



Study of Agricultural Economy and Land in Wirral

30 September 2019



ADAS GENERAL NOTES

Project No.: 1010420-1 (00)



Title: Study of Agricultural Economy and Land in Wirral

Client: Wirral Council

Date: 30 September 2019

Office: Wolverhampton

Status: Final Version

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Date:	<u>30 September 2019</u>	Date:	<u>30 September 2019</u>

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EXECUTIVE SUMMARY

Introduction

Wirral Metropolitan Borough Council (Wirral Council) have commissioned ADAS to undertake a study into the Borough's agricultural economy and land in order to inform the development of its Local Plan. Specific attention has been paid to sites identified for further investigation by Wirral Council in an Initial Green Belt Review in September 2018.

This study has involved a brief review of agricultural policy in England and the potential future impact of policy changes, with emphasis on the main farming enterprises currently found in Wirral. These have been identified by a desk review, which has been based on published data and other information available to ADAS. In addition, an overview of agricultural areas in Wirral (as viewed from roads and other public access points) was undertaken by ADAS in May 2019. This sought to confirm recent data and to provide more detail on current cropping and enterprises, particularly on the sites identified for further investigation by Wirral Council. Desk research has also been undertaken in relation to the soils and geology of agricultural areas in Wirral and with regard to any climate limitations.

The findings of the desk research were used as a basis for a consultation to capture the views of agricultural stakeholders. Farmers, agricultural landlords and statutory consultees were targeted using various methodologies, including online surveys, postal surveys and direct telephone calls, to maximise the potential response rate. The key findings of the desk research and stakeholder consultation were as follows.

Agriculture in Wirral

According to Defra Agricultural Survey data, nearly 27% of land in Wirral (4,304 hectares) is still used for agricultural purposes, with 67 holdings recorded in 2016. However, agriculture accounts for only around 0.2% of all employment in Wirral.

Around 74% of agricultural land is rented as opposed to being owner-occupied. The predominant farm enterprise in the area is dairy, with around 30% of agricultural land in Wirral being used by seven dairy holdings (2016). While there has been a reduction in the number of dairy holdings, there has not been a proportionate decrease in the number of dairy cattle, indicating that dairy units are becoming larger. Conversely the number of lowland grazing livestock holdings has increased since 2000, despite a reduction in beef cattle numbers. This is likely to be due to a more diversified approach, with increased numbers of sheep and horses and more forage production.

Statistics indicate that the majority of the crops grown in Wirral are cereals, with over 24% (1,039 hectares) of agricultural land utilised for this purpose. It is likely that some of the cereals are used as feedstuffs for cattle on the same unit or by neighbouring dairy or cattle farms. In small agricultural communities such as Wirral, there is often a greater focus on self-sufficiency or symbiosis between complimentary enterprises. While dairy and cattle enterprises use locally-grown cereals for feed and straw for bedding, arable enterprises can make use of organic manures as fertiliser for crops.

The physical review of agricultural areas undertaken generally supported the data gathered from the desk studies. Within the 'grazed livestock' category, horses were found to be prevalent and this was considered typical of many urban fringe areas. Winter wheat and spring barley were the main crops seen.

A consultation survey was undertaken of agricultural landowners, tenant farmers and statutory consultees. This found that the predominant challenge farmers in Wirral currently face is making sufficient income from agriculture. The key concerns are rising input costs, decreasing output prices and the potential reduction in direct subsidy payments. All respondents intend to improve the efficiency of their current enterprises to mitigate these challenges, with 50% considering implementing more agri-environment activities in the next five years.

Farm Business Incomes

There is currently a high reliance across the agricultural sector nationally on direct support and agri-environment payments. However, this is less noticeable in the dairy sector at present because of recent increases in average output prices. There was also evidence that some dairy businesses in Wirral are adding value to milk by diversifying in order to increase the amount of income generated.

In the grazing livestock (lowland) sector, beef cattle and sheep farms in general rely very heavily on the Basic Payment Scheme (BPS), diversification and agri-environment payments¹ and this is likely to be the case for such farmers in Wirral. This demonstrates the importance of the financial support currently given to the agricultural sector to ensure continuity of food production and to encourage environmental management activities.

Future Agricultural Policy in England

Current agricultural policy provides support based on land area, subject to farmers meeting defined environmental and good practice requirements. However, the basis for payments is expected to change in future. The Agriculture Bill 2017-19² intends to remove direct payments to farmers over a 7 year period, starting in 2021. In future, emphasis will be placed on delivery of public goods e.g. improved water and air quality, flood management, recreational services and biodiversity. The impacts of these changes at farm level are uncertain at present.

Review of Wirral Soil and Geology

The National Planning Policy Framework (NPPF)³ for England commits to conserving the benefits of the best and most versatile (BMV) agricultural land, which is defined as land in grades 1, 2 and 3a of the Agricultural Land Classification (ALC). If development of agricultural land is demonstrated to be necessary, areas of poorer agricultural quality should be preferred.

The National Soil Map shows that soils in Wirral fall predominantly within five major soil associations; namely Clifton, Bridgnorth, Blackwood, Sandwich and Salwick. Clifton (36%) is the predominant soil association in the agricultural areas, this being defined as a slowly permeable, seasonally waterlogged, reddish fine and coarse loamy soil⁴. Sandstone makes up the solid geology of the majority of Wirral.

Details for 16 ALC surveys within Wirral were found during this study, these dating from 1988 to 1995. Some 62% of the areas surveyed were considered to be within the parameters of BMV land but no assumptions can be made on how this may correlate with other agricultural areas in Wirral. It is therefore recommended that further ALC surveys are undertaken on potential development land to determine soil classification⁵ before any final proposals are confirmed.

