	176						
Magnesium (ppm)	46						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	2423			
Sulphur (ppm)	4			
Sodium (ppm)	12			
Boron (ppm)	2.16			
Copper (ppm)	5.8			
Iron (ppm)	85			
Manganese (ppm)	114			
Molybdenum (ppm)	0.02			
Zinc (ppm)	6.6			

Others				
Phosphorus Total (mg/kg)	652.0			

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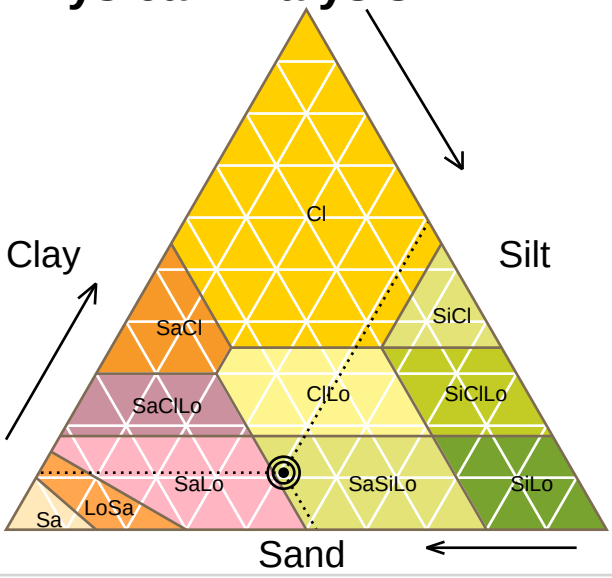
Analysis Results (SOIL)

Customer DEMETER
Sample Ref BLANDINGS
Sample No E204193
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 25/09/2020)

Physical Analysis



Analysis	Result (%)
Sand	48.30
Silt	40.74
Clay	10.96
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

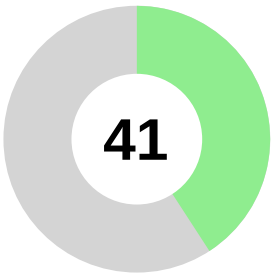
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	32	>70
Organic Carbon (%)	1.0	
Total Nitrogen (%)	0.116	
C:N Ratio	8.5	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	734
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	21
Soil Assessment Score	41/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

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Desirable fungal and bacterial activity
Good earthworm activity
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Lancrop Laboratories

Analysis Results (SOIL)

Customer DEMETER
Sample Ref BLANDINGS
Sample No E204193
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 25/09/2020)

Analysis	Result	Guideline	Comments
pH	8.0	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	1.7	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	10.5	15.0	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.
Soil Respiration (mg/kg)	32	70	Slightly low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	8.5	10.0	Low. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 8 - 10 indicates the potential for a rapid decompostion of organic residue and a low retention of applied organic materials.
Texture Class	SASILO		
Org. Carbon Stock (t/ha)	19.3		
Phosphorus (ppm)	28	26	**(Index 3.1)**
Potassium (ppm)	176	241	**(Index 2.5)**
Magnesium (ppm)	46	100	**(Index 1.8)**
Calcium (ppm)	2423	1600	
Sulphur (ppm)	4	10	
Sodium (ppm)	12	90	
Boron (ppm)	2.16	2.10	
Copper (ppm)	5.8	2.1	
Iron (ppm)	85	50	
Manganese (ppm)	114	110	

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref BLANDINGS
Sample No E204193
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 25/09/2020)

Analysis	Result	Guideline	Comments
Molybdenum (ppm)	0.02	0.20	
Zinc (ppm)	6.6	4.1	
Phosphorus Total (mg/kg)	652.0		

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3 (if an in-lab bulk density has not been performed) and sampling depth of 15 cm.
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Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted].

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Analysis Results (SOIL)

Customer DEMETER
FRECKENHAM FM

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref SMITHS T1

Date Received 16/09/2020 (Date Issued: 23/09/2020)

Sample No E204194/01

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.2			
Org. Matter - DUMAS (%)	1.0			
C.E.C. (meq/100g)	24.1			
Soil Respiration (mg/kg)	22			
C:N Ratio	7.8			
Texture Class	SALO			
Org. Carbon Stock (t/ha)	11.3			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	23						
Potassium (ppm)	86						
Magnesium (ppm)	44						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	4707			
Sulphur (ppm)	1			
Sodium (ppm)	25			
Boron (ppm)	1.55			
Copper (ppm)	3.6			
Iron (ppm)	123			
Manganese (ppm)	134			
Molybdenum (ppm)	0.04			
Zinc (ppm)	4.0			

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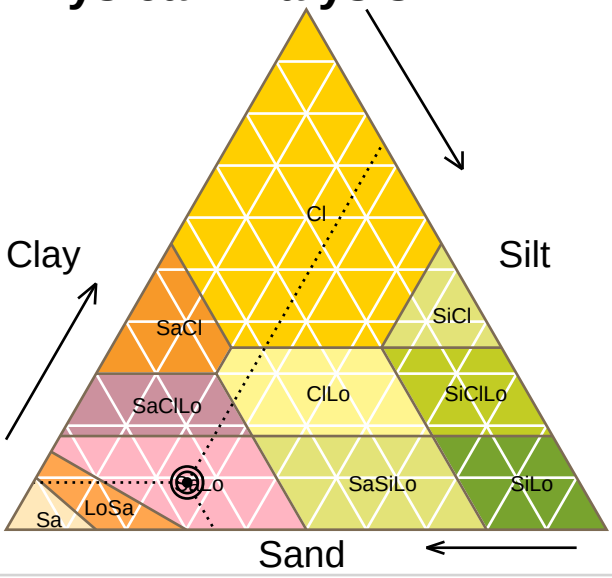
Analysis Results (SOIL)

Customer DEMETER
Sample Ref SMITHS T1
Sample No E204194/01
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Physical Analysis



Analysis	Result (%)
Sand	65.30
Silt	25.62
Clay	9.08
Soil Type	SaLo Sandy 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

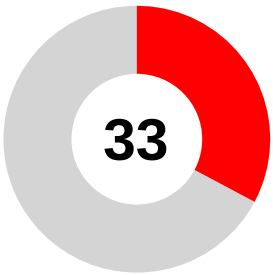
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	22	>70
Organic Carbon (%)	0.6	
Total Nitrogen (%)	0.075	
C:N Ratio	7.8	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	514
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	15
Soil Assessment Score	33/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
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Lancrop Laboratories

Analysis Results (SOIL)

Customer DEMETER
Sample Ref SMITHS T1
Sample No E204194/01
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
pH	8.2	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	1.0	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	24.1	15.0	Cation Exchange Capacity indicates a soil with a good nutrient holding ability.
Soil Respiration (mg/kg)	22	70	Low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	7.8	10.0	Very low. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. The ratio of less than 8 indicates the potential for a rapid decompostion of organic residue and a very low retention of applied organic materials.
Texture Class	SALO		
Org. Carbon Stock (t/ha)	11.3		
Phosphorus (ppm)	23	26	**(Index 2.7)**
Potassium (ppm)	86	241	**(Index 1.4)**
Magnesium (ppm)	44	100	**(Index 1.7)**
Calcium (ppm)	4707	1600	
Sulphur (ppm)	1	10	
Sodium (ppm)	25	90	
Boron (ppm)	1.55	2.10	

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref SMITHS T1
Sample No E204194/01
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
Copper (ppm)	3.6	2.1	
Iron (ppm)	123	50	
Manganese (ppm)	134	110	
Molybdenum (ppm)	0.04	0.20	
Zinc (ppm)	4.0	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3 (if an in-lab bulk density has not been performed) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted]

Please Note

Whilst every care is taken to ensure that the Results from Analysis are as accurate as possible, it is important to note that the analysis relates to the sample received by the laboratory, and is representative only of that sample. No warranty is given by the laboratory that the Results from Analysis relates to any part of a field or growing area not covered by the sample received. It is important to ensure that any soil, leaf, silage or fruitlet sample sent for analysis is representative of the area requiring analysis and that samples are obtained in accordance with established sampling techniques. A leaflet containing instructions on how to take soil, leaf, herbage, silage and fruit samples for analysis is available from the laboratory on request. Uncertainty measurements of results are available on request

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Analysis Results (SOIL)

Customer DEMETER
FRECKENHAM FM

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref T3

Date Received 16/09/2020 (Date Issued: 23/09/2020)

Sample No E204194/02

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.2			
Org. Matter - DUMAS (%)	1.6			
C.E.C. (meq/100g)	11.3			
Soil Respiration (mg/kg)	17			
C:N Ratio	10.6			
Texture Class	CLLO			
Org. Carbon Stock (t/ha)	18.1			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	16						
Potassium (ppm)	146						
Magnesium (ppm)	66						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	2595			
Sulphur (ppm)	7			
Sodium (ppm)	22			
Boron (ppm)	1.84			
Copper (ppm)	3.8			
Iron (ppm)	39			
Manganese (ppm)	64			
Molybdenum (ppm)	0.04			
Zinc (ppm)	3.9			

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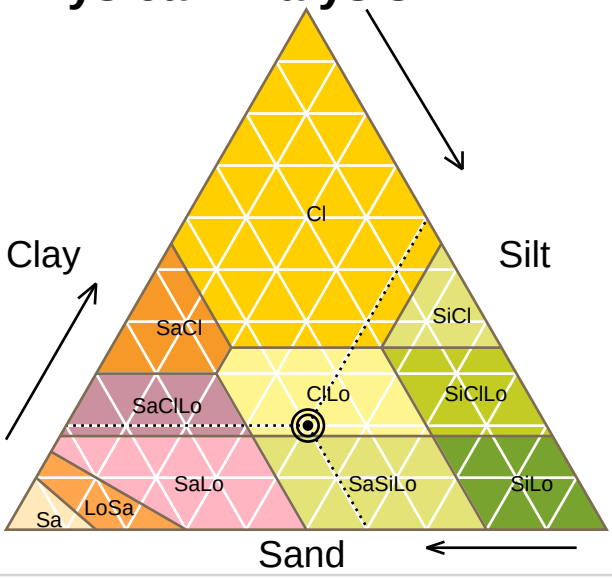
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	T3	**Date Received**	16/09/2020 (Date Issued: 23/09/2020)
Sample No	E204194/02		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	39.72
Silt	40.25
Clay	20.03
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

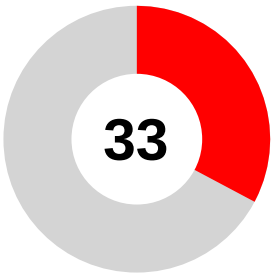
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	17	>70
Organic Carbon (%)	0.9	
Total Nitrogen (%)	0.088	
C:N Ratio	10.6	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	404
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	11
Soil Assessment Score	33/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
Nutrient cycling drops

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref T3
Sample No E204194/02
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
pH	8.2	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	1.6	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	11.3	15.0	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.
Soil Respiration (mg/kg)	17	70	Low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	10.6	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	CLLO		
Org. Carbon Stock (t/ha)	18.1		
Phosphorus (ppm)	16	26	**(Index 2.0)**
Potassium (ppm)	146	241	**(Index 2.2)**
Magnesium (ppm)	66	100	**(Index 2.3)**
Calcium (ppm)	2595	1600	
Sulphur (ppm)	7	10	
Sodium (ppm)	22	90	
Boron (ppm)	1.84	2.10	

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref T3
Sample No E204194/02
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
Copper (ppm)	3.8	2.1	
Iron (ppm)	39	50	
Manganese (ppm)	64	110	
Molybdenum (ppm)	0.04	0.20	
Zinc (ppm)	3.9	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3 (if an in-lab bulk density has not been performed) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted]

Please Note

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Analysis Results (SOIL)

Customer DEMETER
FRECKENHAM FM

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref THOMPSON T7

Date Received 16/09/2020 (Date Issued: 23/09/2020)

Sample No E204194/03

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	7.9			
Org. Matter - DUMAS (%)	1.6			
C.E.C. (meq/100g)	21.5			
Soil Respiration (mg/kg)	59			
C:N Ratio	11.9			
Texture Class	LOSA			
Org. Carbon Stock (t/ha)	18.1			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	61						
Potassium (ppm)	194						
Magnesium (ppm)	46						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	4126			
Sulphur (ppm)	5			
Sodium (ppm)	25			
Boron (ppm)	1.39			
Copper (ppm)	4.8			
Iron (ppm)	203			
Manganese (ppm)	75			
Molybdenum (ppm)	0.04			
Zinc (ppm)	13.3			

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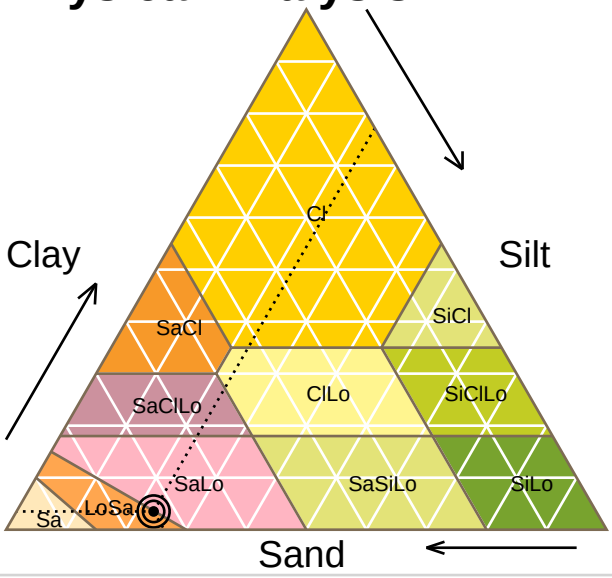
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	THOMPSON T7	**Date Received**	16/09/2020 (Date Issued: 23/09/2020)
Sample No	E204194/03		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	73.67
Silt	22.82
Clay	3.51
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

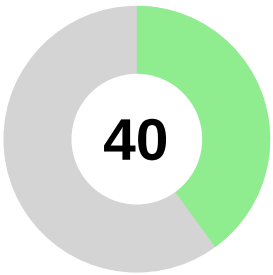
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	59	>70
Organic Carbon (%)	0.9	
Total Nitrogen (%)	0.078	
C:N Ratio	11.9	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	1328
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	33
Soil Assessment Score	40/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
Nutrient cycling drops

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref THOMPSON T7
Sample No E204194/03
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
pH	7.9	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	1.6	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	21.5	15.0	Cation Exchange Capacity indicates a soil with a good nutrient holding ability.
Soil Respiration (mg/kg)	59	70	Slightly low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	11.9	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	LOSA		
Org. Carbon Stock (t/ha)	18.1		
Phosphorus (ppm)	61	26	**(Index 4.6)**
Potassium (ppm)	194	241	**(Index 2.6)**
Magnesium (ppm)	46	100	**(Index 1.8)**
Calcium (ppm)	4126	1600	
Sulphur (ppm)	5	10	
Sodium (ppm)	25	90	
Boron (ppm)	1.39	2.10	

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref THOMPSON T7
Sample No E204194/03
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
Copper (ppm)	4.8	2.1	
Iron (ppm)	203	50	
Manganese (ppm)	75	110	
Molybdenum (ppm)	0.04	0.20	
Zinc (ppm)	13.3	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3 (if an in-lab bulk density has not been performed) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available a [redacted]

Please Note

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Analysis Results (SOIL)

Customer DEMETER
FRECKENHAM FM

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref ISLEHAM RD T25

Date Received 16/09/2020 (Date Issued: 23/09/2020)

Sample No E204194/04

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.4			
Org. Matter - DUMAS (%)	1.8			
C.E.C. (meq/100g)	9.7			
Soil Respiration (mg/kg)	32			
C:N Ratio	11.8			
Texture Class	CLLO			
Org. Carbon Stock (t/ha)	20.4			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	15						
Potassium (ppm)	195						
Magnesium (ppm)	60						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	2197			
Sulphur (ppm)	6			
Sodium (ppm)	40			
Boron (ppm)	1.40			
Copper (ppm)	3.0			
Iron (ppm)	40			
Manganese (ppm)	62			
Molybdenum (ppm)	0.05			
Zinc (ppm)	3.9			

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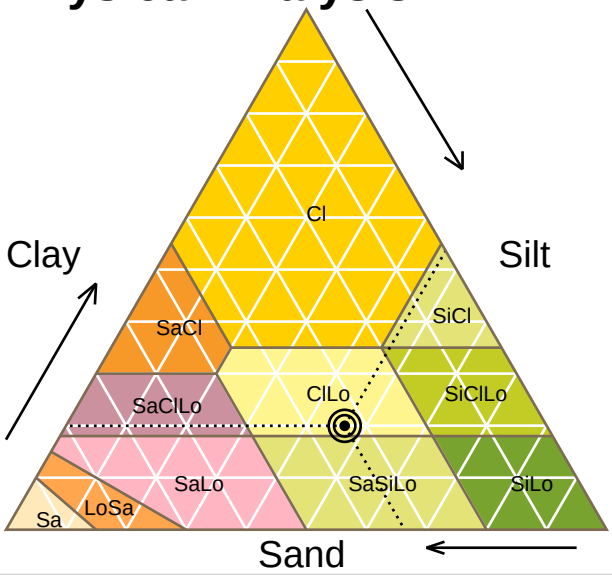
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	ISLEHAM RD T25	**Date Received**	16/09/2020 (Date Issued: 23/09/2020)
Sample No	E204194/04		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	33.63
Silt	46.40
Clay	19.97
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

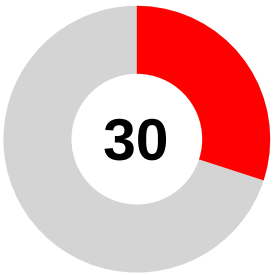
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	32	>70
Organic Carbon (%)	1.0	
Total Nitrogen (%)	0.089	
C:N Ratio	11.8	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	734
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	18
Soil Assessment Score	30/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
Nutrient cycling drops

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref ISLEHAM RD T25
Sample No E204194/04
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
pH	8.4	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	1.8	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	9.7	15.0	Cation Exchange Capacity indicates a low nutrient holding ability - soil applied nutrients will be readily leached. Where possible foliar applied nutrients should be recommended.
Soil Respiration (mg/kg)	32	70	Slightly low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	11.8	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	CLLO		
Org. Carbon Stock (t/ha)	20.4		
Phosphorus (ppm)	15	26	**(Index 1.8)**
Potassium (ppm)	195	241	**(Index 2.6)**
Magnesium (ppm)	60	100	**(Index 2.2)**
Calcium (ppm)	2197	1600	
Sulphur (ppm)	6	10	
Sodium (ppm)	40	90	
Boron (ppm)	1.40	2.10	

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref ISLEHAM RD T25
Sample No E204194/04
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
Copper (ppm)	3.0	2.1	
Iron (ppm)	40	50	
Manganese (ppm)	62	110	
Molybdenum (ppm)	0.05	0.20	
Zinc (ppm)	3.9	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3 (if an in-lab bulk density has not been performed) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted].

Please Note

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Analysis Results (SOIL)

Customer DEMETER
FRECKENHAM FM

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref WEST RD T29

Date Received 16/09/2020 (Date Issued: 23/09/2020)

Sample No E204194/05

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.0			
Org. Matter - DUMAS (%)	1.0			
C.E.C. (meq/100g)	8.0			
Soil Respiration (mg/kg)	24			
C:N Ratio	10.8			
Texture Class	LOSA			
Org. Carbon Stock (t/ha)	11.3			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	30						
Potassium (ppm)	97						
Magnesium (ppm)	30						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	1897			
Sulphur (ppm)	4			
Sodium (ppm)	10			
Boron (ppm)	1.28			
Copper (ppm)	2.5			
Iron (ppm)	58			
Manganese (ppm)	84			
Molybdenum (ppm)	0.03			
Zinc (ppm)	7.8			

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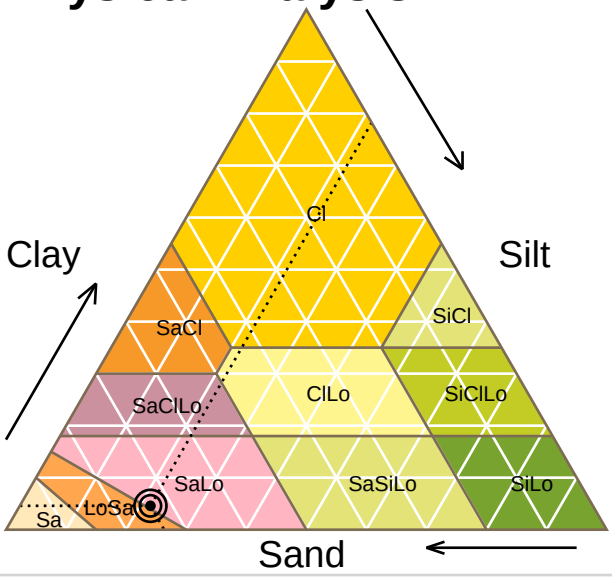
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	WEST RD T29	**Date Received**	16/09/2020 (Date Issued: 23/09/2020)
Sample No	E204194/05		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	73.66
Silt	21.75
Clay	4.59
Soil Type	SaLo Sandy 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

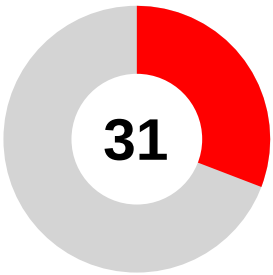
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	24	>70
Organic Carbon (%)	0.6	
Total Nitrogen (%)	0.054	
C:N Ratio	10.8	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	558
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	15
Soil Assessment Score	31/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
Nutrient cycling drops

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Lancrop Laboratories

Analysis Results (SOIL)

Customer DEMETER
Sample Ref WEST RD T29
Sample No E204194/05
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
pH	8.0	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	1.0	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	8.0	15.0	Cation Exchange Capacity indicates a low nutrient holding ability - soil applied nutrients will be readily leached. Where possible foliar applied nutrients should be recommended.
Soil Respiration (mg/kg)	24	70	Low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	10.8	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	LOSA		
Org. Carbon Stock (t/ha)	11.3		
Phosphorus (ppm)	30	26	**(Index 3.2)**
Potassium (ppm)	97	241	**(Index 1.6)**
Magnesium (ppm)	30	100	**(Index 1.2)**
Calcium (ppm)	1897	1600	
Sulphur (ppm)	4	10	
Sodium (ppm)	10	90	
Boron (ppm)	1.28	2.10	

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref WEST RD T29
Sample No E204194/05
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
Copper (ppm)	2.5	2.1	
Iron (ppm)	58	50	
Manganese (ppm)	84	110	
Molybdenum (ppm)	0.03	0.20	
Zinc (ppm)	7.8	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3 (if an in-lab bulk density has not been performed) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted].

Please Note

Whilst every care is taken to ensure that the Results from Analysis are as accurate as possible, it is important to note that the analysis relates to the sample received by the laboratory, and is representative only of that sample. No warranty is given by the laboratory that the Results from Analysis relates to any part of a field or growing area not covered by the sample received. It is important to ensure that any soil, leaf, silage or fruitlet sample sent for analysis is representative of the area requiring analysis and that samples are obtained in accordance with established sampling techniques. A leaflet containing instructions on how to take soil, leaf, herbage, silage and fruit samples for analysis is available from the laboratory on request. Uncertainty measurements of results are available on request

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Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref HALL BARN RD

Date Received 16/09/2020 (Date Issued: 23/09/2020)

Sample No E130869/01

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.5			
Org. Matter - DUMAS (%)	2.4			
C.E.C. (meq/100g)	11.6			
Soil Respiration (mg/kg)	34			
C:N Ratio	10.9			
Texture Class	SASILO			
Org. Carbon Stock (t/ha)	27.2			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	27						
Potassium (ppm)	222						
Magnesium (ppm)	56						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	2652			
Sulphur (ppm)	10			
Sodium (ppm)	16			
Boron (ppm)	1.63			
Copper (ppm)	3.8			
Iron (ppm)	33			
Manganese (ppm)	63			
Molybdenum (ppm)	0.05			
Zinc (ppm)	6.1			

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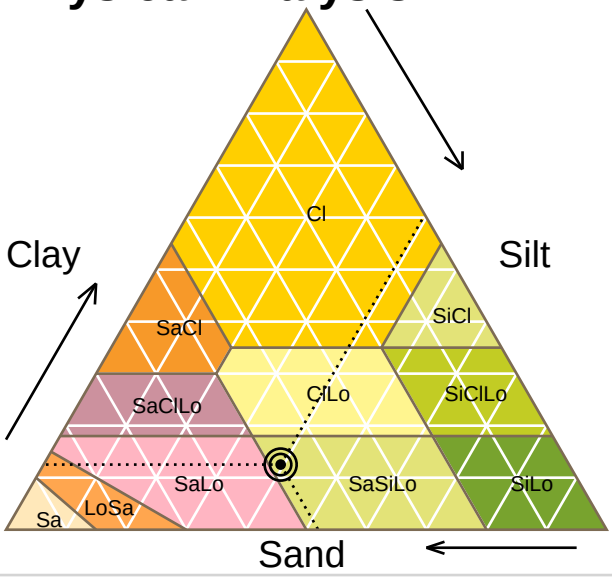
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	HALL BARN RD	**Date Received**	16/09/2020 (Date Issued: 23/09/2020)
Sample No	E130869/01		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	48.02
Silt	39.46
Clay	12.52
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

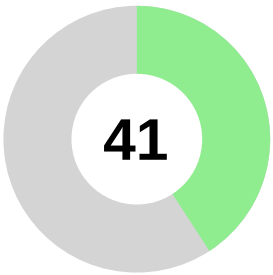
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	34	>70
Organic Carbon (%)	1.4	
Total Nitrogen (%)	0.128	
C:N Ratio	10.9	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	778
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	21
Soil Assessment Score	41/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
Nutrient cycling drops

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref HALL BARN RD
Sample No E130869/01
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
pH	8.5	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	2.4	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	11.6	15.0	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.
Soil Respiration (mg/kg)	34	70	Slightly low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	10.9	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	SASILO		
Org. Carbon Stock (t/ha)	27.2		
Phosphorus (ppm)	27	26	**(Index 3.1)**
Potassium (ppm)	222	241	**(Index 2.8)**
Magnesium (ppm)	56	100	**(Index 2.1)**
Calcium (ppm)	2652	1600	
Sulphur (ppm)	10	10	
Sodium (ppm)	16	90	
Boron (ppm)	1.63	2.10	

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Analysis Results (SOIL)

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Sample Ref HALL BARN RD
Sample No E130869/01
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
Copper (ppm)	3.8	2.1	
Iron (ppm)	33	50	
Manganese (ppm)	63	110	
Molybdenum (ppm)	0.05	0.20	
Zinc (ppm)	6.1	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3 (if an in-lab bulk density has not been performed) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted]

Please Note

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Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref CHIPPENHAM 4

Date Received 16/09/2020 (Date Issued: 23/09/2020)

Sample No E130869/02

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.0			
Org. Matter - DUMAS (%)	2.0			
C.E.C. (meq/100g)	23.9			
Soil Respiration (mg/kg)	41			
C:N Ratio	10.3			
Texture Class	SALO			
Org. Carbon Stock (t/ha)	22.7			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	51						
Potassium (ppm)	506						
Magnesium (ppm)	61						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	4410			
Sulphur (ppm)	4			
Sodium (ppm)	88			
Boron (ppm)	2.00			
Copper (ppm)	8.9			
Iron (ppm)	196			
Manganese (ppm)	154			
Molybdenum (ppm)	0.05			
Zinc (ppm)	11.4			

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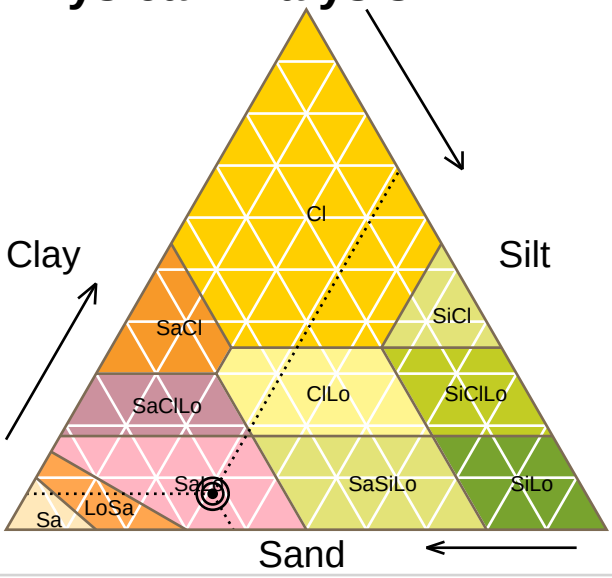
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	CHIPPENHAM 4	**Date Received**	16/09/2020 (Date Issued: 23/09/2020)
Sample No	E130869/02		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	62.14
Silt	30.95
Clay	6.91
Soil Type	SaLo Sandy 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

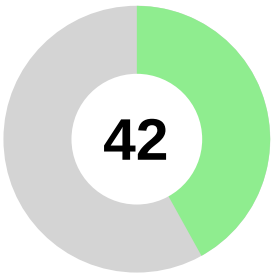
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	41	>70
Organic Carbon (%)	1.2	
Total Nitrogen (%)	0.113	
C:N Ratio	10.3	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	932
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	27
Soil Assessment Score	42/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
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Analysis Results (SOIL)

Customer DEMETER
Sample Ref CHIPPENHAM 4
Sample No E130869/02
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
pH	8.0	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	2.0	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	23.9	15.0	Cation Exchange Capacity indicates a soil with a good nutrient holding ability.
Soil Respiration (mg/kg)	41	70	Slightly low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	10.3	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	SALO		
Org. Carbon Stock (t/ha)	22.7		
Phosphorus (ppm)	51	26	**(Index 4.2)**
Potassium (ppm)	506	241	**(Index 4.5)**
Magnesium (ppm)	61	100	**(Index 2.2)**
Calcium (ppm)	4410	1600	
Sulphur (ppm)	4	10	
Sodium (ppm)	88	90	
Boron (ppm)	2.00	2.10	

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref CHIPPENHAM 4
Sample No E130869/02
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
Copper (ppm)	8.9	2.1	
Iron (ppm)	196	50	
Manganese (ppm)	154	110	
Molybdenum (ppm)	0.05	0.20	
Zinc (ppm)	11.4	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3 (if an in-lab bulk density has not been performed) and sampling depth of 15 cm.
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Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

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Additional technical bulletins are available at [redacted].

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Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref CHIPPENHAM 5

Date Received 16/09/2020 (Date Issued: 23/09/2020)

Sample No E130869/03

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	7.8			
Org. Matter - DUMAS (%)	2.2			
C.E.C. (meq/100g)	18.9			
Soil Respiration (mg/kg)	71			
C:N Ratio	10.3			
Texture Class	SASILO			
Org. Carbon Stock (t/ha)	24.9			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	48						
Potassium (ppm)	327						
Magnesium (ppm)	79						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	3490			
Sulphur (ppm)	3			
Sodium (ppm)	23			
Boron (ppm)	1.77			
Copper (ppm)	6.7			
Iron (ppm)	378			
Manganese (ppm)	163			
Molybdenum (ppm)	0.04			
Zinc (ppm)	9.9			

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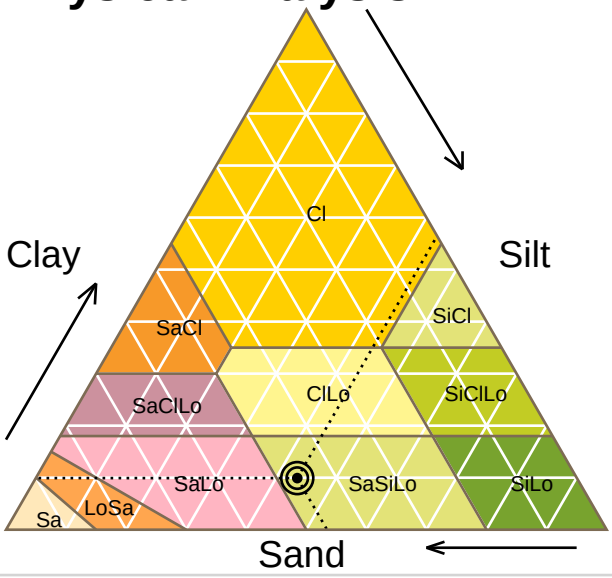
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	CHIPPENHAM 5	**Date Received**	16/09/2020 (Date Issued: 23/09/2020)
Sample No	E130869/03		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	46.55
Silt	43.53
Clay	9.92
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

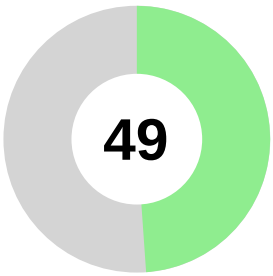
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	71	>70
Organic Carbon (%)	1.3	
Total Nitrogen (%)	0.124	
C:N Ratio	10.3	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	1592
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	46
Soil Assessment Score	49/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

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Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
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Nutrient cycling drops

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref CHIPPENHAM 5
Sample No E130869/03
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
pH	7.8	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	2.2	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	18.9	15.0	Cation Exchange Capacity indicates a soil with a good nutrient holding ability.
Soil Respiration (mg/kg)	71	70	Typical aerobic microbial activity and mineralisation potential. Soil management practices may further improve biological fertility.
C:N Ratio	10.3	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	SASILO		
Org. Carbon Stock (t/ha)	24.9		
Phosphorus (ppm)	48	26	**(Index 4.1)**
Potassium (ppm)	327	241	**(Index 3.5)**
Magnesium (ppm)	79	100	**(Index 2.6)**
Calcium (ppm)	3490	1600	
Sulphur (ppm)	3	10	
Sodium (ppm)	23	90	
Boron (ppm)	1.77	2.10	
Copper (ppm)	6.7	2.1	

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref CHIPPENHAM 5
Sample No E130869/03
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
Iron (ppm)	378	50	
Manganese (ppm)	163	110	
Molybdenum (ppm)	0.04	0.20	
Zinc (ppm)	9.9	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3 (if an in-lab bulk density has not been performed) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted]

Please Note

Whilst every care is taken to ensure that the Results from Analysis are as accurate as possible, it is important to note that the analysis relates to the sample received by the laboratory, and is representative only of that sample. No warranty is given by the laboratory that the Results from Analysis relates to any part of a field or growing area not covered by the sample received. It is important to ensure that any soil, leaf, silage or fruitlet sample sent for analysis is representative of the area requiring analysis and that samples are obtained in accordance with established sampling techniques. A leaflet containing instructions on how to take soil, leaf, herbage, silage and fruit samples for analysis is available from the laboratory on request. Uncertainty measurements of results are available on request

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Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref CHIPPENHAM 8

Date Received 16/09/2020 (Date Issued: 23/09/2020)

Sample No E130869/04

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.1			
Org. Matter - DUMAS (%)	2.5			
C.E.C. (meq/100g)	10.1			
Soil Respiration (mg/kg)	111			
C:N Ratio	11.5			
Texture Class	SALO			
Org. Carbon Stock (t/ha)	28.3			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	34						
Potassium (ppm)	326						
Magnesium (ppm)	81						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	2191			
Sulphur (ppm)	5			
Sodium (ppm)	15			
Boron (ppm)	2.23			
Copper (ppm)	5.0			
Iron (ppm)	85			
Manganese (ppm)	148			
Molybdenum (ppm)	0.08			
Zinc (ppm)	9.5			

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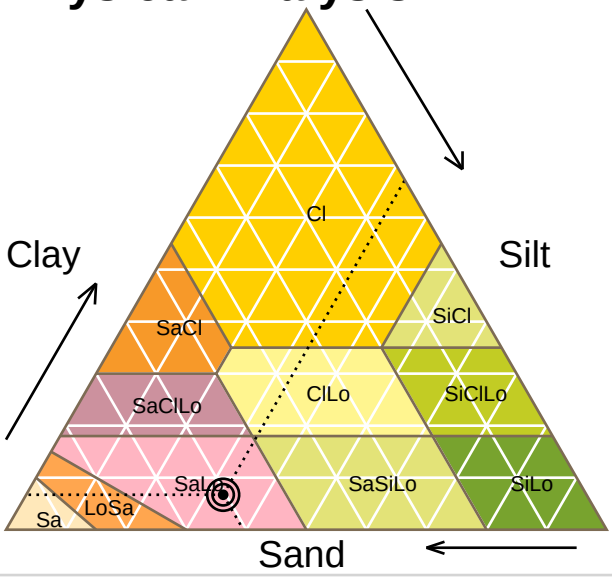
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	CHIPPENHAM 8	**Date Received**	16/09/2020 (Date Issued: 23/09/2020)
Sample No	E130869/04		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	60.49
Silt	32.79
Clay	6.72
Soil Type	SaLo Sandy 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

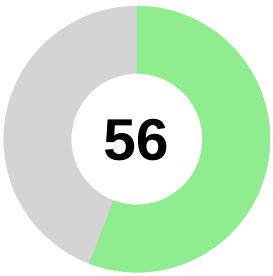
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	111	>70
Organic Carbon (%)	1.5	
Total Nitrogen (%)	0.126	
C:N Ratio	11.5	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	2472
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	65
Soil Assessment Score	56/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
Nutrient cycling drops

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref CHIPPENHAM 8
Sample No E130869/04
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
pH	8.1	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	2.5	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	10.1	15.0	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.
Soil Respiration (mg/kg)	111	70	Typical aerobic microbial activity and mineralisation potential. Soil management practices may further improve biological fertility.
C:N Ratio	11.5	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	SALO		
Org. Carbon Stock (t/ha)	28.3		
Phosphorus (ppm)	34	26	**(Index 3.4)**
Potassium (ppm)	326	241	**(Index 3.5)**
Magnesium (ppm)	81	100	**(Index 2.6)**
Calcium (ppm)	2191	1600	
Sulphur (ppm)	5	10	
Sodium (ppm)	15	90	
Boron (ppm)	2.23	2.10	

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref CHIPPENHAM 8
Sample No E130869/04
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
Copper (ppm)	5.0	2.1	
Iron (ppm)	85	50	
Manganese (ppm)	148	110	
Molybdenum (ppm)	0.08	0.20	
Zinc (ppm)	9.5	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3 (if an in-lab bulk density has not been performed) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted].

Please Note

Whilst every care is taken to ensure that the Results from Analysis are as accurate as possible, it is important to note that the analysis relates to the sample received by the laboratory, and is representative only of that sample. No warranty is given by the laboratory that the Results from Analysis relates to any part of a field or growing area not covered by the sample received. It is important to ensure that any soil, leaf, silage or fruitlet sample sent for analysis is representative of the area requiring analysis and that samples are obtained in accordance with established sampling techniques. A leaflet containing instructions on how to take soil, leaf, herbage, silage and fruit samples for analysis is available from the laboratory on request. Uncertainty measurements of results are available on request

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Appendix 8

Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref COUNTY COUNCIL SUBSOIL 1

Date Received 13/09/2022 (Date Issued: 03/10/2022)

Sample No G021447/01

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.2			
Org. Matter - DUMAS (%)	1.0			
C.E.C. (meq/100g)	9.4			
Soil Respiration (mg/kg)	35			
C:N Ratio	15.3			
Texture Class	CLLO			
Org. Carbon Stock (t/ha)	11.3			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	10						
Potassium (ppm)	69						
Magnesium (ppm)	28						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	2259			
Sulphur (ppm)	4			
Sodium (ppm)	12			
Boron (ppm)	0.35			
Copper (ppm)	1.4			
Iron (ppm)	81			
Manganese (ppm)	56			
Molybdenum (ppm)	0.04			
Zinc (ppm)	1.6			

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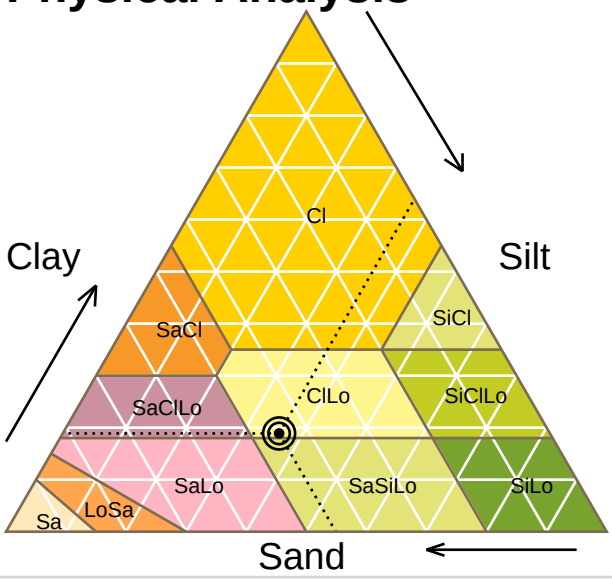
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	COUNTY COUNCIL SUBSOIL 1	**Date Received**	13/09/2022 (Date Issued: 03/10/2022)
Sample No	G021447/01		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	45.09
Silt	36.02
Clay	18.89
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

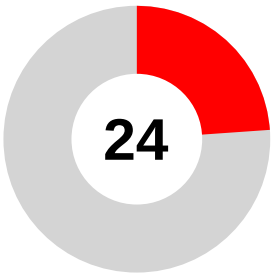
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	35	>70
Organic Carbon (%)	0.6	
Total Nitrogen (%)	0.038	
C:N Ratio	15.3	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	800
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	15
Soil Assessment Score	24/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
Nutrient cycling drops

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref COUNTY COUNCIL SUBSOIL 1
Sample No G021447/01
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
pH	8.2	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	1.0	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	9.4	15.0	Cation Exchange Capacity indicates a low nutrient holding ability - soil applied nutrients will be readily leached. Where possible foliar applied nutrients should be recommended.
Soil Respiration (mg/kg)	35	70	Slightly low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	15.3	10.0	High. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 12 - 25 indicates the potential for a slow rate of decompostion of organic residue and a high retention of applied organic materials.
Texture Class	CLLO		
Org. Carbon Stock (t/ha)	11.3	34.0	The calculated level of organic carbon (active + humus) within one hectare when soil bulk density is either assumed (1.3g/cm3) or has been overwritten with a disturbed soil measured value (if SCA Extra has been requested) and soil depth is 15cm. Please see footnotes for calculation if you wish to adapt. Multiply the OC stock value by the field area (hectares) to indicate level of carbon stored within the field.
Phosphorus (ppm)	10	26	**(Index 1.0)**
Potassium (ppm)	69	241	**(Index 1.1)**
Magnesium (ppm)	28	100	**(Index 1.1)**
Calcium (ppm)	2259	1600	
Sulphur (ppm)	4	10	
Sodium (ppm)	12	90	
Boron (ppm)	0.35	2.10	

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref COUNTY COUNCIL SUBSOIL 1
Sample No G021447/01
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
Copper (ppm)	1.4	2.1	
Iron (ppm)	81	50	
Manganese (ppm)	56	110	
Molybdenum (ppm)	0.04	0.20	
Zinc (ppm)	1.6	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted]

Please Note

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Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref COUNTY COUNCIL TOPSOIL 1

Date Received 13/09/2022 (Date Issued: 03/10/2022)

Sample No G021447/02

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.1			
Org. Matter - DUMAS (%)	2.0			
C.E.C. (meq/100g)	11.6			
Soil Respiration (mg/kg)	51			
C:N Ratio	11.2			
Texture Class	CLLO			
Org. Carbon Stock (t/ha)	22.7			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	27						
Potassium (ppm)	210						
Magnesium (ppm)	36						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	2697			
Sulphur (ppm)	8			
Sodium (ppm)	12			
Boron (ppm)	1.22			
Copper (ppm)	3.4			
Iron (ppm)	35			
Manganese (ppm)	62			
Molybdenum (ppm)	0.03			
Zinc (ppm)	3.7			

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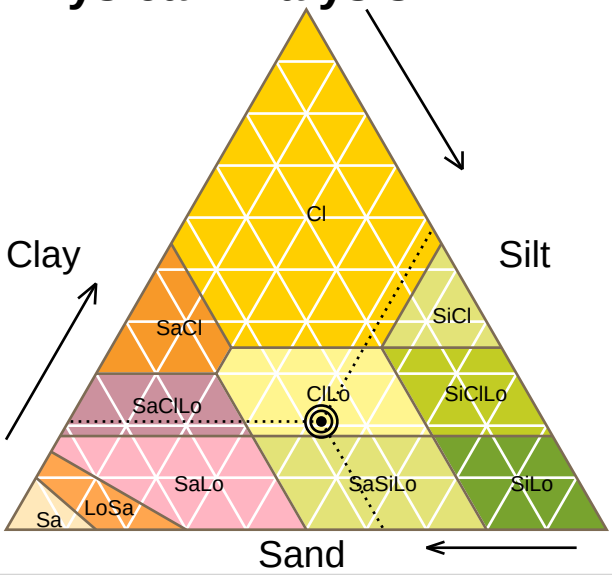
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	COUNTY COUNCIL TOPSOIL 1	**Date Received**	13/09/2022 (Date Issued: 03/10/2022)
Sample No	G021447/02		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	37.10
Silt	42.10
Clay	20.80
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

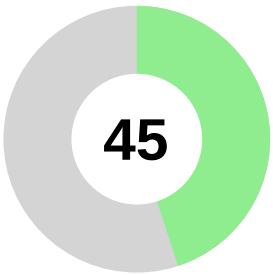
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	51	>70
Organic Carbon (%)	1.2	
Total Nitrogen (%)	0.104	
C:N Ratio	11.2	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	1152
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	31
Soil Assessment Score	45/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
Nutrient cycling drops

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Lancrop Laboratories

Analysis Results (SOIL)

Customer DEMETER
Sample Ref COUNTY COUNCIL TOPSOIL 1
Sample No G021447/02
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
pH	8.1	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	2.0	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	11.6	15.0	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.
Soil Respiration (mg/kg)	51	70	Slightly low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	11.2	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	CLLO		
Org. Carbon Stock (t/ha)	22.7	34.0	The calculated level of organic carbon (active + humus) within one hectare when soil bulk density is either assumed (1.3g/cm3) or has been overwritten with a disturbed soil measured value (if SCA Extra has been requested) and soil depth is 15cm. Please see footnotes for calculation if you wish to adapt. Multiply the OC stock value by the field area (hectares) to indicate level of carbon stored within the field.
Phosphorus (ppm)	27	26	**(Index 3.1)**
Potassium (ppm)	210	241	**(Index 2.7)**
Magnesium (ppm)	36	100	**(Index 1.4)**
Calcium (ppm)	2697	1600	
Sulphur (ppm)	8	10	
Sodium (ppm)	12	90	
Boron (ppm)	1.22	2.10	

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref COUNTY COUNCIL TOPSOIL 1
Sample No G021447/02
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
Copper (ppm)	3.4	2.1	
Iron (ppm)	35	50	
Manganese (ppm)	62	110	
Molybdenum (ppm)	0.03	0.20	
Zinc (ppm)	3.7	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted]

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PAAG Professional Agricultural Analysis Group

Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref COUNTY COUNCIL TOPSOIL 2

Date Received 13/09/2022 (Date Issued: 03/10/2022)

Sample No G021447/03

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.2			
Org. Matter - DUMAS (%)	2.6			
C.E.C. (meq/100g)	13.1			
Soil Respiration (mg/kg)	50			
C:N Ratio	11.2			
Texture Class	CLLO			
Org. Carbon Stock (t/ha)	29.5			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	20						
Potassium (ppm)	339						
Magnesium (ppm)	46						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	2950			
Sulphur (ppm)	9			
Sodium (ppm)	19			
Boron (ppm)	1.40			
Copper (ppm)	4.0			
Iron (ppm)	37			
Manganese (ppm)	61			
Molybdenum (ppm)	0.03			
Zinc (ppm)	5.2			

Released by .....Chris Lindley..Laboratory Manager on behalf of Lancrop Laboratories

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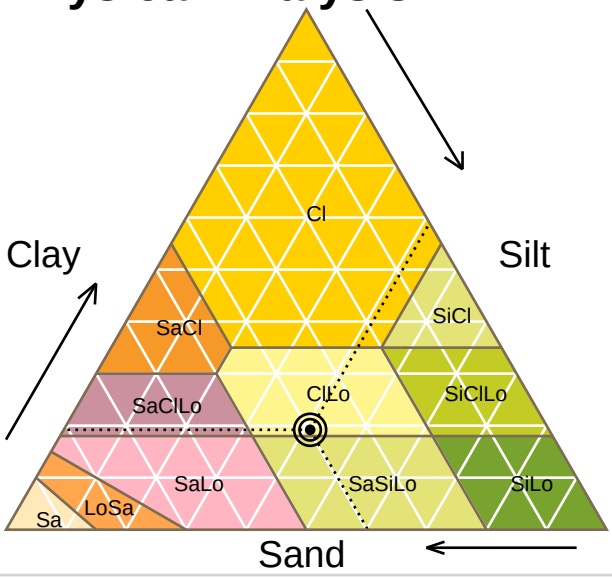
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	COUNTY COUNCIL TOPSOIL 2	**Date Received**	13/09/2022 (Date Issued: 03/10/2022)
Sample No	G021447/03		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	39.76
Silt	41.03
Clay	19.21
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

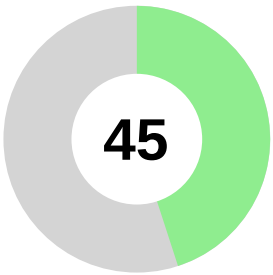
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	50	>70
Organic Carbon (%)	1.5	
Total Nitrogen (%)	0.135	
C:N Ratio	11.2	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	1130
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	30
Soil Assessment Score	45/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
Nutrient cycling drops

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Lancrop Laboratories

Analysis Results (SOIL)

Customer DEMETER
Sample Ref COUNTY COUNCIL TOPSOIL 2
Sample No G021447/03
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
pH	8.2	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	2.6	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	13.1	15.0	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.
Soil Respiration (mg/kg)	50	70	Slightly low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	11.2	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	CLLO		
Org. Carbon Stock (t/ha)	29.5	34.0	The calculated level of organic carbon (active + humus) within one hectare when soil bulk density is either assumed (1.3g/cm3) or has been overwritten with a disturbed soil measured value (if SCA Extra has been requested) and soil depth is 15cm. Please see footnotes for calculation if you wish to adapt. Multiply the OC stock value by the field area (hectares) to indicate level of carbon stored within the field.
Phosphorus (ppm)	20	26	**(Index 2.4)**
Potassium (ppm)	339	241	**(Index 3.6)**
Magnesium (ppm)	46	100	**(Index 1.8)**
Calcium (ppm)	2950	1600	
Sulphur (ppm)	9	10	
Sodium (ppm)	19	90	
Boron (ppm)	1.40	2.10	

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Analysis Results (SOIL)

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Sample Ref COUNTY COUNCIL TOPSOIL 2
Sample No G021447/03
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
Copper (ppm)	4.0	2.1	
Iron (ppm)	37	50	
Manganese (ppm)	61	110	
Molybdenum (ppm)	0.03	0.20	
Zinc (ppm)	5.2	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available a [redacted]

Please Note

Whilst every care is taken to ensure that the Results from Analysis are as accurate as possible, it is important to note that the analysis relates to the sample received by the laboratory, and is representative only of that sample. No warranty is given by the laboratory that the Results from Analysis relates to any part of a field or growing area not covered by the sample received. It is important to ensure that any soil, leaf, silage or fruitlet sample sent for analysis is representative of the area requiring analysis and that samples are obtained in accordance with established sampling techniques. A leaflet containing instructions on how to take soil, leaf, herbage, silage and fruit samples for analysis is available from the laboratory on request. Uncertainty measurements of results are available on request

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Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref COUNTY COUNCIL SUBSOIL 2

Date Received 13/09/2022 (Date Issued: 03/10/2022)

Sample No G021447/04

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.3			
Org. Matter - DUMAS (%)	1.4			
C.E.C. (meq/100g)	11.3			
Soil Respiration (mg/kg)	24			
C:N Ratio	11.5			
Texture Class	SASILO			
Org. Carbon Stock (t/ha)	15.9			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	15						
Potassium (ppm)	168						
Magnesium (ppm)	36						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	2640			
Sulphur (ppm)	15			
Sodium (ppm)	16			
Boron (ppm)	0.80			
Copper (ppm)	2.2			
Iron (ppm)	30			
Manganese (ppm)	38			
Molybdenum (ppm)	0.03			
Zinc (ppm)	2.6			

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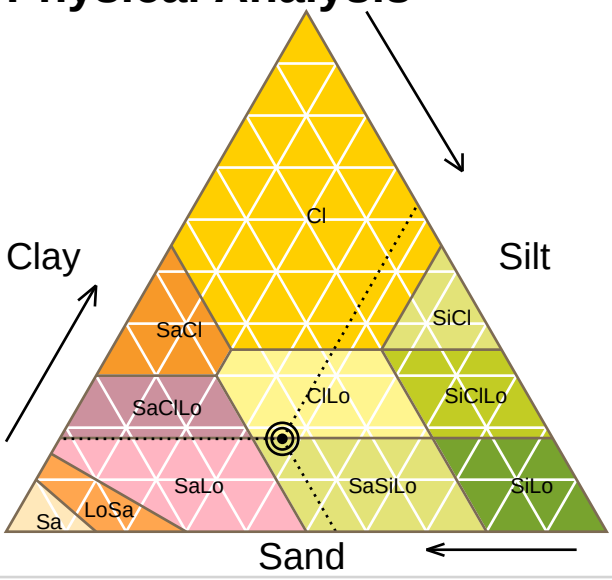
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	COUNTY COUNCIL SUBSOIL 2	**Date Received**	13/09/2022 (Date Issued: 03/10/2022)
Sample No	G021447/04		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	45.07
Silt	37.07
Clay	17.86
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

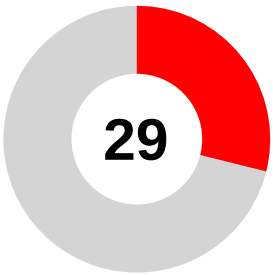
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	24	>70
Organic Carbon (%)	0.8	
Total Nitrogen (%)	0.071	
C:N Ratio	11.5	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	558
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	14
Soil Assessment Score	29/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
Nutrient cycling drops

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref COUNTY COUNCIL SUBSOIL 2
Sample No G021447/04
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
pH	8.3	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	1.4	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	11.3	15.0	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.
Soil Respiration (mg/kg)	24	70	Low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	11.5	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	SASILO		
Org. Carbon Stock (t/ha)	15.9	34.0	The calculated level of organic carbon (active + humus) within one hectare when soil bulk density is either assumed (1.3g/cm3) or has been overwritten with a disturbed soil measured value (if SCA Extra has been requested) and soil depth is 15cm. Please see footnotes for calculation if you wish to adapt. Multiply the OC stock value by the field area (hectares) to indicate level of carbon stored within the field.
Phosphorus (ppm)	15	26	**(Index 1.8)**
Potassium (ppm)	168	241	**(Index 2.4)**
Magnesium (ppm)	36	100	**(Index 1.4)**
Calcium (ppm)	2640	1600	
Sulphur (ppm)	15	10	
Sodium (ppm)	16	90	
Boron (ppm)	0.80	2.10	

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Sample No G021447/04
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
Copper (ppm)	2.2	2.1	
Iron (ppm)	30	50	
Manganese (ppm)	38	110	
Molybdenum (ppm)	0.03	0.20	
Zinc (ppm)	2.6	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted]

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Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref COUNTY COUNCIL TOPSOIL 3

Date Received 13/09/2022 (Date Issued: 03/10/2022)

Sample No G021447/05

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.1			
Org. Matter - DUMAS (%)	2.0			
C.E.C. (meq/100g)	13.8			
Soil Respiration (mg/kg)	48			
C:N Ratio	10.4			
Texture Class	CLLO			
Org. Carbon Stock (t/ha)	22.7			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	35						
Potassium (ppm)	181						
Magnesium (ppm)	49						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	3196			
Sulphur (ppm)	8			
Sodium (ppm)	17			
Boron (ppm)	1.80			
Copper (ppm)	4.7			
Iron (ppm)	39			
Manganese (ppm)	55			
Molybdenum (ppm)	0.06			
Zinc (ppm)	4.9			

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Analysis Results (SOIL)

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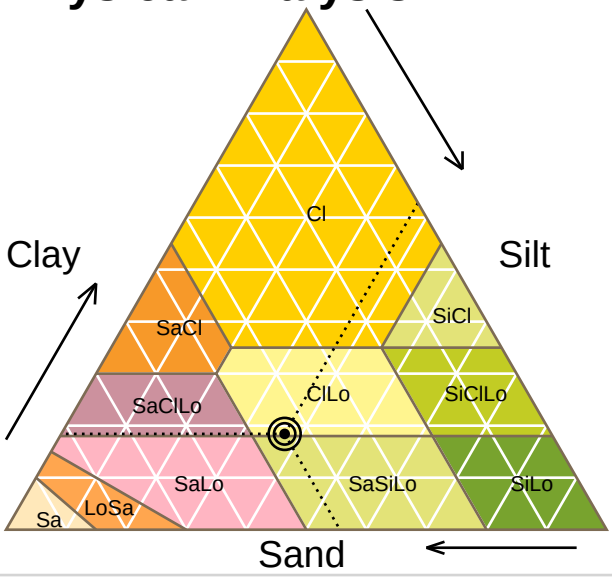
Sample Ref	COUNTY COUNCIL TOPSOIL 3	**Date Received**	13/09/2022 (Date Issued: 03/10/2022)
Sample No	G021447/05		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	44.40
Silt	37.18
Clay	18.42
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

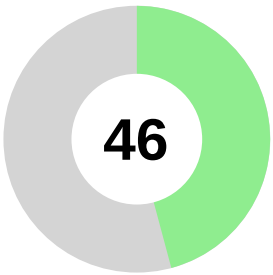
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	48	>70
Organic Carbon (%)	1.2	
Total Nitrogen (%)	0.112	
C:N Ratio	10.4	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	1086
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	31
Soil Assessment Score	46/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

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Desirable fungal and bacterial activity
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Lancrop Laboratories

Analysis Results (SOIL)

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Sample Ref COUNTY COUNCIL TOPSOIL 3
Sample No G021447/05
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
pH	8.1	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	2.0	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	13.8	15.0	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.
Soil Respiration (mg/kg)	48	70	Slightly low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	10.4	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	CLLO		
Org. Carbon Stock (t/ha)	22.7	34.0	The calculated level of organic carbon (active + humus) within one hectare when soil bulk density is either assumed (1.3g/cm3) or has been overwritten with a disturbed soil measured value (if SCA Extra has been requested) and soil depth is 15cm. Please see footnotes for calculation if you wish to adapt. Multiply the OC stock value by the field area (hectares) to indicate level of carbon stored within the field.
Phosphorus (ppm)	35	26	**(Index 3.5)**
Potassium (ppm)	181	241	**(Index 2.5)**
Magnesium (ppm)	49	100	**(Index 1.9)**
Calcium (ppm)	3196	1600	
Sulphur (ppm)	8	10	
Sodium (ppm)	17	90	
Boron (ppm)	1.80	2.10	

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Analysis Results (SOIL)

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Sample No G021447/05
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
Copper (ppm)	4.7	2.1	
Iron (ppm)	39	50	
Manganese (ppm)	55	110	
Molybdenum (ppm)	0.06	0.20	
Zinc (ppm)	4.9	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted]

Please Note

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Analysis Results (SOIL)

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CB7 5TB

Sample Ref COUNTY COUNCIL SUBSOIL 3

Date Received 13/09/2022 (Date Issued: 03/10/2022)

Sample No G021447/06

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.3			
Org. Matter - DUMAS (%)	1.3			
C.E.C. (meq/100g)	12.2			
Soil Respiration (mg/kg)	20			
C:N Ratio	11.5			
Texture Class	SASILO			
Org. Carbon Stock (t/ha)	14.7			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	14						
Potassium (ppm)	92						
Magnesium (ppm)	48						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	2876			
Sulphur (ppm)	8			
Sodium (ppm)	13			
Boron (ppm)	0.81			
Copper (ppm)	2.9			
Iron (ppm)	35			
Manganese (ppm)	45			
Molybdenum (ppm)	0.04			
Zinc (ppm)	1.9			

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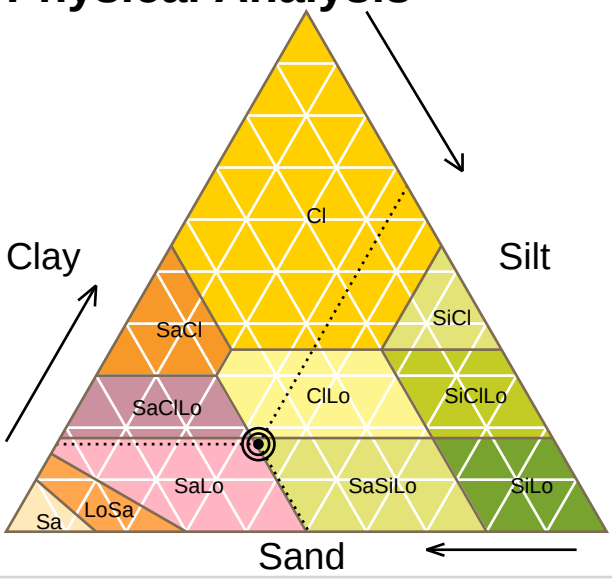
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	COUNTY COUNCIL SUBSOIL 3	**Date Received**	13/09/2022 (Date Issued: 03/10/2022)
Sample No	G021447/06		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	49.56
Silt	33.61
Clay	16.83
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

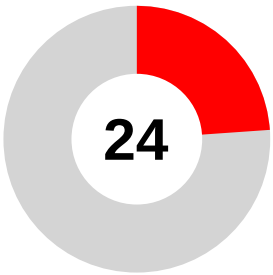
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	20	>70
Organic Carbon (%)	0.8	
Total Nitrogen (%)	0.066	
C:N Ratio	11.5	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	470
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	12
Soil Assessment Score	24/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
Nutrient cycling drops

Lancrop Laboratories, Pocklington, UK, YO42 1DN. soilanalysis@yara.com +44 1759305116

Analysis Results (SOIL)

Customer DEMETER
Sample Ref COUNTY COUNCIL SUBSOIL 3
Sample No G021447/06
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
pH	8.3	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	1.3	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	12.2	15.0	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.
Soil Respiration (mg/kg)	20	70	Low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	11.5	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	SASILO		
Org. Carbon Stock (t/ha)	14.7	34.0	The calculated level of organic carbon (active + humus) within one hectare when soil bulk density is either assumed (1.3g/cm3) or has been overwritten with a disturbed soil measured value (if SCA Extra has been requested) and soil depth is 15cm. Please see footnotes for calculation if you wish to adapt. Multiply the OC stock value by the field area (hectares) to indicate level of carbon stored within the field.
Phosphorus (ppm)	14	26	**(Index 1.7)**
Potassium (ppm)	92	241	**(Index 1.5)**
Magnesium (ppm)	48	100	**(Index 1.9)**
Calcium (ppm)	2876	1600	
Sulphur (ppm)	8	10	
Sodium (ppm)	13	90	
Boron (ppm)	0.81	2.10	

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref COUNTY COUNCIL SUBSOIL 3
Sample No G021447/06
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
Copper (ppm)	2.9	2.1	
Iron (ppm)	35	50	
Manganese (ppm)	45	110	
Molybdenum (ppm)	0.04	0.20	
Zinc (ppm)	1.9	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted].

Please Note

Whilst every care is taken to ensure that the Results from Analysis are as accurate as possible, it is important to note that the analysis relates to the sample received by the laboratory, and is representative only of that sample. No warranty is given by the laboratory that the Results from Analysis relates to any part of a field or growing area not covered by the sample received. It is important to ensure that any soil, leaf, silage or fruitlet sample sent for analysis is representative of the area requiring analysis and that samples are obtained in accordance with established sampling techniques. A leaflet containing instructions on how to take soil, leaf, herbage, silage and fruit samples for analysis is available from the laboratory on request. Uncertainty measurements of results are available on request

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Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref COUNTY COUNCIL 4 TOPSOIL <35CM

Date Received 13/09/2022 (Date Issued: 03/10/2022)

Sample No G021447/07

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.1			
Org. Matter - DUMAS (%)	1.9			
C.E.C. (meq/100g)	14.1			
Soil Respiration (mg/kg)	44			
C:N Ratio	10.9			
Texture Class	CLLO			
Org. Carbon Stock (t/ha)	21.5			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	26						
Potassium (ppm)	211						
Magnesium (ppm)	60						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	3238			
Sulphur (ppm)	8			
Sodium (ppm)	17			
Boron (ppm)	2.07			
Copper (ppm)	4.9			
Iron (ppm)	52			
Manganese (ppm)	70			
Molybdenum (ppm)	0.03			
Zinc (ppm)	4.3			

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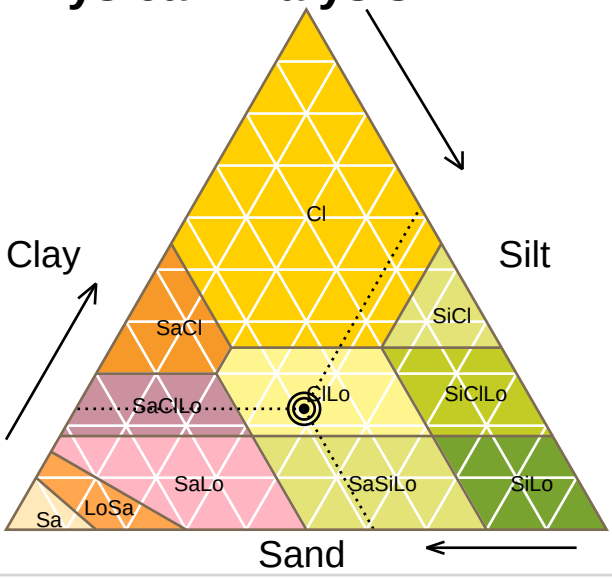
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	COUNTY COUNCIL 4 TOPSOIL <35CM	**Date Received**	13/09/2022 (Date Issued: 03/10/2022)
Sample No	G021447/07		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	38.75
Silt	38.01
Clay	23.24
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

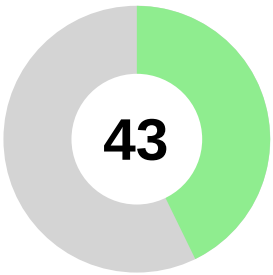
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	44	>70
Organic Carbon (%)	1.1	
Total Nitrogen (%)	0.101	
C:N Ratio	10.9	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	998
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	27
Soil Assessment Score	43/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
Nutrient cycling drops

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref COUNTY COUNCIL 4 TOPSOIL <35CM
Sample No G021447/07
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
pH	8.1	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	1.9	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	14.1	15.0	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.
Soil Respiration (mg/kg)	44	70	Slightly low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	10.9	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	CLLO		
Org. Carbon Stock (t/ha)	21.5	34.0	The calculated level of organic carbon (active + humus) within one hectare when soil bulk density is either assumed (1.3g/cm3) or has been overwritten with a disturbed soil measured value (if SCA Extra has been requested) and soil depth is 15cm. Please see footnotes for calculation if you wish to adapt. Multiply the OC stock value by the field area (hectares) to indicate level of carbon stored within the field.
Phosphorus (ppm)	26	26	**(Index 3.0)**
Potassium (ppm)	211	241	**(Index 2.8)**
Magnesium (ppm)	60	100	**(Index 2.2)**
Calcium (ppm)	3238	1600	
Sulphur (ppm)	8	10	
Sodium (ppm)	17	90	
Boron (ppm)	2.07	2.10	

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref COUNTY COUNCIL 4 TOPSOIL <35CM
Sample No G021447/07
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
Copper (ppm)	4.9	2.1	
Iron (ppm)	52	50	
Manganese (ppm)	70	110	
Molybdenum (ppm)	0.03	0.20	
Zinc (ppm)	4.3	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted]

Please Note

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Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref COUNTY COUNCIL 4 TOPSOIL UPPER

Date Received 13/09/2022 (Date Issued: 03/10/2022)

Sample No G021447/08

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.2			
Org. Matter - DUMAS (%)	1.6			
C.E.C. (meq/100g)	13.2			
Soil Respiration (mg/kg)	21			
C:N Ratio	11.6			
Texture Class	SASILO			
Org. Carbon Stock (t/ha)	18.1			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	18						
Potassium (ppm)	90						
Magnesium (ppm)	52						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	3088			
Sulphur (ppm)	9			
Sodium (ppm)	15			
Boron (ppm)	1.69			
Copper (ppm)	3.4			
Iron (ppm)	35			
Manganese (ppm)	45			
Molybdenum (ppm)	0.03			
Zinc (ppm)	2.4			

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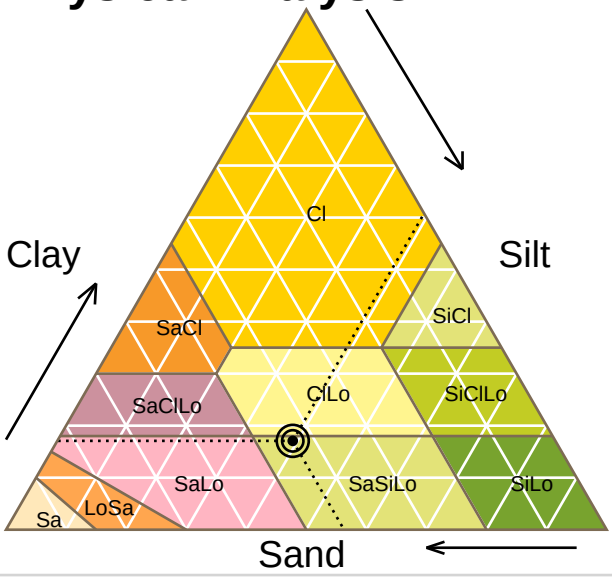
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	COUNTY COUNCIL 4 TOPSOIL UPPER	**Date Received**	13/09/2022 (Date Issued: 03/10/2022)
Sample No	G021447/08		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	43.72
Silt	39.20
Clay	17.08
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

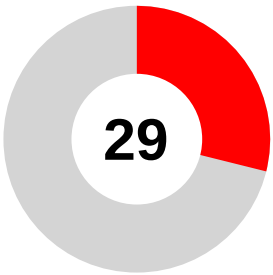
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	21	>70
Organic Carbon (%)	0.9	
Total Nitrogen (%)	0.080	
C:N Ratio	11.6	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	492
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	12
Soil Assessment Score	29/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
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Analysis Results (SOIL)

Customer DEMETER
Sample Ref COUNTY COUNCIL 4 TOPSOIL UPPER
Sample No G021447/08
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
pH	8.2	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	1.6	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	13.2	15.0	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.
Soil Respiration (mg/kg)	21	70	Low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	11.6	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	SASILO		
Org. Carbon Stock (t/ha)	18.1	34.0	The calculated level of organic carbon (active + humus) within one hectare when soil bulk density is either assumed (1.3g/cm3) or has been overwritten with a disturbed soil measured value (if SCA Extra has been requested) and soil depth is 15cm. Please see footnotes for calculation if you wish to adapt. Multiply the OC stock value by the field area (hectares) to indicate level of carbon stored within the field.
Phosphorus (ppm)	18	26	**(Index 2.2)**
Potassium (ppm)	90	241	**(Index 1.5)**
Magnesium (ppm)	52	100	**(Index 2.0)**
Calcium (ppm)	3088	1600	
Sulphur (ppm)	9	10	
Sodium (ppm)	15	90	
Boron (ppm)	1.69	2.10	

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Lancrop Laboratories

Analysis Results (SOIL)

Customer DEMETER
Sample Ref COUNTY COUNCIL 4 TOPSOIL UPPER
Sample No G021447/08
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
Copper (ppm)	3.4	2.1	
Iron (ppm)	35	50	
Manganese (ppm)	45	110	
Molybdenum (ppm)	0.03	0.20	
Zinc (ppm)	2.4	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted].

Please Note

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Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref COUNTY COUNCIL 4 CHALK SUBSOIL

Date Received 13/09/2022 (Date Issued: 03/10/2022)

Sample No G021447/09

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.3			
Org. Matter - DUMAS (%)	1.2			
C.E.C. (meq/100g)	11.3			
Soil Respiration (mg/kg)	10			
C:N Ratio	13.7			
Texture Class	CLLO			
Org. Carbon Stock (t/ha)	13.6			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	11						
Potassium (ppm)	52						
Magnesium (ppm)	45						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	2684			
Sulphur (ppm)	8			
Sodium (ppm)	25			
Boron (ppm)	0.44			
Copper (ppm)	1.4			
Iron (ppm)	50			
Manganese (ppm)	53			
Molybdenum (ppm)	0.04			
Zinc (ppm)	1.4			

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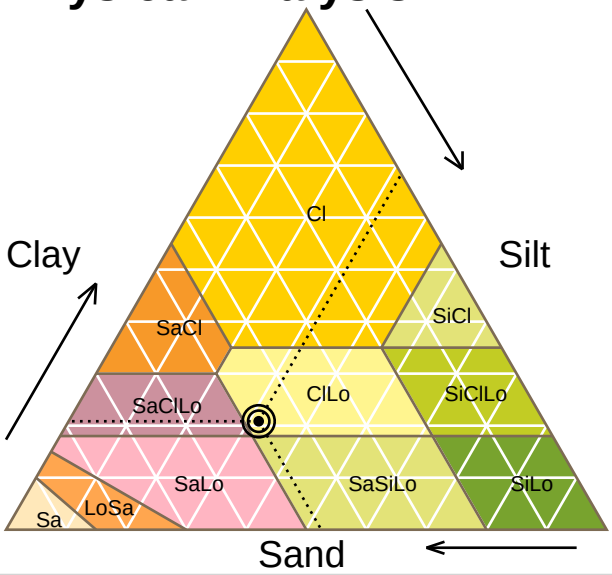
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	COUNTY COUNCIL 4 CHALK SUBSOIL	**Date Received**	13/09/2022 (Date Issued: 03/10/2022)
Sample No	G021447/09		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	47.51
Silt	31.64
Clay	20.85
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

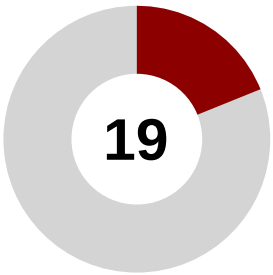
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	10	>70
Organic Carbon (%)	0.7	
Total Nitrogen (%)	0.051	
C:N Ratio	13.7	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	250
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	5
Soil Assessment Score	19/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
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Analysis Results (SOIL)

Customer DEMETER
Sample Ref COUNTY COUNCIL 4 CHALK SUBSOIL
Sample No G021447/09
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
pH	8.3	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	1.2	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	11.3	15.0	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.
Soil Respiration (mg/kg)	10	70	Very low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	13.7	10.0	High. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 12 - 25 indicates the potential for a slow rate of decompostion of organic residue and a high retention of applied organic materials.
Texture Class	CLLO		
Org. Carbon Stock (t/ha)	13.6	34.0	The calculated level of organic carbon (active + humus) within one hectare when soil bulk density is either assumed (1.3g/cm3) or has been overwritten with a disturbed soil measured value (if SCA Extra has been requested) and soil depth is 15cm. Please see footnotes for calculation if you wish to adapt. Multiply the OC stock value by the field area (hectares) to indicate level of carbon stored within the field.
Phosphorus (ppm)	11	26	**(Index 1.2)**
Potassium (ppm)	52	241	**(Index 0.9)**
Magnesium (ppm)	45	100	**(Index 1.8)**
Calcium (ppm)	2684	1600	
Sulphur (ppm)	8	10	
Sodium (ppm)	25	90	
Boron (ppm)	0.44	2.10	

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref COUNTY COUNCIL 4 CHALK SUBSOIL
Sample No G021447/09
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
Copper (ppm)	1.4	2.1	
Iron (ppm)	50	50	
Manganese (ppm)	53	110	
Molybdenum (ppm)	0.04	0.20	
Zinc (ppm)	1.4	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted]

Please Note

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Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref RECTORY FARM TOP SOIL

Date Received 13/09/2022 (Date Issued: 03/10/2022)

Sample No G021448/01

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	7.7			
Org. Matter - DUMAS (%)	1.0			
C.E.C. (meq/100g)	19.5			
Soil Respiration (mg/kg)	100			
C:N Ratio	11.2			
Texture Class	SALO			
Org. Carbon Stock (t/ha)	11.3			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	48						
Potassium (ppm)	89						
Magnesium (ppm)	41						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	3751			
Sulphur (ppm)	1			
Sodium (ppm)	22			
Boron (ppm)	0.83			
Copper (ppm)	3.3			
Iron (ppm)	384			
Manganese (ppm)	108			
Molybdenum (ppm)	0.02			
Zinc (ppm)	3.8			

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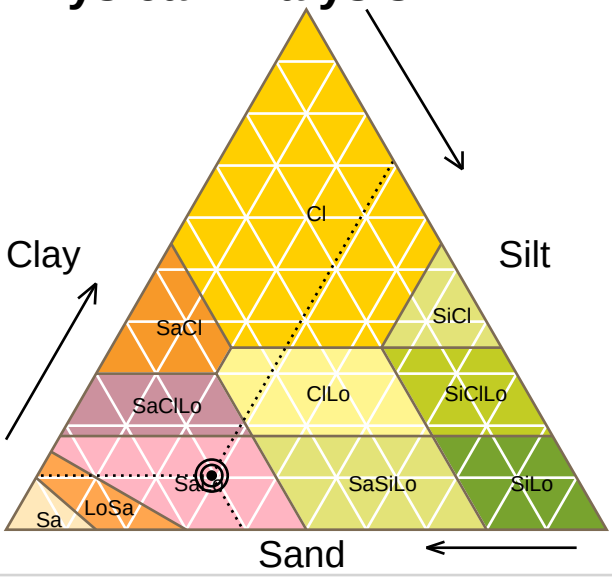
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	RECTORY FARM TOP SOIL	**Date Received**	13/09/2022 (Date Issued: 03/10/2022)
Sample No	G021448/01		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	60.55
Silt	29.04
Clay	10.41
Soil Type	SaLo Sandy 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

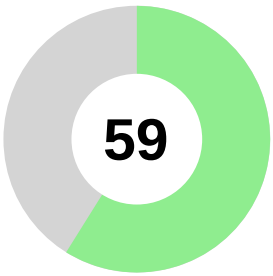
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	100	>70
Organic Carbon (%)	0.6	
Total Nitrogen (%)	0.052	
C:N Ratio	11.2	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	2230
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	60
Soil Assessment Score	59/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
Nutrient cycling drops

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Lancrop Laboratories

Analysis Results (SOIL)

Customer DEMETER
Sample Ref RECTORY FARM TOP SOIL
Sample No G021448/01
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
pH	7.7	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	1.0	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	19.5	15.0	Cation Exchange Capacity indicates a soil with a good nutrient holding ability.
Soil Respiration (mg/kg)	100	70	Typical aerobic microbial activity and mineralisation potential. Soil management practices may further improve biological fertility.
C:N Ratio	11.2	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	SALO		
Org. Carbon Stock (t/ha)	11.3	34.0	The calculated level of organic carbon (active + humus) within one hectare when soil bulk density is either assumed (1.3g/cm3) or has been overwritten with a disturbed soil measured value (if SCA Extra has been requested) and soil depth is 15cm. Please see footnotes for calculation if you wish to adapt. Multiply the OC stock value by the field area (hectares) to indicate level of carbon stored within the field.
Phosphorus (ppm)	48	26	**(Index 4.1)**
Potassium (ppm)	89	241	**(Index 1.5)**
Magnesium (ppm)	41	100	**(Index 1.6)**
Calcium (ppm)	3751	1600	
Sulphur (ppm)	1	10	
Sodium (ppm)	22	90	
Boron (ppm)	0.83	2.10	
Copper (ppm)	3.3	2.1	

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref RECTORY FARM TOP SOIL
Sample No G021448/01
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
Iron (ppm)	384	50	
Manganese (ppm)	108	105	
Molybdenum (ppm)	0.02	0.20	
Zinc (ppm)	3.8	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted]

Please Note

Whilst every care is taken to ensure that the Results from Analysis are as accurate as possible, it is important to note that the analysis relates to the sample received by the laboratory, and is representative only of that sample. No warranty is given by the laboratory that the Results from Analysis relates to any part of a field or growing area not covered by the sample received. It is important to ensure that any soil, leaf, silage or fruitlet sample sent for analysis is representative of the area requiring analysis and that samples are obtained in accordance with established sampling techniques. A leaflet containing instructions on how to take soil, leaf, herbage, silage and fruit samples for analysis is available from the laboratory on request. Uncertainty measurements of results are available on request

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Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref RECTORY FARM SUB SOIL

Date Received 13/09/2022 (Date Issued: 03/10/2022)

Sample No G021448/02

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	7.6			
Org. Matter - DUMAS (%)	0.5			
C.E.C. (meq/100g)	8.7			
Soil Respiration (mg/kg)	69			
C:N Ratio	9.1			
Texture Class	SALO			
Org. Carbon Stock (t/ha)	5.7			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	34						
Potassium (ppm)	46						
Magnesium (ppm)	54						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	1636			
Sulphur (ppm)	1			
Sodium (ppm)	25			
Boron (ppm)	0.78			
Copper (ppm)	2.8			
Iron (ppm)	320			
Manganese (ppm)	86			
Molybdenum (ppm)	0.04			
Zinc (ppm)	2.3			

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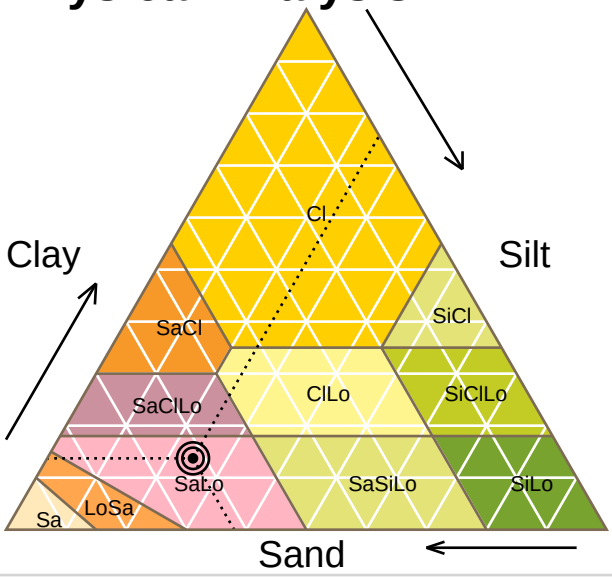
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	RECTORY FARM SUB SOIL	**Date Received**	13/09/2022 (Date Issued: 03/10/2022)
Sample No	G021448/02		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	62.01
Silt	24.27
Clay	13.72
Soil Type	SaLo Sandy 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

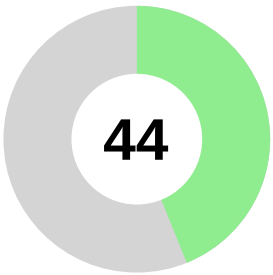
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	69	>70
Organic Carbon (%)	0.3	
Total Nitrogen (%)	0.032	
C:N Ratio	9.1	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	1548
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	46
Soil Assessment Score	44/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
Nutrient cycling drops

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref RECTORY FARM SUB SOIL
Sample No G021448/02
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
pH	7.6	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	0.5	3.0	Very 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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	8.7	15.0	Cation Exchange Capacity indicates a low nutrient holding ability - soil applied nutrients will be readily leached. Where possible foliar applied nutrients should be recommended.
Soil Respiration (mg/kg)	69	70	Slightly low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	9.1	10.0	Low. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 8 - 10 indicates the potential for a rapid decompostion of organic residue and a low retention of applied organic materials.
Texture Class	SALO		
Org. Carbon Stock (t/ha)	5.7	34.0	The calculated level of organic carbon (active + humus) within one hectare when soil bulk density is either assumed (1.3g/cm3) or has been overwritten with a disturbed soil measured value (if SCA Extra has been requested) and soil depth is 15cm. Please see footnotes for calculation if you wish to adapt. Multiply the OC stock value by the field area (hectares) to indicate level of carbon stored within the field.
Phosphorus (ppm)	34	26	**(Index 3.4)**
Potassium (ppm)	46	241	**(Index 0.8)**
Magnesium (ppm)	54	100	**(Index 2.1)**
Calcium (ppm)	1636	1600	
Sulphur (ppm)	1	10	
Sodium (ppm)	25	90	
Boron (ppm)	0.78	2.10	

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref RECTORY FARM SUB SOIL
Sample No G021448/02
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
Copper (ppm)	2.8	2.1	
Iron (ppm)	320	50	
Manganese (ppm)	86	100	
Molybdenum (ppm)	0.04	0.20	
Zinc (ppm)	2.3	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted].

Please Note

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Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref ROYS FIELD TOPSOIL

Date Received 13/09/2022 (Date Issued: 03/10/2022)

Sample No G021448/03

Crop SUGAR BEET

Soil Characteristics	Result	Low	Normal	High
pH	8.1			
Org. Matter - DUMAS (%)	1.9			
C.E.C. (meq/100g)	13.6			
Soil Respiration (mg/kg)	38			
C:N Ratio	10.0			
Texture Class	CLLO			
Org. Carbon Stock (t/ha)	21.5			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	16						
Potassium (ppm)	203						
Magnesium (ppm)	56						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	3112			
Sulphur (ppm)	5			
Sodium (ppm)	34			
Boron (ppm)	2.49			
Copper (ppm)	5.3			
Iron (ppm)	98			
Manganese (ppm)	239			
Molybdenum (ppm)	0.04			
Zinc (ppm)	3.5			

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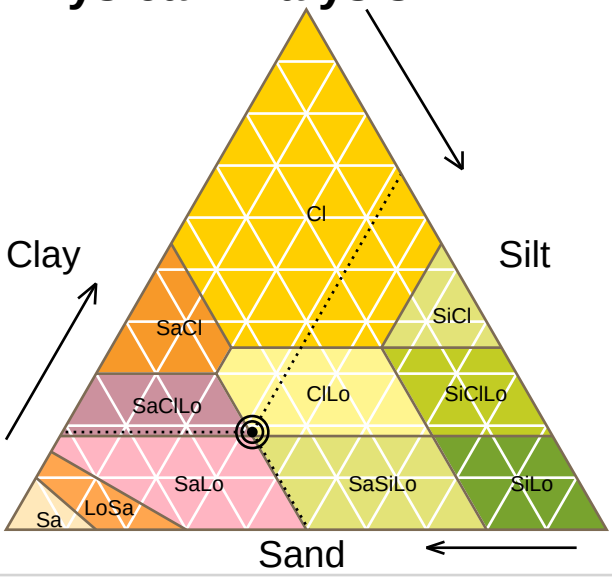
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	ROYS FIELD TOPSOIL	**Date Received**	13/09/2022 (Date Issued: 03/10/2022)
Sample No	G021448/03		
Crop	SUGAR BEET		

Physical Analysis



Analysis	Result (%)
Sand	49.61
Silt	31.62
Clay	18.77
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

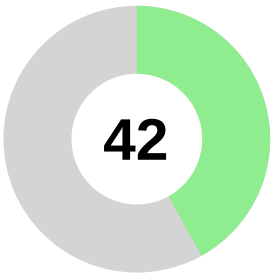
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	38	>70
Organic Carbon (%)	1.1	
Total Nitrogen (%)	0.110	
C:N Ratio	10.0	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	866
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	25
Soil Assessment Score	42/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
Nutrient cycling drops

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Lancrop Laboratories

Analysis Results (SOIL)

Customer DEMETER
Sample Ref ROYS FIELD TOPSOIL
Sample No G021448/03
Crop SUGAR BEET

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
pH	8.1	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	1.9	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	13.6	15.0	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.
Soil Respiration (mg/kg)	38	70	Slightly low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	10.0	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	CLLO		
Org. Carbon Stock (t/ha)	21.5	34.0	The calculated level of organic carbon (active + humus) within one hectare when soil bulk density is either assumed (1.3g/cm3) or has been overwritten with a disturbed soil measured value (if SCA Extra has been requested) and soil depth is 15cm. Please see footnotes for calculation if you wish to adapt. Multiply the OC stock value by the field area (hectares) to indicate level of carbon stored within the field.
Phosphorus (ppm)	16	16	**(Index 2.0)** 50 kg/ha P2O5 (40 units/acre). Maintenance.
Potassium (ppm)	203	121	**(Index 2.7)** 100 kg/ha K2O (80 units/acre).
Magnesium (ppm)	56	51	**(Index 2.1)** Adequate level.
Calcium (ppm)	3112	1600	Adequate level.
Sulphur (ppm)	5	10	Consider treatment
Sodium (ppm)	34	40	Sugar Beet responds to sodium. 190 kg/ha of agricultural salt is recommended.

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref ROYS FIELD TOPSOIL
Sample No G021448/03
Crop SUGAR BEET

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
Boron (ppm)	2.49	2.10	Adequate level.
Copper (ppm)	5.3	4.1	Adequate level.
Iron (ppm)	98	50	Adequate level.
Manganese (ppm)	239	110	Adequate level.
Molybdenum (ppm)	0.04	0.20	Low priority on this crop. Other crops may be affected.
Zinc (ppm)	3.5	4.1	Consider treatment

Additional Comments

The amount of phosphate and potash shown at target Index 2 are needed to replace the offtakes in a 60t/ha crop (with tops ploughed in) and maintain the soil at the target Index.
The phosphate and potash recommendations at target or lower indices can be adjusted if yields are likely to be larger or smaller than 60 t/ha by multiplying the difference in expected yield by the phosphate and potash content per tonne of yield. See RB209 for full details.
Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted]

Please Note

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PAAG Professional Agricultural Analysis Group

Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref ROYS FIELD SUBSOIL

Date Received 13/09/2022 (Date Issued: 03/10/2022)

Sample No G021448/04

Crop SUGAR BEET

Soil Characteristics	Result	Low	Normal	High
pH	8.3			
Org. Matter - DUMAS (%)	1.3			
C.E.C. (meq/100g)	13.8			
Soil Respiration (mg/kg)	13			
C:N Ratio	11.1			
Texture Class	SALO			
Org. Carbon Stock (t/ha)	14.7			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	8						
Potassium (ppm)	73						
Magnesium (ppm)	53						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	3243			
Sulphur (ppm)	8			
Sodium (ppm)	26			
Boron (ppm)	1.05			
Copper (ppm)	2.7			
Iron (ppm)	26			
Manganese (ppm)	42			
Molybdenum (ppm)	0.04			
Zinc (ppm)	1.2			

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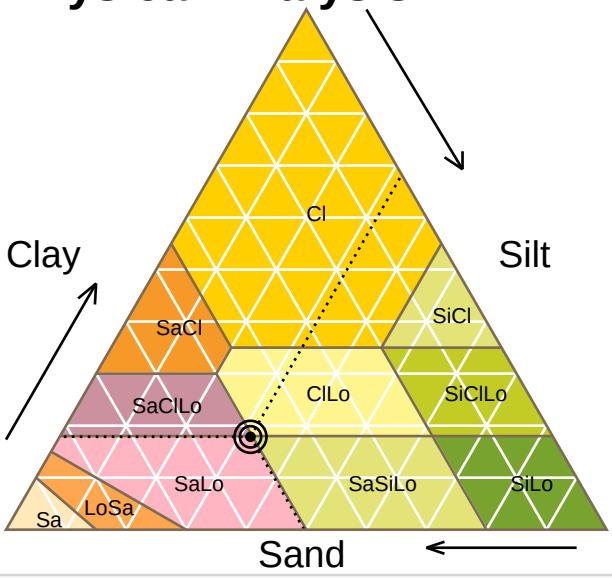
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	ROYS FIELD SUBSOIL	**Date Received**	13/09/2022 (Date Issued: 03/10/2022)
Sample No	G021448/04		
Crop	SUGAR BEET		

Physical Analysis



Analysis	Result (%)
Sand	50.37
Silt	31.77
Clay	17.86
Soil Type	SaLo Sandy 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

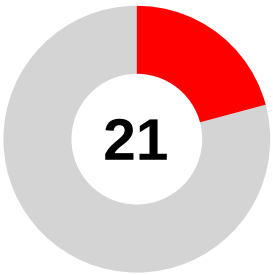
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	13	>70
Organic Carbon (%)	0.8	
Total Nitrogen (%)	0.068	
C:N Ratio	11.1	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	316
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	8
Soil Assessment Score	21/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
Nutrient cycling drops

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Lancrop Laboratories

Analysis Results (SOIL)

Customer DEMETER
Sample Ref ROYS FIELD SUBSOIL
Sample No G021448/04
Crop SUGAR BEET

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
pH	8.3	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	1.3	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	13.8	15.0	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.
Soil Respiration (mg/kg)	13	70	Low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	11.1	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	SALO		
Org. Carbon Stock (t/ha)	14.7	34.0	The calculated level of organic carbon (active + humus) within one hectare when soil bulk density is either assumed (1.3g/cm3) or has been overwritten with a disturbed soil measured value (if SCA Extra has been requested) and soil depth is 15cm. Please see footnotes for calculation if you wish to adapt. Multiply the OC stock value by the field area (hectares) to indicate level of carbon stored within the field.
Phosphorus (ppm)	8	16	**(Index 0.8)** 110 kg/ha P2O5 (88 units/acre).
Potassium (ppm)	73	121	**(Index 1.2)** 130 kg/ha K2O (104 units/acre).
Magnesium (ppm)	53	51	**(Index 2.0)** Adequate level.
Calcium (ppm)	3243	1600	Adequate level.
Sulphur (ppm)	8	10	Consider treatment
Sodium (ppm)	26	40	Sugar Beet responds to sodium. 190 kg/ha of agricultural salt is recommended.

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref ROYS FIELD SUBSOIL
Sample No G021448/04
Crop SUGAR BEET

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
Boron (ppm)	1.05	2.10	PRIORITY FOR TREATMENT.
Copper (ppm)	2.7	4.1	PRIORITY FOR TREATMENT.
Iron (ppm)	26	50	Low priority on this crop. Other crops may be affected.
Manganese (ppm)	42	110	PRIORITY FOR TREATMENT.
Molybdenum (ppm)	0.04	0.20	Low priority on this crop. Other crops may be affected.
Zinc (ppm)	1.2	4.1	Consider treatment

Additional Comments

The amount of phosphate and potash shown at target Index 2 are needed to replace the offtakes in a 60t/ha crop (with tops ploughed in) and maintain the soil at the target Index.
The phosphate and potash recommendations at target or lower indices can be adjusted if yields are likely to be larger or smaller than 60 t/ha by multiplying the difference in expected yield by the phosphate and potash content per tonne of yield. See RB209 for full details.
The potash recommendations assume sodium is used at 200 kg/ha Na2O (375 kg/ha salt). Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted]

Please Note

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Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
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ISLEHAM
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Sample Ref GARGETTS TOPSOIL

Date Received 13/09/2022 (Date Issued: 03/10/2022)

Sample No G021448/05

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.2			
Org. Matter - DUMAS (%)	1.1			
C.E.C. (meq/100g)	8.8			
Soil Respiration (mg/kg)	37			
C:N Ratio	11.0			
Texture Class	SALO			
Org. Carbon Stock (t/ha)	12.5			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	35						
Potassium (ppm)	79						
Magnesium (ppm)	33						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	2100			
Sulphur (ppm)	5			
Sodium (ppm)	10			
Boron (ppm)	0.98			
Copper (ppm)	3.6			
Iron (ppm)	42			
Manganese (ppm)	38			
Molybdenum (ppm)	0.04			
Zinc (ppm)	4.5			

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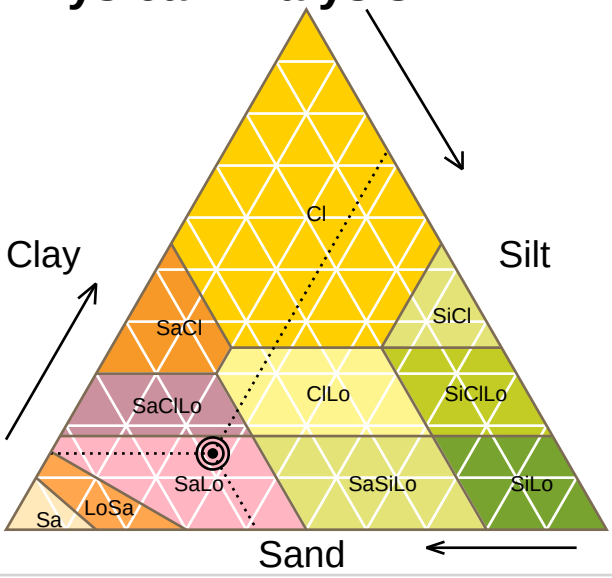
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	GARGETTS TOPSOIL	**Date Received**	13/09/2022 (Date Issued: 03/10/2022)
Sample No	G021448/05		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	58.25
Silt	27.09
Clay	14.66
Soil Type	SaLo Sandy 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

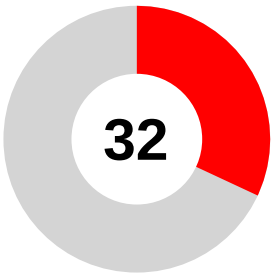
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	37	>70
Organic Carbon (%)	0.6	
Total Nitrogen (%)	0.058	
C:N Ratio	11.0	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	844
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	22
Soil Assessment Score	32/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
Nutrient cycling drops

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref GARGETTS TOPSOIL
Sample No G021448/05
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
pH	8.2	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	1.1	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	8.8	15.0	Cation Exchange Capacity indicates a low nutrient holding ability - soil applied nutrients will be readily leached. Where possible foliar applied nutrients should be recommended.
Soil Respiration (mg/kg)	37	70	Slightly low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	11.0	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	SALO		
Org. Carbon Stock (t/ha)	12.5	34.0	The calculated level of organic carbon (active + humus) within one hectare when soil bulk density is either assumed (1.3g/cm3) or has been overwritten with a disturbed soil measured value (if SCA Extra has been requested) and soil depth is 15cm. Please see footnotes for calculation if you wish to adapt. Multiply the OC stock value by the field area (hectares) to indicate level of carbon stored within the field.
Phosphorus (ppm)	35	26	**(Index 3.5)**
Potassium (ppm)	79	241	**(Index 1.3)**
Magnesium (ppm)	33	100	**(Index 1.3)**
Calcium (ppm)	2100	1600	
Sulphur (ppm)	5	10	
Sodium (ppm)	10	90	
Boron (ppm)	0.98	2.10	

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Analysis Results (SOIL)

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Sample Ref GARGETTS TOPSOIL
Sample No G021448/05
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
Copper (ppm)	3.6	2.1	
Iron (ppm)	42	50	
Manganese (ppm)	38	110	
Molybdenum (ppm)	0.04	0.20	
Zinc (ppm)	4.5	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted].

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Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
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CAMBS
CB7 5TB

Sample Ref GARGETTS SUBSOIL

Date Received 13/09/2022 (Date Issued: 03/10/2022)

Sample No G021448/06

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.3			
Org. Matter - DUMAS (%)	0.5			
C.E.C. (meq/100g)	6.9			
Soil Respiration (mg/kg)	15			
C:N Ratio	22.4			
Texture Class	SACLLO			
Org. Carbon Stock (t/ha)	5.7			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	12						
Potassium (ppm)	30						
Magnesium (ppm)	17						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	1706			
Sulphur (ppm)	5			
Sodium (ppm)	12			
Boron (ppm)	0.35			
Copper (ppm)	1.0			
Iron (ppm)	30			
Manganese (ppm)	23			
Molybdenum (ppm)	0.05			
Zinc (ppm)	1.4			

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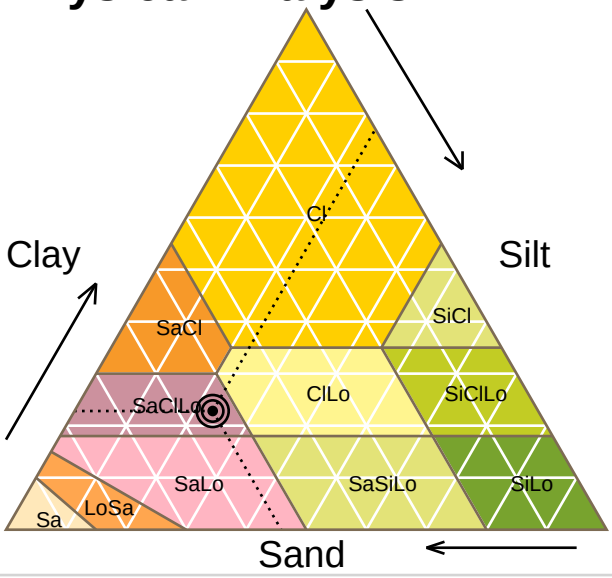
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	GARGETTS SUBSOIL	**Date Received**	13/09/2022 (Date Issued: 03/10/2022)
Sample No	G021448/06		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	54.18
Silt	23.00
Clay	22.82
Soil Type	SaClLo Sandy Clay 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

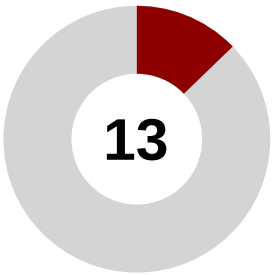
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	15	>70
Organic Carbon (%)	0.3	
Total Nitrogen (%)	0.013	
C:N Ratio	22.4	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	360
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	4
Soil Assessment Score	13/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
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Analysis Results (SOIL)

Customer DEMETER
Sample Ref GARGETTS SUBSOIL
Sample No G021448/06
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
pH	8.3	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	0.5	3.0	Very 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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	6.9	15.0	Cation Exchange Capacity indicates a low nutrient holding ability - soil applied nutrients will be readily leached. Where possible foliar applied nutrients should be recommended.
Soil Respiration (mg/kg)	15	70	Low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	22.4	10.0	High. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 12 - 25 indicates the potential for a slow rate of decompostion of organic residue and a high retention of applied organic materials.
Texture Class	SACLLO		
Org. Carbon Stock (t/ha)	5.7	34.0	The calculated level of organic carbon (active + humus) within one hectare when soil bulk density is either assumed (1.3g/cm3) or has been overwritten with a disturbed soil measured value (if SCA Extra has been requested) and soil depth is 15cm. Please see footnotes for calculation if you wish to adapt. Multiply the OC stock value by the field area (hectares) to indicate level of carbon stored within the field.
Phosphorus (ppm)	12	26	**(Index 1.3)**
Potassium (ppm)	30	241	**(Index 0.5)**
Magnesium (ppm)	17	100	**(Index 0.7)**
Calcium (ppm)	1706	1600	
Sulphur (ppm)	5	10	
Sodium (ppm)	12	90	
Boron (ppm)	0.35	2.10	

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref GARGETTS SUBSOIL
Sample No G021448/06
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
Copper (ppm)	1.0	2.1	
Iron (ppm)	30	50	
Manganese (ppm)	23	110	
Molybdenum (ppm)	0.05	0.20	
Zinc (ppm)	1.4	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available a [redacted]

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Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref HAVACRE TOP SOIL

Date Received 13/09/2022 (Date Issued: 03/10/2022)

Sample No G021448/07

Crop POTATOES

Soil Characteristics	Result	Low	Normal	High
pH	8.1			
Org. Matter - DUMAS (%)	2.2			
C.E.C. (meq/100g)	11.8			
Soil Respiration (mg/kg)	74			
C:N Ratio	9.2			
Texture Class	SASILO			
Org. Carbon Stock (t/ha)	24.9			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	23						
Potassium (ppm)	185						
Magnesium (ppm)	58						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	2703			
Sulphur (ppm)	9			
Sodium (ppm)	16			
Boron (ppm)	3.39			
Copper (ppm)	3.8			
Iron (ppm)	56			
Manganese (ppm)	86			
Molybdenum (ppm)	0.04			
Zinc (ppm)	6.5			

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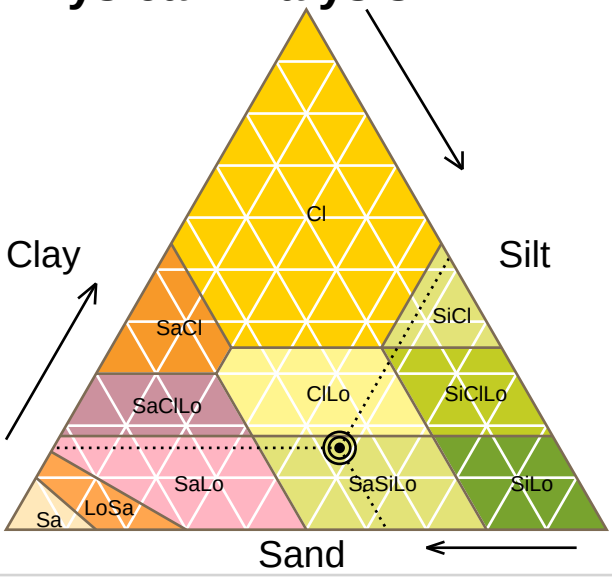
PAAG Professional Agricultural Analysis Group

Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	HAVACRE TOP SOIL	**Date Received**	13/09/2022 (Date Issued: 03/10/2022)
Sample No	G021448/07		
Crop	POTATOES		

Physical Analysis



Analysis	Result (%)
Sand	36.60
Silt	47.67
Clay	15.73
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

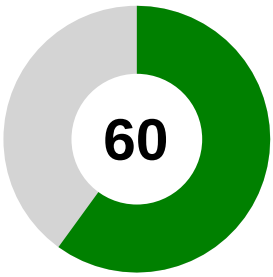
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	74	>70
Organic Carbon (%)	1.3	
Total Nitrogen (%)	0.139	
C:N Ratio	9.2	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	1658
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	50
Soil Assessment Score	60/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
Nutrient cycling drops

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Lancrop Laboratories

Analysis Results (SOIL)

Customer DEMETER
Sample Ref HAVACRE TOP SOIL
Sample No G021448/07
Crop POTATOES

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
pH	8.1	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	2.2	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	11.8	15.0	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.
Soil Respiration (mg/kg)	74	70	Typical aerobic microbial activity and mineralisation potential. Soil management practices may further improve biological fertility.
C:N Ratio	9.2	10.0	Low. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 8 - 10 indicates the potential for a rapid decompostion of organic residue and a low retention of applied organic materials.
Texture Class	SASILO		
Org. Carbon Stock (t/ha)	24.9	34.0	The calculated level of organic carbon (active + humus) within one hectare when soil bulk density is either assumed (1.3g/cm3) or has been overwritten with a disturbed soil measured value (if SCA Extra has been requested) and soil depth is 15cm. Please see footnotes for calculation if you wish to adapt. Multiply the OC stock value by the field area (hectares) to indicate level of carbon stored within the field.
Phosphorus (ppm)	23	16	**(Index 2.7)** 170 kg/ha P2O5 (136 units/acre).
Potassium (ppm)	185	121	**(Index 2.5)** 300 kg/ha K2O (240 units/acre).
Magnesium (ppm)	58	51	**(Index 2.1)** 40 kg/ha MgO (32 units/acre).
Calcium (ppm)	2703	2000	Adequate level.
Sulphur (ppm)	9	10	CONSIDER TREATMENT.
Sodium (ppm)	16	90	Not a problem for this crop.
Boron (ppm)	3.39	1.60	Adequate level.

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Customer DEMETER
Sample Ref HAVACRE TOP SOIL
Sample No G021448/07
Crop POTATOES

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
Copper (ppm)	3.8	2.1	Adequate level.
Iron (ppm)	56	200	Low priority on this crop. Other crops may be affected.
Manganese (ppm)	86	110	PRIORITY FOR TREATMENT.
Molybdenum (ppm)	0.04	0.20	Low priority on this crop. Other crops may be affected.
Zinc (ppm)	6.5	4.1	Adequate level.

Additional Comments

Soil applied P and K recommendations are taken from AHDB Nutrient management Guide (RB209) for Maincrop yielding 50 t/ha. The potash recommendations at target or lower indices can be can be adjusted when yield is likely to be larger or smaller than 50 t/ha by multiplying the difference in expected yield by the potash content per tonne yield (see 8th edition RB209 for more detail). Ensure the potash offtake is balanced by application of potash fertiliser on Index 2 soils, and check that the soil is maintained at Index 2 for both phosphate and potash by soil sampling every 3-5 years. The amounts of phosphate and potash shown at Index 2 are those recommended to achieve a total yield of 50 t/ha. The phosphate recommendations are intended to achieve optimum yield and should not be adjusted even if larger or smaller yields than 50 t/ha are expected. Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted]

Please Note

Whilst every care is taken to ensure that the Results from Analysis are as accurate as possible, it is important to note that the analysis relates to the sample received by the laboratory, and is representative only of that sample. No warranty is given by the laboratory that the Results from Analysis relates to any part of a field or growing area not covered by the sample received. It is important to ensure that any soil, leaf, silage or fruitlet sample sent for analysis is representative of the area requiring analysis and that samples are obtained in accordance with established sampling techniques. A leaflet containing instructions on how to take soil, leaf, herbage, silage and fruit samples for analysis is available from the laboratory on request. Uncertainty measurements of results are available on request

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Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref HAVACRE SUB SOIL

Date Received 13/09/2022 (Date Issued: 03/10/2022)

Sample No G021448/08

Crop POTATOES

Soil Characteristics	Result	Low	Normal	High
pH	8.3			
Org. Matter - DUMAS (%)	1.0			
C.E.C. (meq/100g)	9.9			
Soil Respiration (mg/kg)	33			
C:N Ratio	12.4			
Texture Class	SALO			
Org. Carbon Stock (t/ha)	11.3			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	6						
Potassium (ppm)	37						
Magnesium (ppm)	28						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	2389			
Sulphur (ppm)	12			
Sodium (ppm)	20			
Boron (ppm)	0.53			
Copper (ppm)	1.2			
Iron (ppm)	21			
Manganese (ppm)	18			
Molybdenum (ppm)	0.02			
Zinc (ppm)	1.4			

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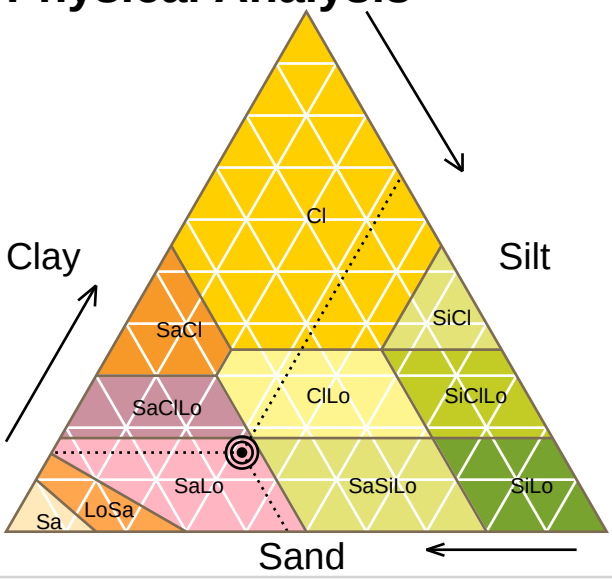
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	HAVACRE SUB SOIL	**Date Received**	13/09/2022 (Date Issued: 03/10/2022)
Sample No	G021448/08		
Crop	POTATOES		

Physical Analysis



Analysis	Result (%)
Sand	53.11
Silt	31.67
Clay	15.22
Soil Type	SaLo Sandy 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

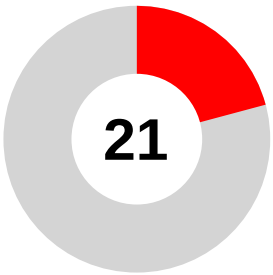
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	33	>70
Organic Carbon (%)	0.6	
Total Nitrogen (%)	0.047	
C:N Ratio	12.4	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	756
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	18
Soil Assessment Score	21/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref HAVACRE SUB SOIL
Sample No G021448/08
Crop POTATOES

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
pH	8.3	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	1.0	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	9.9	15.0	Cation Exchange Capacity indicates a low nutrient holding ability - soil applied nutrients will be readily leached. Where possible foliar applied nutrients should be recommended.
Soil Respiration (mg/kg)	33	70	Slightly low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	12.4	10.0	High. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 12 - 25 indicates the potential for a slow rate of decompostion of organic residue and a high retention of applied organic materials.
Texture Class	SALO		
Org. Carbon Stock (t/ha)	11.3	34.0	The calculated level of organic carbon (active + humus) within one hectare when soil bulk density is either assumed (1.3g/cm3) or has been overwritten with a disturbed soil measured value (if SCA Extra has been requested) and soil depth is 15cm. Please see footnotes for calculation if you wish to adapt. Multiply the OC stock value by the field area (hectares) to indicate level of carbon stored within the field.
Phosphorus (ppm)	6	16	**(Index 0.6)** 250 kg/ha P2O5 (200) units/acre).
Potassium (ppm)	37	121	**(Index 0.6)** 360 kg/ha K2O (288 units/acre).
Magnesium (ppm)	28	51	**(Index 1.1)** 80 kg/ha MgO (64 units/acre).
Calcium (ppm)	2389	2000	Adequate level.
Sulphur (ppm)	12	10	Adequate level.
Sodium (ppm)	20	90	Not a problem for this crop.
Boron (ppm)	0.53	1.60	CONSIDER TREATMENT.

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Sample Ref HAVACRE SUB SOIL
Sample No G021448/08
Crop POTATOES

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
Copper (ppm)	1.2	2.1	Low priority on this crop. Other crops may be affected.
Iron (ppm)	21	200	Low priority on this crop. Other crops may be affected.
Manganese (ppm)	18	110	PRIORITY FOR TREATMENT.
Molybdenum (ppm)	0.02	0.20	Low priority on this crop. Other crops may be affected.
Zinc (ppm)	1.4	4.1	Low priority on this crop. Other crops may be affected.

Additional Comments

Soil applied P and K recommendations are taken from AHDB Nutrient management Guide (RB209) for Maincrop yielding 50 t/ha. The potash recommendations at target or lower indices can be can be adjusted when yield is likely to be larger or smaller than 50 t/ha by multiplying the difference in expected yield by the potash content per tonne yield (see 8th edition RB209 for more detail). Ensure the potash offtake is balanced by application of potash fertiliser on Index 2 soils, and check that the soil is maintained at Index 2 for both phosphate and potash by soil sampling every 3-5 years. The amounts of phosphate and potash shown at Index 2 are those recommended to achieve a total yield of 50 t/ha. The phosphate recommendations are intended to achieve optimum yield and should not be adjusted even if larger or smaller yields than 50 t/ha are expected. Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted]

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Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref 2 T25 TOPSOIL

Date Received 13/09/2022 (Date Issued: 03/10/2022)

Sample No G021449/01

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.1			
Org. Matter - DUMAS (%)	1.7			
C.E.C. (meq/100g)	10.7			
Soil Respiration (mg/kg)	53			
C:N Ratio	11.1			
Texture Class	CLLO			
Org. Carbon Stock (t/ha)	19.3			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	53						
Potassium (ppm)	173						
Magnesium (ppm)	56						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	2457			
Sulphur (ppm)	6			
Sodium (ppm)	12			
Boron (ppm)	1.54			
Copper (ppm)	4.4			
Iron (ppm)	164			
Manganese (ppm)	72			
Molybdenum (ppm)	0.04			
Zinc (ppm)	6.4			

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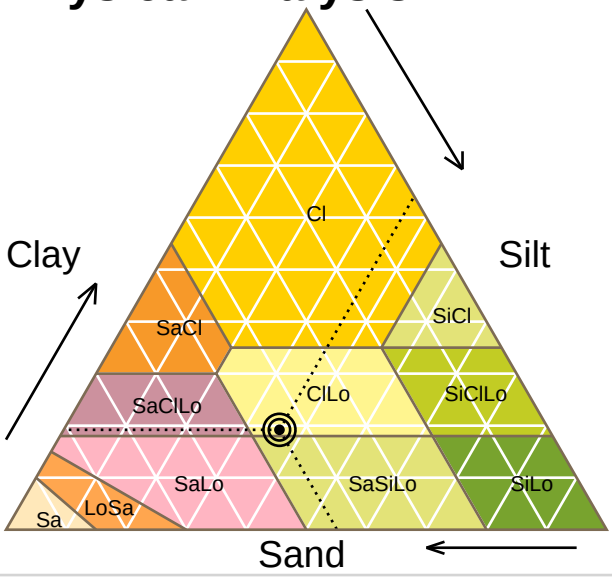
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	2 T25 TOPSOIL	**Date Received**	13/09/2022 (Date Issued: 03/10/2022)
Sample No	G021449/01		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	44.88
Silt	35.92
Clay	19.20
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

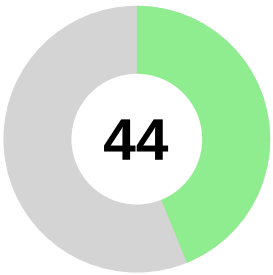
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	53	>70
Organic Carbon (%)	1.0	
Total Nitrogen (%)	0.089	
C:N Ratio	11.1	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	1196
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	32
Soil Assessment Score	44/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
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Sample Ref 2 T25 TOPSOIL
Sample No G021449/01
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
pH	8.1	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	1.7	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	10.7	15.0	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.
Soil Respiration (mg/kg)	53	70	Slightly low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	11.1	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	CLLO		
Org. Carbon Stock (t/ha)	19.3	34.0	The calculated level of organic carbon (active + humus) within one hectare when soil bulk density is either assumed (1.3g/cm3) or has been overwritten with a disturbed soil measured value (if SCA Extra has been requested) and soil depth is 15cm. Please see footnotes for calculation if you wish to adapt. Multiply the OC stock value by the field area (hectares) to indicate level of carbon stored within the field.
Phosphorus (ppm)	53	26	**(Index 4.3)**
Potassium (ppm)	173	241	**(Index 2.4)**
Magnesium (ppm)	56	100	**(Index 2.1)**
Calcium (ppm)	2457	1600	
Sulphur (ppm)	6	10	
Sodium (ppm)	12	90	
Boron (ppm)	1.54	2.10	

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Sample No G021449/01
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
Copper (ppm)	4.4	2.1	
Iron (ppm)	164	50	
Manganese (ppm)	72	110	
Molybdenum (ppm)	0.04	0.20	
Zinc (ppm)	6.4	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
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Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref 2 T25 SUBSOIL

Date Received 13/09/2022 (Date Issued: 03/10/2022)

Sample No G021449/02

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.3			
Org. Matter - DUMAS (%)	1.2			
C.E.C. (meq/100g)	11.7			
Soil Respiration (mg/kg)	15			
C:N Ratio	10.0			
Texture Class	SALO			
Org. Carbon Stock (t/ha)	13.6			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	11						
Potassium (ppm)	298						
Magnesium (ppm)	55						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	2626			
Sulphur (ppm)	4			
Sodium (ppm)	17			
Boron (ppm)	2.06			
Copper (ppm)	3.2			
Iron (ppm)	54			
Manganese (ppm)	105			
Molybdenum (ppm)	0.04			
Zinc (ppm)	1.7			

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Analysis Results (SOIL)

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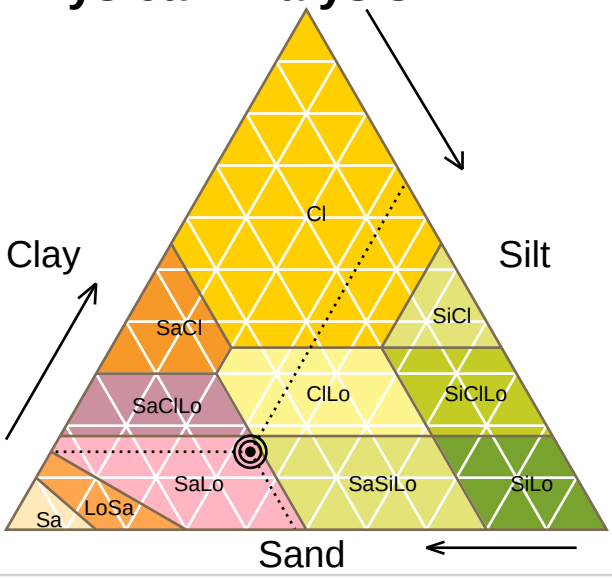
Sample Ref	2 T25 SUBSOIL	**Date Received**	13/09/2022 (Date Issued: 03/10/2022)
Sample No	G021449/02		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	51.83
Silt	33.19
Clay	14.98
Soil Type	SaLo Sandy 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

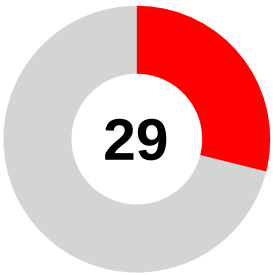
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	15	>70
Organic Carbon (%)	0.7	
Total Nitrogen (%)	0.070	
C:N Ratio	10.0	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	360
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	10
Soil Assessment Score	29/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
Nutrient cycling drops

Lancrop Laboratories, Pocklington, UK, YO42 1DN. soilanalysis@yara.com +44 1759305116

Analysis Results (SOIL)

Customer DEMETER
Sample Ref 2 T25 SUBSOIL
Sample No G021449/02
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
pH	8.3	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	1.2	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	11.7	15.0	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.
Soil Respiration (mg/kg)	15	70	Low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	10.0	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	SALO		
Org. Carbon Stock (t/ha)	13.6	34.0	The calculated level of organic carbon (active + humus) within one hectare when soil bulk density is either assumed (1.3g/cm3) or has been overwritten with a disturbed soil measured value (if SCA Extra has been requested) and soil depth is 15cm. Please see footnotes for calculation if you wish to adapt. Multiply the OC stock value by the field area (hectares) to indicate level of carbon stored within the field.
Phosphorus (ppm)	11	26	**(Index 1.2)**
Potassium (ppm)	298	241	**(Index 3.4)**
Magnesium (ppm)	55	100	**(Index 2.1)**
Calcium (ppm)	2626	1600	
Sulphur (ppm)	4	10	
Sodium (ppm)	17	90	
Boron (ppm)	2.06	2.10	

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref 2 T25 SUBSOIL
Sample No G021449/02
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
Copper (ppm)	3.2	2.1	
Iron (ppm)	54	50	
Manganese (ppm)	105	110	
Molybdenum (ppm)	0.04	0.20	
Zinc (ppm)	1.7	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available a [redacted]

Please Note

Whilst every care is taken to ensure that the Results from Analysis are as accurate as possible, it is important to note that the analysis relates to the sample received by the laboratory, and is representative only of that sample. No warranty is given by the laboratory that the Results from Analysis relates to any part of a field or growing area not covered by the sample received. It is important to ensure that any soil, leaf, silage or fruitlet sample sent for analysis is representative of the area requiring analysis and that samples are obtained in accordance with established sampling techniques. A leaflet containing instructions on how to take soil, leaf, herbage, silage and fruit samples for analysis is available from the laboratory on request. Uncertainty measurements of results are available on request

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Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref 1 T25 TOPSOIL

Date Received 13/09/2022 (Date Issued: 03/10/2022)

Sample No G021449/03

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.1			
Org. Matter - DUMAS (%)	1.7			
C.E.C. (meq/100g)	9.7			
Soil Respiration (mg/kg)	18			
C:N Ratio	10.9			
Texture Class	SASILO			
Org. Carbon Stock (t/ha)	19.3			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	20						
Potassium (ppm)	117						
Magnesium (ppm)	52						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	2272			
Sulphur (ppm)	11			
Sodium (ppm)	8			
Boron (ppm)	1.63			
Copper (ppm)	3.6			
Iron (ppm)	62			
Manganese (ppm)	76			
Molybdenum (ppm)	0.06			
Zinc (ppm)	4.6			

Released by .....Chris Lindley..Laboratory Manager on behalf of Lancrop Laboratories

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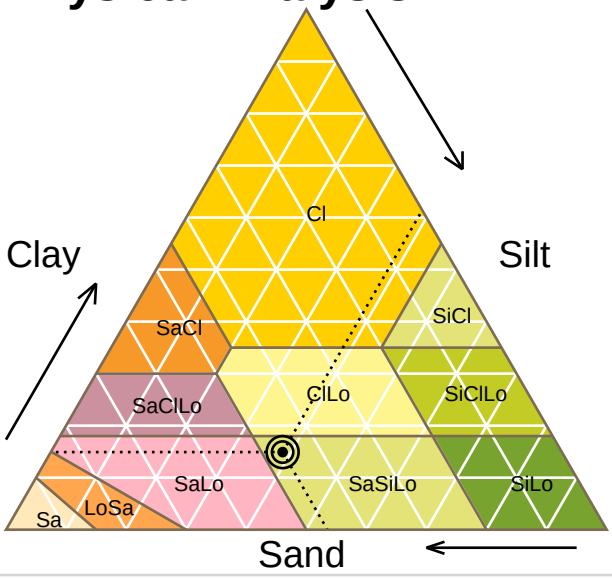
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	1 T25 TOPSOIL	**Date Received**	13/09/2022 (Date Issued: 03/10/2022)
Sample No	G021449/03		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	46.49
Silt	38.59
Clay	14.92
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

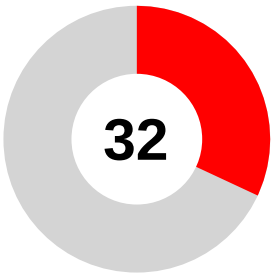
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	18	>70
Organic Carbon (%)	1.0	
Total Nitrogen (%)	0.091	
C:N Ratio	10.9	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	426
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	11
Soil Assessment Score	32/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
Nutrient cycling drops

Lancrop Laboratories, Pocklington, UK, YO42 1DN. soilanalysis@yara.com +44 1759305116

Analysis Results (SOIL)

Customer DEMETER
Sample Ref 1 T25 TOPSOIL
Sample No G021449/03
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
pH	8.1	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	1.7	3.0	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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	9.7	15.0	Cation Exchange Capacity indicates a low nutrient holding ability - soil applied nutrients will be readily leached. Where possible foliar applied nutrients should be recommended.
Soil Respiration (mg/kg)	18	70	Low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	10.9	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	SASILO		
Org. Carbon Stock (t/ha)	19.3	34.0	The calculated level of organic carbon (active + humus) within one hectare when soil bulk density is either assumed (1.3g/cm3) or has been overwritten with a disturbed soil measured value (if SCA Extra has been requested) and soil depth is 15cm. Please see footnotes for calculation if you wish to adapt. Multiply the OC stock value by the field area (hectares) to indicate level of carbon stored within the field.
Phosphorus (ppm)	20	26	**(Index 2.4)**
Potassium (ppm)	117	241	**(Index 1.9)**
Magnesium (ppm)	52	100	**(Index 2.0)**
Calcium (ppm)	2272	1600	
Sulphur (ppm)	11	10	
Sodium (ppm)	8	90	
Boron (ppm)	1.63	2.10	

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Analysis Results (SOIL)

Customer DEMETER
Sample Ref 1 T25 TOPSOIL
Sample No G021449/03
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
Copper (ppm)	3.6	2.1	
Iron (ppm)	62	50	
Manganese (ppm)	76	110	
Molybdenum (ppm)	0.06	0.20	
Zinc (ppm)	4.6	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted]

Please Note

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Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref 1 T25 SUBSOIL

Date Received 13/09/2022 (Date Issued: 03/10/2022)

Sample No G021449/04

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.3			
Org. Matter - DUMAS (%)	0.4			
C.E.C. (meq/100g)	7.0			
Soil Respiration (mg/kg)	12			
C:N Ratio	29.1			
Texture Class	SALO			
Org. Carbon Stock (t/ha)	4.5			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	4						
Potassium (ppm)	24						
Magnesium (ppm)	18						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	1712			
Sulphur (ppm)	5			
Sodium (ppm)	13			
Boron (ppm)	0.35			
Copper (ppm)	0.9			
Iron (ppm)	42			
Manganese (ppm)	36			
Molybdenum (ppm)	0.04			
Zinc (ppm)	1.5			

Released by .....Chris Lindley..Laboratory Manager on behalf of Lancrop Laboratories

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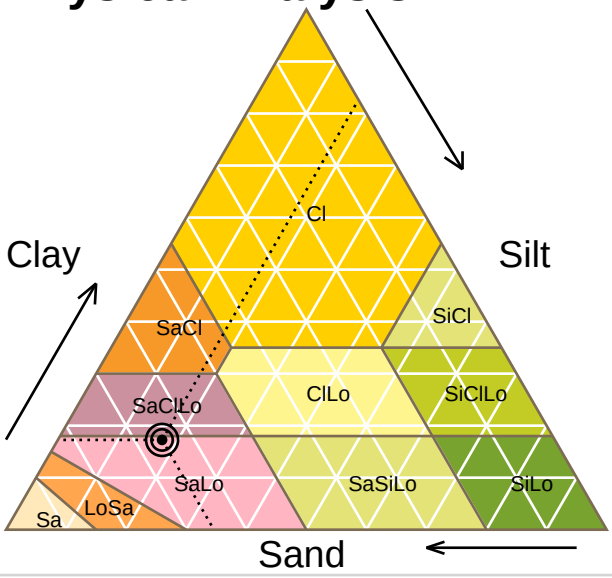
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	1 T25 SUBSOIL	**Date Received**	13/09/2022 (Date Issued: 03/10/2022)
Sample No	G021449/04		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	65.39
Silt	17.35
Clay	17.26
Soil Type	SaLo Sandy 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

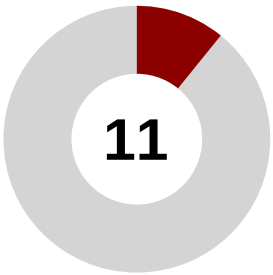
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	12	>70
Organic Carbon (%)	0.2	
Total Nitrogen (%)	0.008	
C:N Ratio	29.1	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	294
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	3
Soil Assessment Score	11/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
Nutrient cycling drops

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Lancrop Laboratories

Analysis Results (SOIL)

Customer DEMETER
Sample Ref 1 T25 SUBSOIL
Sample No G021449/04
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
pH	8.3	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	0.4	3.0	Very 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 conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	7.0	15.0	Cation Exchange Capacity indicates a low nutrient holding ability - soil applied nutrients will be readily leached. Where possible foliar applied nutrients should be recommended.
Soil Respiration (mg/kg)	12	70	Low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	29.1	10.0	Very high. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. Ratios greater than 25 suggest organic matter is not decomposing.
Texture Class	SALO		
Org. Carbon Stock (t/ha)	4.5	34.0	The calculated level of organic carbon (active + humus) within one hectare when soil bulk density is either assumed (1.3g/cm3) or has been overwritten with a disturbed soil measured value (if SCA Extra has been requested) and soil depth is 15cm. Please see footnotes for calculation if you wish to adapt. Multiply the OC stock value by the field area (hectares) to indicate level of carbon stored within the field.
Phosphorus (ppm)	4	26	**(Index 0.4)**
Potassium (ppm)	24	241	**(Index 0.4)**
Magnesium (ppm)	18	100	**(Index 0.7)**
Calcium (ppm)	1712	1600	
Sulphur (ppm)	5	10	
Sodium (ppm)	13	90	
Boron (ppm)	0.35	2.10	

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Lancrop Laboratories

Analysis Results (SOIL)

Customer DEMETER
Sample Ref 1 T25 SUBSOIL
Sample No G021449/04
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 13/09/2022 (Date Issued: 03/10/2022)

Analysis	Result	Guideline	Comments
Copper (ppm)	0.9	2.1	
Iron (ppm)	42	50	
Manganese (ppm)	36	110	
Molybdenum (ppm)	0.04	0.20	
Zinc (ppm)	1.5	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted]

Please Note

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Appendix 9

Details of Requests to Access Land for ALC Soil Sampling

Date	Land	Who Involved	Type of contact	Request made	Outcome
15 July 2021	Chippenham Park	Becca Nicolle	email	Access for soil samples	Refused
15 July 2021	Upton	Hugo Upton	email	Access for soil samples	Refused
15 July 2021	Chippenham Park	Becca Nicolle	email	Access for soil samples	Refused
16 July 2021	Moulton Manor	John Barron	email	Access for soil samples	Refused
16 July 2021	Sunnica		email	Access for soil samples	Refused
18 July 2021	Tilbrook	Richard Tilbrook	email	Access for soil samples	Refused
09 March 2022	James Waters, Isleham	James Waters		Access for soil samples	Granted but then retracted*
13 July 2022	Upton	Hugo Upton	email	Access for soil samples	Refused
13 July 2022	Chippenham Park	Becca Nicolle	email	Access for soil samples	Refused
13 July 2022	Upton	Hugo Upton	email	Access for soil samples	Refused
13 September 2022	Chippenham Park	Becca Nicolle	email	Access for soil samples	Refused
13 October 2022	James Waters, Isleham	James Waters	email	Access for soil samples	No response

*James Waters asked in person after Red Lodge meeting in March 2022, said yes but then retracted.

From: [redacted]
To: [redacted]
Cc: [redacted]

Subject: FW: Request for soil sampling
Date: 16 July 2021 12:43:26

Dear Anne,

Further to the e-mails below, our position is exactly the same as Rebecca Nicolle and Hugo Upton.

Kind regards,

John Barron
Moulton Manor Farm

From: Rebecca Nicolle [mailto[redacted]]
Sent: 15 July 2021 16:38
To: anne noble
Cc: [redacted]
Subject: Re: Request for soil sampling

Dear Anne
Thank you for your email with regard to having access to the proposed solar site.
I am afraid that this will not be possible for me to give you permission to access this private land
Kind regards
Rebecca

> On 15 Jul 2021, at 13:45, anne noble [redacted]> wrote:
>
> Dear Rebecca
> As we understand you are intending to submit your DCO application in September, we would be very grateful to have access to your proposed site to take some soil samples of our own.
> We hope this will not cause a problem, and have copied some of the Landowners who we know are involved with your proposal.
> We are quite happy to deal with the landowners direct regarding access if this will make things easier to administer.
> We look forward to hearing from you in the near future.
> Best regards
> Anne

CHIPPENHAM
PARK EVENTS

Becca Nicolle
Chippenham Park Events
Chippenham Park
Chippenham
Ely
CBY 5PT

From: [redacted]
To: [redacted]
Subject: Fwd: Request for soil sampling
Date: 16 July 2021 19:24:26

Sent from my iPad

Begin forwarded message:

From: [redacted]
Date: 16 July 2021 at 17:10:58 BST
To: anne noble [redacted]
Cc: [redacted]
Subject: Re: Request for soil sampling

Dear Anne,

Thank you for your email. Unfortunately we are not able to grant access to the site for this purpose.

Once again, we must stress that the background data to our assessment of the agricultural land classification will be made available if our application is accepted for examination. Subject to our application being accepted for examination, you will be able to review the data and submit comments.

We expect to submit our application in early Autumn.

Kind regards,

Rebecca

(Sent for and on behalf of Sunnica)

----- Original Message -----
From:
"anne noble" [redacted]

To:
[redacted]
Cc:
[redacted]

Sent:
Thu, 15 Jul 2021 13:45:02 +0100
Subject:
Request for soil sampling

Dear Rebecca

As we understand you are intending to submit your DCO application in September, we would be very grateful to have access to your proposed site to take some soil samples of our own.

We hope this will not cause a problem, and have copied some of the Landowners who we know are involved with your proposal.

We are quite happy to deal with the landowners direct regarding access if this will make things easier to administer.

We look forward to hearing from you in the near future.

Best regards

Anne

From: [redacted]
To:
Subject: Fwd: Request for soil sampling
Date: 15 July 2021 18:23:30

-------- Forwarded Message --------
Subject: Re: Request for soil sampling
Date: Thu, 15 Jul 2021 16:37:56 +0100
From: Rebecca Nicolle [redacted]
To:anne noble [redacted]
John Barron [redacted]

Dear Anne
Thank you for your email with regard to having access to the proposed solar site.
I am afraid that this will not be possible for me to give you permission to access this private land
Kind regards
Rebecca

> On 15 Jul 2021, at 13:45, anne noble [redacted] wrote:
>
> Dear Rebecca
>
> As we understand you are intending to submit your DCO application in September, we would be very grateful to have access to your proposed site to take some soil samples of our own.
>
> We hope this will not cause a problem, and have copied some of the Landowners who we know are involved with your proposal.
>
> We are quite happy to deal with the landowners direct regarding access if this will make things easier to administer.
>
> We look forward to hearing from you in the near future.
>
> Best regards
>
> Anne

Becca Nicolle
Chippenham Park Events
Chippenham Park
Chippenham
Ely
CBY 5PT

[redacted]

From: [redacted]
To: [redacted]
Subject: Fwd: soil sampling
Date: 13 July 2022 20:43:57

-------- Forwarded Message --------
Subject:RE: soil sampling
Date: Wed, 13 Jul 2022 14:03:30 +0000
From: Hugo Upton [redacted]
To:anne noble [redacted], Hugo Nicolle [redacted],
Hugo Nicolle [redacted]

Thank you Anne . I`m afraid SNTS don`t have an agreement to access the land and therefore we`re not able to grant you consent to undertake the soil sampling requested .
KR
Hugo

Hugo Upton
[redacted]

From: [redacted]e
To: [redacted]
Subject: Land access
Date: 13 October 2022 14:59:55

Dear James

Following the Red Lodge PC meeting in March this year when you spoke with Netty you made it clear that access onto your land for the Say No To Sunnica Group to take soil samples to check soil quality information was not possible. I would be grateful if you could let us know if you are now willing to allow us access, or explain any issues or concerns

thank you

best regards

Anne

From: [redacted]
To: [redacted]k
Cc: [redacted]

Subject: Re: Request for soil sampling
Date: 16 July 2021 17:10:58

Dear Anne,

Thank you for your email. Unfortunately we are not able to grant access to the site for this purpose.

Once again, we must stress that the background data to our assessment of the agricultural land classification will be made available if our application is accepted for examination. Subject to our application being accepted for examination, you will be able to review the data and submit comments.

We expect to submit our application in early Autumn.

Kind regards,

Rebecca

(Sent for and on behalf of Sunnica)

----- Original Message -----
From:
"anne noble" [redacted]

To:
<info@sunnica.co.uk>
Cc:
[redacted]
Sent:
Thu, 15 Jul 2021 13:45:02 +0100
Subject:
Request for soil sampling

Dear Rebecca

As we understand you are intending to submit your DCO application in September, we would be very grateful to have access to your proposed site to take some soil samples of our own.

We hope this will not cause a problem, and have copied some of the Landowners who we know are involved with your proposal.

We are quite happy to deal with the landowners direct regarding access if this will make things easier to administer.

We look forward to hearing from you in the near future.

Best regards

Anne

From: [redacted]
To: [redacted]
Cc: [redacted];
[redacted]k
Subject: Re: Request for soil sampling
Date: 15 July 2021 16:38:00
Attachments: PastedGraphic-1.tiff

Dear Anne
Thank you for your email with regard to having access to the proposed solar site.
I am afraid that this will not be possible for me to give you permission to access this private land
Kind regards
Rebecca

> On 15 Jul 2021, at 13:45, anne noble [redacted] wrote:
>
> Dear Rebecca
>
> As we understand you are intending to submit your DCO application in September, we would be very grateful to have access to your proposed site to take some soil samples of our own.
>
> We hope this will not cause a problem, and have copied some of the Landowners who we know are involved with your proposal.
>
> We are quite happy to deal with the landowners direct regarding access if this will make things easier to administer.
>
> We look forward to hearing from you in the near future.
>
> Best regards
>
> Anne

Becca Nicolle
Chippenham Park Events
Chippenham Park
Chippenham
Ely
CBY 5PT

[redacted]

[redacted]

From: [redacted]
To: [redacted]
Subject: RE: Request for soil sampling
Date: 15 July 2021 17:03:10

Anne – We`ve received the copy email below .I`m sorry but I'm afraid we are unable to grant access or any data collection rights for this purpose.
Yours
Hugo Upton

[redacted]onfidential and may be privileged.
It is intended solely for the use of the individual or the entity to whom it is addressed. If you are not the named addressee or have received this in error, please contact the sender and delete the material immediately. Any unauthorised disclosure or copying is strictly prohibited.
Emails and any information transmitted thereunder may be intercepted, corrupted or delayed. As a result, Upton Suffolk Farms does not accept any responsibility for any errors or omissions howsoever caused. Whilst all reasonable endeavours are taken by Upton Suffolk Farms to screen all emails for known viruses, Upton Suffolk Farms cannot guarantee that any transmission will be virus free.
[redacted]

From: anne noble [redacted]
Sent: 15 July 2021 13:45
To: info@sunnica.co.uk
Cc: Hugo Upton [redacted]
Subject: Request for soil sampling

Dear Rebecca
As we understand you are intending to submit your DCO application in September, we would be very grateful to have access to your proposed site to take some soil samples of our own.
We hope this will not cause a problem, and have copied some of the Landowners who we know are involved with your proposal.
We are quite happy to deal with the landowners direct regarding access if this will make things easier to administer.
We look forward to hearing from you in the near future.
Best regards
Anne

From: [redacted]
To:
Subject: Re: soil sampling
Date: 13 July 2022 11:22:22

Dear Anne
Thank you for your email.
I'm sorry but I cannot grant you access to the farm
Kind regards
Becca Nicolle

Sent from my iPhone

> On 12 Jul 2022, at 6:29 pm, anne noble [redacted] wrote:
>
> Good afternoon
>
> As the Sunnica DCO has now been submitted we are writing to ask if you would kindly allow us to access your land in the scheme to do some soil sampling as the crops are removed.
>
> Thank you
>
> Best regard

From: [redacted]
To: [redacted]
Cc: [redacted]
Subject: Re: soil sampling
Date: 13 September 2022 11:40:25

Dear Anne
Thank you for your email.
Im afraid that is not possible
Kind regards
Becca Nicolle

On 13 Sep 2022, at 10:16, anne noble [redacted] wrote:

Good Morning

On behalf of the Say No To Sunnica group

Since many fields are now harvested we write to ask whether you would kindly allow us to make auger borings and take samples across your fields which are part of the Sunnica proposal.

Thank you

Best regards

Anne

[redacted]

From: [redacted]
To: [redacted]
Subject: RE: soil sampling
Date: 13 July 2022 15:03:31

Thank you Anne . I`m afraid SNTS don`t have an agreement to access the land and therefore we`re not able to grant you consent to undertake the soil sampling requested .
KR
Hugo

Hugo Upton
[redacted]

From: anne noble [redacted]
Sent: 13 July 2022 14:49
To: Hugo Upton [redacted]; Hugo Nicolle <[redacted]; Hugo Nicolle [redacted]
Subject: Re: soil sampling

Dear Hugo

Apologies for not explaining the client is SNTS group.

Understand your concerns over compensation and timings and would look to accomodate all these issues

Best regards

Anne

On 13/07/2022 08:56, Hugo Upton wrote:

> Anne – Look forward to receiving a proposed plan and specification but in terms of lead times this will need scheduling .Please do not assume that access can be `yesterday` ;this needs planning as the majority of our land will not be cleared / harvested until end August – Nov with Sugar Beet Harvest running until Mid-Jan `23 and stock rotations adding an additional layer that needs consideration including security and H and S . It needs planning and , as previously negotiated , the survey technique will also impact on and be impacted by subsequent vegetable crops .

KR
Hugo

Hugo Upton
[redacted]

From: anne noble [redacted]
Sent: 12 July 2022 19:51
To: Hugo Upton [redacted]≥; Hugo Nicolle [redacted]; Hugo Nicolle [redacted]
Subject: Re: soil sampling

Dear Hugo

Thank you for your quick response. We will look at a possible plan of fields with our consultant, and would aim for minimal disturbance of any crop.

Will be in touch

best regards

Anne

On 12/07/2022 18:58, Hugo Upton wrote:

> Anne - Thank you for you email Re soil sampling . Do you have a plan for :
> -Which fields so we can indicate timing
> -Are you able to define what is required eg trenches or walk over auger
> -Depending on the the sampling disturbance we have a compensation formula in place from previous sampling depending on the actual crop compensation if any and or disturbance for subsequent crop type .
> We look forward to receiving some further info to help your plan and actions
> Yours
> Hugo
> For Upton Suffolk farms

Sent from my iPhone

On 12 Jul 2022, at 18:29, anne noble [redacted] wrote:

Good afternoon

As the Sunnica DCO has now been submitted we are writing to ask if you would kindly allow us to access your land in the scheme to do some soil sampling as the crops are removed.

Thank you

Best regard

From: [redacted]
To:
Subject: Request for ALC background data
Date: 14 July 2021 10:42:56

Dear Ann,

Thank you for your enquiry relating to the background data for our assessment of agricultural land classification (ALC).

In common with the background data to our other assessments, we will be publishing this once we submit our application. Should our application be accepted for examination, this information will be published on the Planning Inspectorate's website.

The Planning Inspectorate would then facilitate a further consultation on our application as submitted prior to examination. This will mean that you will have plenty of time to view the ALC background data and make comments.

We plan to submit our application in the near future and this information will be made available in due course.

Kind regards,

Rebecca Coleman

From: [redacted]
To: [redacted]
Cc: [redacted]

[redacted]

Subject: Request for soil sampling
Date: 15 July 2021 13:45:02

Dear Rebecca

As we understand you are intending to submit your DCO application in September, we would be very grateful to have access to your proposed site to take some soil samples of our own.

We hope this will not cause a problem, and have copied some of the Landowners who we know are involved with your proposal.

We are quite happy to deal with the landowners direct regarding access if this will make things easier to administer.

We look forward to hearing from you in the near future.

Best regards

Anne

From: [redacted]
To: [redacted]

Subject: soil sampling
Date: 12 July 2022 18:29:13

Good afternoon

As the Sunnica DCO has now been submitted we are writing to ask if you would kindly allow us to access your land in the scheme to do some soil sampling as the crops are removed.

Thank you

Best regard

From: [redacted]
To: [redacted]

Subject: soil sampling
Date: 12 July 2022 18:29:13

Good afternoon

As the Sunnica DCO has now been submitted we are writing to ask if you would kindly allow us to access your land in the scheme to do some soil sampling as the crops are removed.

Thank you

Best regard

From: [redacted]
To: [redacted]

Subject: soil sampling
Date: 13 September 2022 10:16:35

Good Morning

On behalf of the Say No To Sunnica group

Since many fields are now harvested we write to ask whether you would kindly allow us to make auger borings and take samples across your fields which are part of the Sunnica proposal.

Thank you

Best regards

Anne

[redacted]

From: [redacted]

Subject: soil sampling
Date: 12 July 2022 18:25:52

Good afternoon

As the Sunnica DCO has now been submitted, we are writing to ask if you would kindly allow us to access your land in the scheme to do some soil sampling as the crops are removed.

Thank you

Best regards

Anne

Appendix B

Sunnica Energy Farm (EN010106) Deadline 3a

24 November 2022

Peter Danks – Reading Agricultural Consultants:

Comments on the Applicant's Deadline 3 responses to the Local Impact Report (EN010106/APP/8.44)

Instructions

Reading Agricultural Consultants Ltd (RAC) is instructed by Say No To Sunnica Action Group Ltd (SNTS) to review and report on the agricultural elements of Sunnica Ltd's (the Developer) application for a Development Consent Order (DCO) for, and associated documents relating to, the construction, operation and decommissioning of Sunnica Energy Farm. The development includes an extensive ground-mounted solar photovoltaic (PV) array, battery energy storage systems (BESS) and supporting infrastructure with a stated capacity exceeding 500MW.

These comments have been prepared by Peter W Danks, Senior Director of RAC.

Applicant's Response to the Local Impact Report Paragraphs 12.49 – 12.54

12.49:

The applicant defends its position regarding planning policy not supporting the maintenance of food production.

Whilst there are few coordinated food planning policies remaining in the UK and the Government intends to draft policy to better integrate policies with regard to sustainable food and energy production, the EIA produced by the applicant fails to recognise the provisioning role of the development area.

Government Guidance on enabling a Natural Capital Approach and its role in planning and wider policies, examines a range of tangible goods and flows that provide economic inputs (https://www.gov.uk/government/publications/enabling-a-natural-capital-approach-enca-guidance/enabling-a-natural-capital-approach-guidance#annex-3-economic-valuation-methods). Table 14 of the guidance identifies food as a service provided by natural capital,

whether it be produced directly (wild fruit and fish) or through processing of a provisioning service from crops as a raw material to manufactured outputs (bread). Whilst agricultural outputs require management and other inputs, they rely entirely on services provided by soil, which underpins field scale production.

The impacts of droughts can be catastrophic for underdeveloped agricultural systems, but developed farming systems use water economically and store resources taken in times of surplus rainfall or transferred from areas with surplus flows.

12.50:

The lack of a methodology statement to underpin the sensitive and sustainable management of the soil resource means that the Examination is unable to assess whether site specific CEMPs, OEMPs and DEMPs are likely to be produced to its satisfaction or that of the relevant planning authorities.

12.51:

The Patrick Stephenson Ltd report attached to the SNTS submission was a draft and did not include the information identified by the Applicant. The conclusions of the report were informed by such data, which are now incorporated into a revised final version of Mr Stephenson's report. A copy of the report is attached hereto. This version of the report also replaces Appendix 6 of RAC's report of November 2022.

12.52:

The upgrading of drought-limited land for the presence of irrigation infrastructure is irrelevant where the land is of Best and Most Versatile (BMV) quality. Evidence available to the Examination suggests that a substantial part of the proposed development area is BMV.

It is clear that, whilst evidence suggests that it was Natural England's intention to align ALC guidance with planning policy, TIN049 is also clear that:

> *"the Classification is based on the long term physical limitations of land for agricultural use"…* and *…"detailed guidance for classifying land can be found in: Agricultural*
>
> *Land Classification of England and Wales: revised guidelines and criteria for grading the*
>
> *quality of agricultural land (MAFF, 1988)."*

This document continues to require that irrigation should be taken into account in ALC grading where it is current or recent practice.

The primary ALC guidance related reference to the inclusion of irrigation no longer being considered appropriate in the assessment of the ALC grade, it being based simply on the inherent physical characteristics of the land, is contained in the second revision of a draft guidelines published in May 1996.

12.53:

The loss of agricultural land to the solar farm is temporary, for a period of more than 40 years, possibly up to 50 years.

The impact of taking high quality agricultural land out of production for use in solar energy production for extended periods is uncertain.

Further, the likely loss of irrigation resources associated with the area is very likely to mean that whilst the land may have physical characteristics that will enable it to support intensive high value arable production, it will not have access to water resources to allow its full potential to be realised.

12.54:

This is not a question of field being 'eliminated'. It is recognised that it is physically possible to grow energy crops on land other than in the proposed development area and that alternative feedstocks such as approved industrial co-products can be used in AD installations.

The removal of land close to the AD installation for the growing of energy crops in established rotations and for the beneficial application of digestate to crops in the control of the site operator will result in unquantified additional effects of the proposed Energy Farm that are unaccounted for in the Environmental Impact Assessment. The primary impacts of this are likely to be in additional and extended vehicle movements associated with the transport pf feedstock and digestate.

Appendix C

Sunnica Energy Farm (EN010106) Deadline 3a

24 November 2022

Peter Danks – Reading Agricultural Consultants:

Comments on Framework Management Plans – EN010106/APP/6.2 (CEMP (Appendix 16C), OEMP (Appendix 16F) & DEMP (Appendix 16E))

1 Construction Environmental Management Plan

1.1 Since its last skeletal iteration Table 3-7 now includes detailed descriptions of measures necessary to protect the soil resource (16C-38). These measures are worthwhile and reasonable to expect on project of this nature.

1.2 However, critically, at the third bullet of this list under 'General Principles' heading on page 16C-38, it is stated that a grass sward will be established and maintained over the Solar PV area before trafficking over by construction plant and delivery vehicles. This requirement, which is reasonable and intended to reduce the risk of damage to soils by ensuring that a grass sward is established under the arrays before they shade plants, is likely to cause a significant delay in the start of commissioning the project.

1.3 There are also likely to be significant issues with establishing grass swards on light land found in some parts of the development area, without irrigation. Also, over-irrigation may result in plants establishing shallow roots which would render them vulnerable to drought, particularly under arrays where there will be a permanent area of rain shadow.

1.4 Under the heading 'Pre-Work Condition' at page 16C-40, a similar commitment to establishing a sward is made but mention is also made to trafficking by heavy vehicles during agricultural operations. In order to maintain soils in good agricultural condition throughout the life of the development, they must be in good condition at the start of the construction phase. Land should be cultivated to ensure that there is no residual compaction from agricultural activities. This compaction would normally be relieved as a routine part of farming operations.

1.5 There is no detailed methodology for soil stripping and storage associated with the establishment of hard standings across the site.

2 Operation Environmental Management Plan

2.1 This document also refers to the soil management plan and contains text covering mitigation of risks to soils similar to that in the CEMP and DEMP.

2.2 The OEMP does not address compaction and suppression of vegetative growth associated with access during the operational period. Should the development be allowed, it should be a requirement that soils are loosened to relieve any compaction before the grass sward is established and thereafter, the soils of regularly trafficked areas should be loosened to reduce risk of surface run off, lasting compaction and erosion.

3 Decommissioning Environmental Management Plant

3.1 The revised DEMP covers risk to *in situ* soils but only passing mention of reinstatement of soils in hardstanding and heavily trafficked areas. The removal of soil materials from storage, placement and aftercare should be addressed in the CEMP and reiterated in the DEMP.

Appendix D

Landscape Briefing Note 8

Project: 1186 Sunnica PVD
Date: 25th November 2022
Purpose: Review and comment on additional matters requested by Daniel Kozelko
Reference: 1186 BN08 Sunnica PVD Comments for Deadline 3a.docx
Author: John Jeffcock CMLI

Draft statement of common ground with the Councils

1. Extent of study area is not yet agreed and is a matter under discussion. We agree that a 2km study area is sufficient for an assessment of the landscape and visual impacts of the Sunnica Energy Farm. However, 2km is insufficient for the assessment of cumulative impacts, specifically sequential impacts that might result from the combined visibility of Sunnica and additional schemes within and beyond the 2km study area boundary. We consider that the 5km study area initially considered but dismissed in the LVIA (section 10.4) should have been used for the cumulative impact assessment. If 5km had been used the scheme west of Soham (the omission of which has been raised as an issue by the Councils) would have been included as part of the cumulative impact assessment.

2. Other matters under discussion. We note Sunnica promise several new documents including a detailed masterplan for mitigation measures and technical notes on village design iterations, and historical development of the landscape. These documents will be relevant to our assessment, and once published, we will be happy to review them.

3. We are surprised that there are no matters which are not agreed, particularly given the extent of disagreement highlighted by the Councils in their LIR. We assume this section will be updated prior to the hearings.

Framework Environmental Management Plans (FEMP)

4. Landscape and visual amenity matters are addressed in Table 3-5 of each FEMP. There have been no updates / track changes to these tables. All three FEMPs refer to the OLEMP for the measures proposed to mitigate landscape impacts. Section 5 of our review report addresses the OLEMP.

5. In the Construction FEMP, landscape enhancement measures, which we understand to include mitigation planting, are proposed to be implemented either '*during and/or following construction*'. Where the location and type of planting is agreed to be appropriate, we consider it would be preferable for this planting to take place as soon as possible in advance of the commencement of any construction works. It would be helpful if this objective was added to the FEMP.

ZTVs

6. Equine ZTVs have been submitted which identify locations where the development would theoretically be visible to people on horseback, for which an assumed eye height of 2.7m was used.

7. As expected, the 'equine' ZTVs show more locations where the development would theoretical be visible than the ZTVs prepared for an assumed eye height of 1.7m (e.g., people walking in the landscape). At the scale presented, the increase in locations does not appear to be significant, particularly within the 2km study area. However, presentational issues mean that it is difficult to pinpoint areas where the changes might be significant e.g., additional visibility on bridleways. The presentational issues which mean the results of the ZTVs are difficult to interpret are:

    - The large scale at which the figures have been presented.
    - Insufficient transparency used on the colour blocks means the base mapping beneath is difficult to read.
    - Due to the large scale and poor quality of the base map, names of settlements and roads are difficult to read.
    - Public rights of ways are not legible.

8. The extent of the development that would be visible at any given location cannot be determined from the ZTVs. Therefore, it is not possible to determine from the ZTVs whether people on horseback would see a greater extent of the development than people walking in the landscape, but it is reasonable to assume that they would. This issue is expected to be more significant for equine receptors than the increase in locations of visibility shown on the ZTVs, which as above, doesn't appear to be significant.

9. Figures 10-11f ZTV with Barriers Combined & Figure 1f Equine ZTV with Barriers Combined. The combined equine ZTV is not significantly different to the non-equine combined ZTV. The Limekilns is the location where the largest block of potential visibility of both schemes is shown. Although Sunnica East is theoretically visible from the Limekilns, given the distance and additional screening provided by elements not considered in the ZTV, its impact from this location would be negligible.

Appendix A to Outline Battery Fire Safety Management Plan

10. Two indicative layout options are provided for two different battery technology types (option 1 and option 2). The decision on which option will be used will be made as part of the detailed design process.

11. The layout for option 1 shows containers spread across the compound. In option 2 the layout of containers is more compact. It is assumed this difference relates to differences in container separation used for the different technology types and/or differences in the amount of hardware (footprint) required to reach the desired MW capacity.

12. Option 2 would introduce a denser block of development but is preferred to option 1 because it would reduce the development footprint and provide greater scope for the optimisation of the layouts within each BESS compound. For example, compare options 1 and 2 at Sunnica East Site B. Option 2 would probably allow all infrastructure to be removed from the field alongside Elms Rd, which would be a positive outcome compared with having the substation and battery containers in this field (option 1).

Appendix E

Planning Act (2008)
PROPOSED SUNNICA ENERGY FARM
EN010106

Deadline 3 submission 28 November 2022

1. Comments on Sunnica Ltd's responses to First Written Questions
2. Comments on draft Statements of Common Ground
3. Comments on Framework Construction, Operational and Decommissioning Management Plans

Bioscan UK Ltd
for
Say No To Sunnica

E2132R3

COMMISSIONED BY

Say No to Sunnica

PROPOSED SUNNICA ENERGY FARM

Submissions on Ecology Matters:

1. Comments on Sunnica Ltd's responses to First Written Questions
2. Comments on draft Statements of Common Ground
3. Comments on Framework Construction, Operational and Decommissioning Management Plans

Examination Deadline 3
28 November 2022

Bioscan Report No.
E2132R3

BIOSCAN (UK) Ltd
The Old Parlour
Little Baldon Farm
Little Baldon
Oxford OX44 9PU

Tel: (01865) 341321
Fax: (01865) 343674
E-mail: bioscan@bioscanuk.com

CONTENTS

1 INTRODUCTION

1.1.1 This document contains comment, observations, matters of concern and (where applicable) rebuttal or corrective responses from Bioscan on behalf of Say No To Sunnica (SNTS), on the following:

1) The responses from Sunnica Ltd to the Examining Authority's First Written Questions (FWQs), as submitted at Deadline 2 [REP2-037 and REP2-038];

2) The initial (draft) Statements of Common Ground of the Local Authorities [REP2-044], the Environment Agency [REP2-045], Natural England [REP2-046] and the Suffolk Wildlife Trust [REP2-049];

3) The latest versions of the Framework Construction Environmental Management Plan [REP3-015 and REP3-016], the Framework Operation Environmental Management Plan [REP2-030 and REP2-031] and the Framework Decommissioning Environmental Management Plan [REP2-028 and REP2-029].

1.1.2 The following sections deal with each of the above in turn.

2 COMMENT ON THE RESPONSES FROM THE APPLICANT (SUNNICA LTD) TO THE EXAMINING AUTHORITY'S FIRST WRITTEN QUESTIONS (FWQs)

2.1 Format of comments

2.1.1 In places below we have extracted, via screengrabs or quoted text, extracts from the table presented in section 2 of Sunnica Ltd's response document [REP2-037], relating to specific questions upon which we wish to make comment. Where we have done this, we provide our commentary below each in turn below. Elsewhere, for brevity, we simply reference the question number and the subject it addresses by way of heading. Reference should be made to REP2-037 for the precise wording of the question and Sunnica Limited's response in those cases.

2.2 Comments on Sunnica Ltd's Responses to the FWQs.

Q1.0.15: Cumulative Effects Assessment - Methodology

ExQ1	Respondent	Question	Applicant's Response
Q1.0.15	The Applicant	**Cumulative Effects Assessment, overarching approach** Table 1-1 of ES Appendix 5A [APP-055] lists all the developments screened into consideration for the Cumulative Effects Assessment (CEA). This provides the outcome of Stages 1 and 2 of the methodology and lists approximately 92 developments carried forward for further assessment at Stage 3. However, the only Zone of Influence referred to in Table 1-1 is for ecology. Please explain the reasons why the ecological zone of influence is the only consideration in Table 1-1 in Appendix 5A and how other environmental aspect zones of influence have been used to define the scope of the CEA.	The 10km ecological study area that is referred to in Table 1-1 of ES Appendix 5A [APP-055] is the greatest potential study area that was identified for any environmental or social impact presented in the ES. It is therefore considered to be a suitable distance threshold for the identification of cumulative schemes and was applied to all other environmental topics. Only impacts on bats was considered beyond 10km from the Site, following a request from PINS in the Scoping Opinion [APP-052] to consider international statutory site designations up to 30km away where bats are noted as the, or one of the, qualifying features. As noted in Paragraph 4.1.1 of Appendix 8J Report on Surveys for Bats [APP-087]. "There are no international statutory site designations for bats within 30km of the Order limits". It was therefore not necessary to consider impacts beyond 10km in any technical chapters. For clarity, the potential Zone of Influences for all environmental or social impacts were considered when identifying cumulative schemes, but none exceeded 10km. Other schemes outside of 10km were not considered in the cumulative impact assessment, as explained in Paragraph 5.8.8 of Chapter 5: EIA Methodology [APP-037].

2.2.1 Sunnica Ltd's statement above, which echoes the wording at 6.6.4 of the ES [APP-040], that "*There are no international statutory site designations for bats within 30km of the Order limits*" is factually incorrect.

2.2.2 Eversden and Wimpole Woods Special Area of Conservation (SAC) is approximately 26.7km from the Burwell substation which lies within the Order limits. This site is designated for the presence of the rare Annex II bat species barbastelle *Barbastella barbastellus.*

2.2.3 This omission or oversight is particularly relevant to both the EIA and HRA processes as this rare bat species disperses significant distances from roosts for foraging purposes. Indeed it was found within the Order limits, including grid connection areas, by the applicant [see ES Appendix 8J – APP-087]. There is the potential, therefore, for a functional linkage between the land covered by the Order limits and the Wimpole Woods Special Area of Conservation that has not been identified or assessed.

Q1.2.1: Ecological Assessment Methodology

2.2.4 The first part of this question relates to the methodology and terminology employed by the applicant to characterise the magnitude and significance of effects on ecological receptors.

2.2.5 The applicant's departure from the CIEEM approach (for reasons it would seem of no more than consistency with other ES chapters), which lies at the root of the ExA's question, has the effect of masking effects that are significant at Local (e.g. Parish) level. The reason the CIEEM industry standard advocates against the matrix-based approach is precisely because effects at this level have the potential to fail to comply with national and local policy (e.g. to avoid net loss of biodiversity) and thus the matrix approach can result in artificially restricted considerations of cumulative effects, as impacts below EIA significance thresholds are 'screened out'. In short, the threshold for significance in EIA terms is above the level at which significant effects on ecology, that have the potential to engage with policy, might, or will, actually occur. Fixation on a traditional EIA approach, eschewing the more up to date and relevant methodology set out in the CIEEM Guidelines, can and does result in impacts which may be major in magnitude at local (e.g. Parish) geographical frames of reference being disregarded as 'not significant'. When such impacts are considered cumulatively, there is a logical shift in amplitude upwards to District or higher geographical levels which the applicant's approach risks missing, inadequately documenting, or downplaying. A relevant example in this case would be the cumulative effects of loss of arable land of value to a range of scarce, arable-adapted, flora and fauna being inadequately accounted for in the impact assessment.

2.2.6 We therefore comment that the applicant's statement in response to this question – that "*the assessment approach follows the good practice guidelines for ecological impact assessment (EcIA) described in CIEEM (2018)*" - is not strictly correct. The applicant has departed from the recommended methodology set out in CIEEM (2018 and as subsequently revised) and, for the reasons set out above, the EIA is rendered less comprehensive and robust because of this. We would further remark that it is notable that the applicant does **not** claim that the 264m of hedgerow removal it uses as the basis of its assessment of loss for this receptor is the worst-case scenario. Nor whether this is consistent with the figures arising from the recently submitted Arboricultural Impact Assessment discussed later in this submission.

2.2.7 On the second part of the ExAs question, we comment in section 4 of this submission on how the 'design controls' to avoid and minimise impacts on biodiversity as set out in the framework CEMP, OEMP and DEMP are high level and nebulous, and subject to significant questions over the resourcing capability applied to the essential clerk of works personnel that will ensure they are adhered to and/or enforced. In essence, we do not consider that the applicant, in seeking the degree of flexibility that it does, has fully engaged with the mitigation hierarchy nor that it has fully committed to engagement with that hierarchy at the detailed and/or construction stages, and that

it is relying on nebulous commitments and failsafes that it provides no evidence as being appropriately committed to or resourced.

Q1.2.3 – Stone Curlew

2.2.8 Given the importance of the area affected by the Order limits for this species, and the actual or potential functional linkages to the Breckland SPA, we consider it a matter of concern that there still remain matters of uncertainty and negotiation over the type, level and significance of impacts on this iconic species and the adequacy of the mitigation and compensation proposed for it. Our comments on the interim SoCG between the applicant and Natural England on this matter are also relevant and are as set out in section 3 of this submission.

Q1.2.4 – Stone Curlew

ExQ1	Respondent	Question	Applicant's Response
1.2.4	The Applicant	**Stone Curlew** Please explain why the protection measures outlined in [APP-108] apply to the proposed offsetting areas, but apparently not to the areas where stone curlew have been recorded, even breeding, some of which will be within the solar arrays? What provision will be made for stone curlew that attempt to breed within the operational areas?	Offsetting habitats have been embedded into the Scheme, as it has been assumed that, in a worst case scenario, Stone Curlew will not nest within the operational site where solar arrays are located. The Framework OEMP **[APP-126,** ES - Appendix 16F] includes the requirement for all operational staff working within 500m of the offsetting areas created for breeding Stone Curlew to be given a toolbox talk regarding the sensitivity of the species and controlling works which can be undertaken. Where possible, any operational maintenance within 500m of the offsetting areas will be scheduled between November and February. Monitoring of Stone Curlew during operation of the Scheme will establish whether the species is nesting within the solar arrays. Should this be found to be the case then the same requirements, with regard to briefing operational staff and controlling works, will be applied to any locations within the operational areas, that are already in included in the Framework OEMP **[APP-126,** ES - Appendix 16F] for the offsetting areas. Given, the low likelihood that Stone Curlew will nest in the operational areas, seasonal restrictions with regards operational maintenance are not required throughout the Scheme. These measures will be included within the updated Framework OEMP to be submitted at Deadline 2.

2.2.9 We do not agree with the applicant that a scenario where stone curlew refuse to nest amongst the solar arrays or otherwise in the operational site is "worst case". In the absence of any evidence that the species habitually does nest amongst solar arrays or in solar farms, this should instead be considered the likely and realistic case. Indeed, we note that the applicant itself, in its answer to the question above, considers the prospect of this species nesting within solar arrays to be "low likelihood". If the applicant accepts there is only a 'low likelihood' of the species nesting within solar arrays, then the prospect of that low likelihood of nesting being manifested as no nesting, cannot be a 'worst case' scenario.

2.2.10 The applicant's latter position (that there is a low likelihood of stone curlew nesting within solar arrays), is of course the more robust on the available evidence. On this basis, we support the concerns raised by RSPB and others over whether the quantum of compensatory provision for this species is adequate, considering the worst-case magnitude of displacement (i.e. as counted in numbers of pairs or held territories/breeding attempts, and taking into account likely displacement and/or disturbance effects at 500m or more), and also taking a precautionary approach to matters such as the success of habitat creation in compensation areas and their likely take up by the species, having regard to its specific autecological attributes.

Q1.2.5 – Stone Curlew

2.2.11 The applicant's answer to this question from the ExA about the 'appropriateness, adequacy and realism'; of the proposed offsetting measures for stone curlew does not in our view provide comfort that any more than a *de minimis* approach has been taken to compensation for this species. Using simple arithmetic of pairs x territory size to determine compensation effort builds in no 'risk multipliers' of the sort now incorporated as standard in compensatory calculations (e.g. under the Biodiversity Metric). The applicant's intention to rely on 'adaptive management prescriptions' appears to be a further recognition as to the huge margins of uncertainty over delivery of appropriate compensatory habitat for this species. In this context the necessary headroom built in to the compensation provision for failure is, in our view, absent or inadequate.

2.2.12 In the baseline state, stone curlew occupy various areas of the Order limits at various times. In this context the net diminution in area available to these birds, not only for breeding but also for post-breeding congregation and foraging at other times, does not appear to have been considered on a precautionary basis. In the absence of supporting evidence as to the efficacy of the measures the applicant proposes by way of compensation, the likely outcome is some degree of diminution in numbers using the Order limits, for breeding or generally. We are not satisfied that the applicant has duly assessed the impact of displacement of a proportion of the local population into surrounding farmland, including whether there is suitable habitat available to absorb displaced birds, nor the potential in-combination effects of this with other future land-use changes predictable locally (including both development and non-development land-use changes).

Q1.2.7 – Stone Curlew

2.2.13 The provisions and failsafes suggested by the applicant in response to this question appear broadly appropriate, but the larger issue with the compensatory habitat provision is as discussed under Q1.2.5 above.

Q1.2.8: Biodiversity Net Gain

ExQ1	Respondent	Question	Applicant's Response
1.2.8	The Applicant	**Biodiversity net gain** Please confirm whether the balance in the biodiversity net gain figures includes mitigation and compensation as well as overall biodiversity net gain? If so, what is the figure for net gain alone?	As no European Protected Species Mitigation Licences are needed as a result of the Scheme, there was no need to account for any associated habitat creation or mitigation in the calculations. Likewise, the Scheme is not providing any compensatory habitats for any habitats or species. As such, all areas of habitat creation were included in the biodiversity net gain calculations using metric 3.0. The biodiversity net gain is being recalculated using metric 3.1 and will be submitted at a later Deadline. This will consider where areas may be classed as mitigation as laid out in the latest guidance, in order to avoid any double counting. It will also take into account updates to habitat changes from recent updating surveys.

2.2.14 Bioscan, on behalf of SNTS, have a number of comments to make with regard to the applicant's answer to this question, per the screengrab above.

2.2.15 In the first instance, the applicant's reference to European Protected Species licences, despite being beside the point, highlights that we remain to be convinced

that no European Protected Species mitigation licences are needed as a result of the Scheme, and we consider that the Examining Authority is, at least currently, bereft of sufficient information to agree with the applicant's position.

2.2.16 We have highlighted, for example, omitted records for great crested newts from Chippenham Fen, in locations where terrestrial phase animals could range into the proposed development areas within the Order limits. There are questions over the veracity of the omitted GCN record (which originates from a licence return on 'Magic', as detailed in our reports included in SNTS's Written Representation), but until this is resolved the applicant is not in a position to state that this species could not be impacted and that no licensing provisions can apply, and should not be doing so. Similarly, the flexibility the applicant seeks in respect of road crossings, hedgerow removal and the risk of impacting trees with potential for bat roosting, means that the suggestion that there is no scope for licensing for bats to be required during implementation is similarly non-precautionary. It appears to be flatly contradicted by the Arboricultural Impact Assessment submitted at Deadline 3.

2.2.17 Notwithstanding the above, the Examining Authority's question was about Biodiversity Net Gain (BNG) which is a matter on which we have made detailed submissions via the Bioscan reports contained in SNTSs Written Representation. In light of the applicant's statements that they intend to submit more information on BNG, it is enough for us to ask the Examining Authority to note that the comments and concerns we raised in STNSs written representation are not answered in the applicant's response above. We note the applicant confirms its intention to recalculate its BNG figures using Metric 3.1 and to submit these "at a later deadline". It remains to be seen whether the habitat classification and other errors we have brought first to the applicant's attention and latterly to the Examining Authority's attention will be duly and properly corrected as part of this process.

Q1.2.9: Ecological Mitigation (proposed wet grassland adj. River Snail)

2.2.18 We note that the applicant recognises that the area proposed for compensatory habitat creation/mitigation south-west of Chippenham Fen is "*influenced by the River Snail*", but there does not appear to have been any hydrological modelling demonstrating how inundation frequency for the proposed wet grassland will be optimised, without either topographical changes to reduce land levels, or changes to the physical form and character of the river channel itself – neither of which appear to be being proposed. In the absence of such interventions, there can be little confidence in the development of any wetter a grassland than at present, and in this context the contribution towards mitigation, compensation and BNG scores from this element of the proposals has to be treated with caution. Surface scarification and re-seeding is proposed but in the absence of hydrological change, and without interventions to influence soil chemistry, this is highly unlikely to deliver a significant uplift in habitat quality and, in stating that the proposals "*will utilise the existing soil conditions and topography*" the applicant appears to be confirming that no more than localised scarification and seeding is actually proposed. It is noted that the applicant is "*currently working with stakeholders to agree an appropriate management regime for this area*". We suggest such discussions should also include

the practical detail of how the objectives will be physically achieved, rather than be restricted to discussions about management, to ensure this habitat creation is meaningful and not tokenistic.

Q1.2.10: Grassland Re-establishment

2.2.19 We note that the Examining Authority has picked up on the confused picture as regards the grassland creation objectives set out in the ES, and we note that the applicant is moving to provide clarity on the area-by-area objectives. This is welcomed, and we note that the applicant's BNG calculations will need to change to reflect this rationalisation of objectives and their improved alignment with what is achievable in practice.

2.2.20 However, we note, as a point of concern, that in listing the factors influencing decision on species-composition for sown grasslands, no consideration is given in the applicant's response to the availability of suitable native seed. This may well provide to be the single most important driver in success in achieving variation and/or target condition. If insufficient seed is available, (and the quantity required for this project appears to far outstrip the resources of commercial suppliers in any given year), the likely result across large areas of the proposed Order limits will be much more mundane and uniform grassland types derived from a relaxation of cultivation – comprising a flush of ruderal species and ubiquitous grasses tolerant of latent high-fertility levels. We make further comment on this important matter under Q1.2.11 below.

Q1.2.11: Grassland Re-establishment (2)

2.2.21 The applicant's response to this question is wholly unsatisfactory. It reveals that there has been next to no thinking about this significant logistical challenge to date, and suggests that the applicant did not consider it in any meaningful way until it was raised as a practical concern by several objectors and other stakeholders (including ourselves).

2.2.22 In essence, the answer confirms that the Examining Authority is in no position to have confidence in the habitat creation targets and objectives the applicant seeks to rely upon to support its claims of no net loss of biodiversity and net benefits/enhancement. Nor its claim of serviceable compensation provision for receptors such as stone curlew, and its inflated and exaggerated calculation outputs for BNG. The reference to discussions about 'scope' and possible seed sources that will be subject to a whole suite of agreements and (potentially) consents is to matters that should have been concluded, or at least significantly further advanced, before submission if the applicant wished the Examining Authority and others to place weight on its habitat creation and enhancement proposals. It is all too easy to say that a seed mix will be used to create habitat 'X', but in real life there are a whole suite of practical and ecological challenges for that objective to be successfully attained. It is not acceptable for the applicant to seek to leave such matters to deep into the Examination later, while at the same time asking the Examining Authority,

consultees and stakeholders to accept that the picture it seeks to paint of the post-development scenario is reliable or accurate.

Q1.2.13: Glint and Glare Assessment

2.2.23 We note that the applicant confirms that it made no meaningful efforts to look into this potential impact source prior to submission of the DCO application. Bioscan recognise that this is an area of significant uncertainty and where scientific research is relatively lacking, but given that it is a concern that has been expressed internationally (even if less so to date in the UK), and given the site's proximity to internationally important sites for both birds and invertebrates, this has to be seen as less than best practice and a matter of concern.

2.2.24 The brief comments that the applicant now offers in justification for its decision to scope out any risk to bird species from this potential impact source are concerning. The scope for impact appears to have been limited almost exclusively to a theoretical impact arising from 'significant numbers of waterbirds' becoming confused by the panels, mistaking them for a waterbody and seeking to land on them.

2.2.25 This is a highly simplistic approach that conveys a worrying lack of application of ornithological expertise. The suite of bird species that could mistake the panel arrays for bodies of water is not limited to species of waterfowl that aggregate in flocks. If that was an ecological truism, then 'new' artificially created inland waterbodies such as at the nearby RSPB Lakenheath Fen reserve would never attract the wider suite of wetland species that it has.

2.2.26 Bioscan and SNTS believe that a more robust assessment, supported by empirical data and/or a thorough research review, is needed before the Examining Authority can have any confidence that this potential impact source (glint and glare impacts on birds) can be screened out of further consideration.

2.2.27 Similarly, and as commented upon in our comments on the Local Impact Report ([REP3-026] submitted 22 November 2022), Bioscan and SNTS believe that the assessment the applicant has belatedly carried out of the scope for significant effects on invertebrates (Appendix C of REP-038) is inadequate.

2.2.28 Increasing concerns have been expressed internationally about the potential impact of solar arrays on aquatic invertebrate species attracted to polarised light and there can be little dispute that the evidence of potential impacts from this source is compelling. The panel arrays in Sunnica West Site B (in proximity to the designated Chippenham Fen) therefore pose a credible risk of creating an ecological trap for invertebrate fauna associated with the SAC/Ramsar/SSSI/NNR. This matter should be thoroughly examined in order to define the risk, if any, to the integrity of not only the international designations (in accordance with Appropriate Assessment/HRA requirements), but also the integrity of the SSSI and the site's ecological integrity more generally.

2.2.29 The starting position on this issue, in accordance with the avoid-mitigate-compensate hierarchy, should be to avoid impacts on such high value resources

entirely which demands a precautionary approach wherever there is any doubt over whether significant effects could occur.

2.2.30 We note that the applicant's originally submitted HRA [APP-092] gives this matter only cursory attention and appears to rely on the 200m distance between wetland within the international site and the nearest proposed PV positions to suggest that there "are no pathways for significant effects on invertebrates" associated with the SAC and Ramsar (e.g. APP-092 page 8M-60). This assessment is no more than an unevidenced leap of faith. The Examining Authority will note, in any event, that the applicant's position has now changed. Indeed, the conclusions of the applicant's HRA are now flatly contradicted by the applicant's more recent response to the Examining Authority's First Written Questions (FWQs) [REP2-038, Appendix C]. In this appendix, further attention has been given to aquatic invertebrates and the risk posed to them by photovoltaic panels in the form of a desk-based review of available literature and a revised assessment based on little more than guesswork and the use of proxy scenarios. The literature review demonstrates that this is, contrary to the position taken in the HRA, a credible impact risk and it exposes that the complete absence of relevant survey data that would assist in defining the risk more acutely is a significant failing of the application submission. In lieu of empirical data or site-specific evidence to inform this belated impact assessment, the applicant sets up a theoretical scenario using a weak flying taxon (Ephemeroptera) and a set of unproven assumptions about what happens at and around Chippenham Fen.

2.2.31 SNTS/Bioscan consider that baseline invertebrate survey data targeted to the potential impact vector is necessary in order to inform a robust assessment of potential impacts from this source. The approach taken by the applicant and as described in its response to this question is no more than an elaborate exercise in trying to paper over the cracks. Invertebrate surveys could have established whether target species from the SAC/Ramsar populations occur at the locations proposed for panel arrays (rather than guessing whether they do or do not) which could have either lent support to the conclusions the applicant presents that there is no likely significant effects or, in the alternative, could have better defined the magnitude of effects and (where necessary) guided decisions on avoidance, mitigation and compensation. As the applicant has failed to collect such data, it seeks to deal with this potential impact vector to the international site via little more than conjecture and supposition. This is not a robust approach and in the absence of further work, STNS/Bioscan supports the suggestion made by the Councils in their LIR [REP1-024] that the panels should be removed from Sunnica West Site B for precautionary reasons.

Q1.2.14: Biosecurity

2.2.32 Bioscan have no comment to make on this question, albeit SNTS may have commented (or may still comment) separately.

Q1.2.17: Habitats Regulations Assessment (mismatch in area figures)

2.2.33 The applicant's response to this question, that corrections will be forthcoming in a re-submitted HRA, is noted. Bioscan/SNTS may wish to comment on the resubmitted HRA in due course.

Q1.2.18: Habitats Regulations Assessment (cabling within stone curlew areas)

2.2.34 We are unclear from the applicant's answer whether there are implications for the readiness of the stone curlew replacement habitat and/or whether there is a risk (high, low, certain) that cable laying works could disturb the species (if it happens to use the replacement habitat at the time) and if so how that can be avoided if implementation programmes unavoidably clash with the time periods that the species is present. Further clarity on these matters would be appreciated from the applicant.

Q1.2.19: Habitats Regulations Assessment (ExA requested corrections)

Q1.2.20: Habitats Regulations Assessment (piling)

Q1.2.21: Habitats Regulations Assessment (update of matrices)

Q1.2.22: Habitats Regulations Assessment (update of matrices)

Q1.2.23: Habitats Regulations Assessment (update of matrices)

2.2.35 The applicant's proposed corrections and updates to the HRA in response to these questions are noted. Bioscan/SNTS may wish to comment on the resubmitted HRA in due course.

Q.1.2.24: Habitats Regulations Assessment (limits of excavation)

2.2.36 Bioscan/SNTS consider that in referencing the maximum excavation parameters set out at Chapter 3 of the ES, the applicant is indicating that it does not intend to exert tighter controls in proximity to the designated European Site and, furthermore, that it appears to be inviting such controls to be specified in the DCO. We suggest that Natural England should have input into defining suitably precautionary excavation limits within appropriate buffer distances around Chippenham Fen SAC/Ramsar/SSSI/NNR to ensure adequate protection of groundwater catchment.

Q1.2.25: Habitats Regulations Assessment (agreement on mitigation with SNCB)

2.2.37 The applicant's response is noted. Bioscan's/SNTS's comments on the interim statement of common ground between the applicant and Natural England are provided in section 4 of this submission.

Q1.2.26: Habitats Regulations Assessment (tables 4-1 and 4-2)

2.2.38 The ExA's question about presentational clarity and the applicant's response to it are noted. Bioscan/SNTS may wish to comment on the resubmitted HRA in due course.

Q1.2.27: Habitats Regulations Assessment (stone curlew, mitigation hierarchy)

2.2.39 The applicant's proposed corrections and updates to the HRA in response to these questions are noted. Bioscan/SNTS may wish to comment on the resubmitted HRA in due course.

Q1.2.28: Habitats Regulations Assessment (Condition Assessment)
Q1.2.30: Habitats Regulations Assessment (Updates on SPA bird impacts)
Q1.2.31: Habitats Regulations Assessment (Updated matrices)
Q1.2.32: Habitats Regulations Assessment (Updated matrices)

2.2.40 The applicant's proposed corrections and updates to the HRA in response to these questions are noted. Bioscan/SNTS may wish to comment on the resubmitted HRA in due course.

Q1.2.33: Habitats Regulations Assessment (GCN and Fenland SAC)

2.2.41 We note that the applicant does not consider there to be any scope for impact on great crested newt (GCN) populations functionally linked to the Fenland SAC. However, and as set out in Bioscan's reports submitted with SNTS's written representation [REP2-240], this disregards (due to oversight) a past record of GCN from Chippenham Fen which we have since brought to the applicant's attention.

Q1.6.7: Long-term management of ecological mitigation land

2.2.42 The applicant's response to this question provides useful but alarming clarity on the rather tokenistic nature of the proposed mitigation, compensation and enhancements and related commitments. It confirms that even if it were to be accepted that the scheme could deliver net beneficial change in land-uses, there would be nothing in place to prevent any such benefits being reversed in (what is in ecological terms) a very short timescale.

Q1.6.8: Construction Environmental Management Plan
Q1.6.9: Construction Environmental Management Plan

2.2.43 The applicant's responses to these questions are noted. Comments on the framework CEMP are provided at section 4 of this submission.

Q1.6.10: Construction Environmental Management Plan
Q1.6.11 Construction Environmental Management Plan
Q1.6.12: Construction Environmental Management Plan

2.2.44 The applicant's responses to these questions are noted. The Examining Authority is asked to note the nebulous wording used in order to seek to retain operational and construction flexibility to carry out works at suboptimal times of year (e.g. in respect of bird breeding) and the fact that worst case assumptions underpinning the ES and HRA do not appear to be consistent with this.

Q1.7.11: Absence of Arboricultural Impact Assessment

2.2.45 We note that the applicant has belatedly submitted an AIA at Deadline 3 on which we have yet to comment in detail. However, Bioscan/SNTS note how this illuminates how the original position of the applicant on tree and woodland loss, as set out in the ES, is incorrect, and that this has necessitated revisions to ancillary documents such as the CEMP (see section 4 of this submission), vindicating the ExAs question.

2.2.46 Bioscan/SNTS wish to seek clarity as to whether the Environmental Statement is now similarly going to be revised in order to better reflect the factual position as regards impacts to trees and linear features, and how this may impinge on the previous conclusions drawn, for example about bats, which now quite clearly need to be revisited.

2.2.47 For example, the AIA confirms that "*Two individual trees* [one subject to TPO]*, two tree groups* [also subject to TPO]*, part of four woodland groups, part of 13 tree groups and part of four hedgerow features are to be removed to facilitate the Scheme. This would include four part woodland groups of high quality (Category A), one tree group, part of seven tree groups and part of two hedgerows of moderate quality (Category B), two individual trees, part of six tree groups and part of two hedgerows of low quality (Category C) and one individual tree and one tree group which are unsuitable for retention for more than 10 years (Category U).*"

2.2.48 It is further noted that the AIA states that "*as a reasonable worst case the Scheme would require the removal of up to 150m2 of likely high quality tree cover, 5300m2 of likely moderate quality tree cover and 2850m2 of likely low quality tree cover (8300m2 in total).*"

2.2.49 The Examining Authority is asked to note the difference between the position as now assessed via the AIA and the statements made in the original ES Chapter such as:

- "*Woodland habitats across the Order limits will be retained*" (ES Chapter 8: Table 8-10, page 8-108)
- "*The construction of the Scheme will avoid features used by roosting and foraging / commuting bats, based on the current baseline conditions. There will be no loss of habitats identified as being important for bats anywhere within the Order limits.*" (ES Chapter 8: Table 8-10, page 8-122)
- "*The construction of the Scheme will not impact upon mature, species-rich hedgerows and other boundary features, which will retain connectivity across the Order limits for commuting and foraging bats. Therefore, there will be no fragmentation of habitats used by bats*" (ES Chapter 8: Table 8-10, page 8-122).

- "*Therefore, there are no impact pathways, either directly or indirectly, that would impact upon bats*".

2.2.50 In addition, it is noted that based on erroneous assumptions about avoiding tree loss, the 'Report on Surveys for Bats' [APP-087: ES Appendix 8J] did not adequately consider impacts on bats arising from loss of foraging or roosting habitat (see para 5.5.5 of that document). It went on to recommend that "*further more detailed bat roost surveys will be required at specific features (i.e. structures with low to high roost suitability and trees with moderate to high roost suitability) to inform mitigation and potential licence application in accordance with best practice guidance*". In light of the results of the AIA, that position would appear to have been reached. Bioscan/SNTS therefore wish to seek clarity from the applicant as to whether and when it is now duly carrying out this additional work, and whether it intends the results to be available before the close of the Examination.

Q1.7.12: Inconsistency regarding veteran trees

2.2.51 We note that the applicant has recognised the inconsistency highlighted in the ExA's question as regards veteran trees within the proposed Order limits and that this may necessitate design changes. We ask the ExA to note how this is consistent with other errors and omissions noted on the baseline habitat surveys and as set out in Bioscan's reports appended to SNTS's written representation. We await the applicant's update surveys (promised at Deadline 1) to see whether similar design and mitigation implications are triggered in other areas due to deficiencies in the baseline and reliance on assumptions that later prove to be incorrect. We will offer further comment on this, and its implications, in due course.

2.3 Overall conclusions on applicant's responses to FWQs

2.3.1 Bioscan and SNTS consider that the applicant's responses to the Examining Authorities First Written Questions (and indeed the volume of those questions), illuminate the lack of thoroughness in the applicant's submitted ES and HRA, and related submission material. We await several further revised submissions on matters that should have been available to the Examining Authority, and stakeholders, at the outset, including on crucial factors such as compliance with the Conservation of Habitats and Species Regulations, the mitigation hierarchy and crucial details that directly influence the weight that can or cannot be attached to the applicant's claims on enhancement, compensation and biodiversity net gain. The Examining Authority is asked to note the additional burden that responding to this material in such a piecemeal way places on stakeholder groups with limited resources, such as SNTS. We also note the applicant's revealing answer to Q1.6.7 which confirms beyond any residual doubt that any compensatory or enhancement benefits secured via the DCO would likely be temporary, with no residual control over land beyond the *maximum* 40-year life of the proposed solar facility.

3 COMMENTS ON DRAFT STATEMENTS OF COMMON GROUND

3.1.1 On behalf of SNTS, Bioscan's comments on the draft/interim statements of common ground of the Local Authorities, Natural England, Suffolk Wildlife Trust and the Environment Agency are set out in turn below:

3.2 Local Authorities

3.2.1 Bioscan note and agree with the position implied by the lack of agreement between the applicant and the Local Authorities on 'application of expert/professional judgments' – i.e. that the Local Authorities are not satisfied that the judgments reached by the applicant on ecological matters are robust. The catalogue of habitat classification errors, assessment omissions and unevidenced leaps of faith about the future position support the LPAs position of non-agreement at this stage. Indeed, it might be argued that they are added to or confirmed at each Examination deadline.

3.2.2 We note under 'matters under discussion' that the applicant intends to submit the delayed additional surveys responding to omissions identified by ourselves and others at Deadline 3, not Deadline 1 as originally advised. The ExA is reminded of our comments at 2.3.1 above about how these shifting deadlines for receipt of new information bears upon the satisfactory (or otherwise) running of the examination in respect of SNTSs limited time and resources (and not least those of PINS).

3.2.3 We note that the applicant states that it is intending to submit a revised Metric 3.1 calculation to the Examination "*at the earliest convenience*". If this material is not forthcoming at Deadline 3, then we consider that greater clarity on this submission timescale should be sought by the ExA.

3.3 Natural England

3.3.1 Bioscan and SNTS disagree that the study areas adopted by Sunnica within the ecology and nature conservation assessments "*reflects current best practice and standards*" and we question why this has been agreed by Natural England.

3.3.2 As set out in our response to FWQ 1.0.15 above, the applicant's claims that there are no international sites designated for their bat interest within 30 km of the proposed Order limits appears to be factually incorrect. Specifically, Eversden and Wimpole Woods Special Area of Conservation (SAC) is approximately 26.7km from the Order limits at Burwell substation. This SAC is designated for the presence of the rare Annex II bat species barbastelle *Barbastella barbastellus*. This omission or oversight is particularly relevant to the EIA (and HRA) processes as this rare bat species disperses significant distances from roosts for foraging purposes and has been recorded within the Order limits. This oversight also calls into question the statement, presented as an agreed matter, that "*The parties agree that the Stage 1 – Screening has identified all relevant sites, potential impact pathways and has taken into consideration all potential Likely Significant Effects*."

3.3.3 We note that there is a divergence of opinion between NE and the Local Authorities on whether the application of professional judgement by specialists in respect of ecological impacts is appropriate and robust. Bioscan and SNTS agree with the Local Authorities that there are clear grounds (as set out in SNTS's written representation, and in the comments earlier in this document) to question that view. We have also highlighted in our comments on the applicant's response to FWQ 1.2.1 how the impact matrix approach deviates from accepted best practice standards and how it can result in relevant impacts being disregarded.

3.3.4 Bioscan/SNTS question how in a situation where the applicant is being compelled to submit addendum information to address deficiencies in the baseline data, there can be an agreed position between the applicant and NE on the adequacy of the submitted survey data at this stage. We question whether the reality is that Natural England has confined its considerations to matters of a statutory nature, as per its normal remit in engaging with the planning process, and has thus not given detailed consideration to the adequacy of matters such as accurate habitat classification outside of the designation boundaries and impact buffers around statutory sites, except where concerning statutory protected species. We suggest the Examining Authority should seek clarity from Natural England as to precisely where it positions its involvement in the Examination on non-statutory matters, in order that it can adjust the weight to be attached to a lack of comment from the statutory authority (or agreement on statements proffered by the applicant) accordingly.

3.3.5 Bioscan/SNTS note the inconsistency between NE having been portrayed as agreeing that "*the application of professional judgement by specialists within the following assessments is considered to be appropriate and robust: … air quality*" and the later statement that "*It is considered by the parties that the outcomes of the cumulative effects assessment in relation to development interactions are accurate with the exception of air quality, where Natural England has requested an in-combination assessment be carried out*.". This inconsistency is reflected elsewhere in the comparison of statements suggesting that matters such as potential effects on Chippenham Fen are agreed, which is flatly contradicted by later statements that impacts on aquatic invertebrates associated with Chippenham Fen Ramsar site and Fenland SAC are a matter of ongoing data exchange and discussion.

3.3.6 Bioscan note that the record of GCN from Chippenham Fen drawn to the applicant's attention some months back, and referenced again in SNTS's written representation, is not mentioned in the statement on GCN. Bioscan wonder whether this matter has been discussed at all between the applicant and NE since it was flagged by ourselves.

3.3.7 Bioscan/SNTS consider that due to deficiencies in the submission material and a lack of detail on critical matters, Natural England are not in an informed enough position on the following matters to agree that the impacts have been appropriately identified and assessed:

- Impacts to and loss of arable flora, including populations of locally and nationally scarce species;

- Displacement impacts on stone curlew and other farmland birds (e.g. skylark);

- Potential impact vectors to the Chippenham Fen SAC/Ramsar/SSSI/NNR, in particular in respect of aquatic invertebrates, the data vacuum around these, and the application of the precautionary principle;

- Whether the scheme delivers a net gain in biodiversity, whether objectively via the metric-based approach or subjectively on the basis of the balance of evidence in relation to both flora and fauna;

- Whether the applicant's claims of habitat enhancement are practical and achievable having regard to matters such as simple logistics, soil fertility and other factors.

3.3.8 Bioscan/SNTS will review future iterations of this Statement of Common Ground with interest, in light of the above.

3.4 **Suffolk Wildlife Trust**

3.4.1 Somewhat in contrast to the position the applicant sets out in the draft Statements of Common Ground with the Local Authorities and Natural England, Bioscan/SNTS notes that the Suffolk Wildlife Trust has not yet agreed any matters on ecology.

3.4.2 For all of the reasons set out in preceding sections of this document, including data deficiencies, unevidenced claims and assumptions, inconsistencies and simple matters of factual error, Bioscan/SNTS consider this to be very much the more defensible position at this stage of the Examination.

3.5 **Environment Agency**

3.5.1 Many or most of the comments made above in respect of the draft Statement of Common Ground with Natural England apply equally to the draft Statement of Common Ground with the Environment Agency. We are concerned that statutory agencies are being portrayed by the applicant as being in agreement with them on matters that are subsequently found to either be factually incorrect, or which fall outside of the statutory remit they define in consultation correspondence and which leaves matters such as non-statutory biodiversity matters largely to local authorities and non-statutory agencies such as the Wildlife Trusts.

4 COMMENTS ON LATEST VERSIONS OF CEMP, OEMP AND DEMP

4.1 Framework Construction Environmental Management Plan [REP3-015/16 + appendices]

4.1.1 Bioscan/SNTS note how the (tracked) changes to the CEMP indicates (amongst other things) how additional information fed into the design process via the arboricultural impact assessment (AIA), changes the original position of the applicant that no mature trees will be affected during the construction phase. This has necessitated revisions to ancillary documents such as the CEMP, and Bioscan/SNTS wish to seek clarity as to whether the Environmental Statement is similarly going to be revised in order to better reflect the factual position as regards impacts to trees and linear features, and how this may impinge on the previous conclusions drawn about bats.

4.1.2 For example, having undertaken an initial review of the AIA, Bioscan note that "*Two individual trees* [one subject to TPO]*, two tree groups* [also subject to TPO]*, part of four woodland groups, part of 13 tree groups and part of four hedgerow features are to be removed to facilitate the Scheme. This would include four part woodland groups of high quality (Category A), one tree group, part of seven tree groups and part of two hedgerows of moderate quality (Category B), two individual trees, part of six tree groups and part of two hedgerows of low quality (Category C) and one individual tree and one tree group which are unsuitable for retention for more than 10 years (Category U).*"

4.1.3 It is further noted that "*as a reasonable worst case the Scheme would require the removal of up to 150m2 of likely high quality tree cover, 5300m2 of likely moderate quality tree cover and 2850m2 of likely low quality tree cover (8300m2 in total)*."

4.1.4 The Examining Authority is asked to note the difference between the position as now assessed via the AIA and the statements made in the original ES Chapter such as:

- "*Woodland habitats across the Order limits will be retained*" (ES Chapter 8: Table 8-10, page 8-108)
- "*The construction of the Scheme will avoid features used by roosting and foraging / commuting bats, based on the current baseline conditions. There will be no loss of habitats identified as being important for bats anywhere within the Order limits*." (ES Chapter 8: Table 8-10, page 8-122)
- "*The construction of the Scheme will not impact upon mature, species-rich hedgerows and other boundary features, which will retain connectivity across the Order limits for commuting and foraging bats. Therefore, there will be no fragmentation of habitats used by bats*" (ES Chapter 8: Table 8-10, page 8-122).
- "*Therefore, there are no impact pathways, either directly or indirectly, that would impact upon bats*".

4.2 **Ecological Clerk of Works – clarity sought from applicant**

4.2.1 In addition to the above, Bioscan/SNTS would request that the applicant defines what is meant by "*a licenced Ecological Clerk of Works*" (page 16C-15) and in particular how it will be ensured that someone with suitable experience of stone curlew, as well as all the other relevant receptors, will be employed.

4.2.2 Bioscan/SNTS would also request that the applicant defines precisely how many ECoW are likely to be required to cover all potential impact fronts/interfaces with ecological receptors that require supervision and monitoring during the construction phase. It is very notable that references to ECoW are made in the singular and appear to be generic, as if lifted from another project. The size of this project means that this would be wholly inadequate to implement the CEMP to the intended efficacy. The Examining Authority is asked to note the outcome of a simple totting up exercise of all the likely and potential daily tasks that may fall to a single ECoW and the impracticality of their being covered without multiple ECoWs being in post.

4.2.3 Bioscan/SNTS consider that this matter requires further detail before any weight can be placed on the CEMP as an effective means to limit construction-phase effects. Confirmation of the skill set, number of employees and an indication of anticipated daily schedule of tasks would assist the ExA and stakeholders in determining whether the applicant has sufficient intention and resource to cover this essential matter.

4.3 **Framework Operational Management Plan [REP2-030 and REP2-031]**

4.3.1 The text in this document on Biodiversity (table 3-3) is insufficiently precise and evidently subject to change in the light of further information (e.g. on stone curlew) and Bioscan/SNTS therefore reserve the right to comment on it at a later stage of the Examination.

4.3.2 However, the comments made above about the resourcing requirements to ensure the value of an ECoW should be noted also with regard to the operational phase, though they are perhaps less acute as a concern than with the construction phase.

4.4 **Framework Decommissioning Management Plan [REP2-028/029]**

4.4.1 The comments provided above at 4.1 and 4.2 apply equally to the Framework Decommissioning Management Plan. In addition, the Examining Authority's attention is drawn to Bioscan/SNTS's comments on FWQ 1.6.7 (para 2.2.42 above) concerning the absence of security over the future position beyond the operational life of the solar facility.

5 SUMMARY AND CONCLUSIONS

5.1 Bioscan and SNTS consider that the applicant's responses to the Examining Authorities First Written Questions illuminate how errors and omissions have infected the Environmental Statement submission (and its supporting surveys), as regards biodiversity impacts. These individually and collectively undermine the robustness of the conclusions the applicant presents, with a further diminution of robustness added in the absence of detail on the long term and future position that is claimed will be delivered.

5.2 Bioscan and SNTS consider that the applicant's ticker tape submissions in response to these errors and omissions, including additional surveys and submissions, related adjustments and corrections and changes of position do not imply a robust and well thought through scheme. We suspect the Examining Authority shares in our frustration that this rather haphazard approach to designing and assessing a scheme brings, and in the resourcing implications for stakeholders that it gives rise to.

5.3 We await further information on the matters of concern raised in this document and will respond as necessary.

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