¹ <https://www.gov.uk/government/statistics/farm-business-income>

² <https://services.parliament.uk/Bills/2017-19/agriculture.html>

³ <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

⁴ <http://www.landis.org.uk/>

⁵ ADAS, 2019

CONTENTS

1	Introduction.....	1
2	Agricultural and policy context.....	3
2.1	Land use for food production.....	4
2.1.1	Agricultural subsidies and environmental stewardship	4
2.1.2	Sustainable food production	5
2.2	Environmental protection	5
2.2.1	Soil protection	5
2.2.2	Climate Change Act 2008 & Clean Air Strategy 2018.....	5
2.3	Planning Policy	6
3	Current agriculture and land use in Wirral.....	7
3.1	Desk study of farming practices and land use in Wirral	7
3.1.1	Farm Holdings.....	7
3.1.2	Farm Type	9
3.1.3	Land Tenure.....	11
3.1.4	Trends in cropping	12
3.1.5	Livestock Holdings and Numbers	13
3.1.6	Labour Changes	16
3.1.7	Gross Value Added (GVA).....	17
3.2	Physical Review of Agriculture in Wirral	17
3.2.1	Current agricultural land use in Wirral.....	18
3.2.2	Agricultural Infrastructure	19
4	The future direction of agriculture in Wirral	20
4.1	Farm returns and viability.....	20
4.1.1	Farm Business Income Trends	20
4.1.2	Farm Business Income 2017/18	22
4.1.3	Farm Business Income Forecast	24
4.2	Future changes in agricultural policies.....	25
4.2.1	Agriculture Bill 2017 - 19	25
4.2.2	25 year Environment Plan.....	26
5	Review of soil and geological information	27
5.1	Mapped Soils	27
5.2	Mapped geology	28
5.3	Agricultural Land Classification (ALC)	29
5.3.1	Sites for Further Investigation – ALC Grade Range.....	31

5.4 ALC Climate Calculations and Interactive Limitations.....	34
6 Conclusions.....	35
7 Next steps.....	37
8 Glossary.....	38

Tables

Table 1: Size class of holdings – Wirral 2000-2016	8
Table 2: Number of holdings by dominant farm type in Wirral 1995-2010.....	9
Table 3: Changes in cropping areas in Wirral (ha)	12
Table 4: Cropping allocation in Wirral – 2016	13
Table 5: Trend in cattle numbers in Wirral, 2007 – 2016.....	14
Table 6: Total Dairy Cattle in Wirral, 1995 – 2016.....	15
Table 7: Enterprise location summary	18
Table 8: Average Farm Business Income by Type of Farm in England (£/farm).....	21
Table 9: Farm Business Income Forecast Summary (England), 2018/19.....	24
Table 10: Major soil associations of Wirral	27
Table 11: Summary of ALC survey areas in Wirral from 1988 to 1997.....	29
Table 12: Summary of ALC Survey results by soil type.....	30
Table 13: Estimates of land area of each ALC grade within major soils associations found in Wirral	30
Table 14: Soil associations and range of likely ALC grades in the 32 Sites for Further Investigation in Wirral.....	33

Figures

Figure 1: UK agriculture’s contributions to the economy and the environment.....	3
Figure 2: Total number of holdings and farmed area in Wirral, 1995 – 2016.....	8
Figure 3: Comparison of farm sizes – England and Wirral, 2016.....	9
Figure 4: Main agricultural land uses as a proportion of total agricultural land area – 2016	10
Figure 5: Land Tenure Comparison in Wirral : 1995 – 2016.....	11
Figure 6: Total Number of Holdings, Grazing Livestock (Lowland), 2000 – 2016	14
Figure 7: Total Dairy Holdings in Wirral, 1995 – 2016	14
Figure 8: Permanent and Managed Grassland, 1995 – 2016.....	15
Figure 9: Total number of breeding ewes and lambs less than 1 year old, 1995 – 2016.....	16
Figure 10: Total Agricultural Labour in Wirral, 2000 – 2016.....	16
Figure 11: GVA generated from Agriculture in Wirral, 1997-2012	17
Figure 12: Current challenges facing Wirral farmers.....	20

Figure 13: Future priorities for Wirral Farmers	22
Figure 14: Farm income across all farm types in England	22
Figure 15: Land subject to agri-environment schemes agreement in Wirral	23
Figure 16: UK Farmland Forecasts 2019 – 2023.....	25

Appendices

Appendix 1 – Area of green belt - Wirral	41
Appendix 2 – Cropping allocation in Wirral 2016.....	42
Appendix 3 – Physical evaluation of agriculture in Wirral.....	43
Appendix 4 – Land use map of sites for further investigation	51
Appendix 5 – Sites identified for further investigation	52
Appendix 6 – Soil map of Wirral	53
Appendix 7 – Bedrock Geology map	54
Appendix 8 – Superficial geology map	55
Appendix 9 – Summary of existing ALC surveys in Wirral	56
Appendix 10 – Summary of ALC climate calculations in Wirral.....	61
Appendix 11 – Consultation Survey Questions.....	64

1 INTRODUCTION

Wirral is a metropolitan borough of Merseyside located on the peninsula between the Dee and Mersey estuaries. Covering 60 square miles, Wirral is a largely urban area with a population of 322,796⁶. Despite this population concentration, 47% of Wirral is rural and designated as Green Belt in the Council's Unitary Development Plan.

Areas designated as Green Belt are protected by Government under the National Planning Policy Framework (NPPF) for England 2019. The purpose is to prevent urban sprawl and protect the countryside from development. The Green Belt in Wirral covers an area of 7,560 hectares. This is shown in [Appendix 1](#).

In 2017, Wirral Council commenced consultations on development of a new Local Plan which would identify sufficient housing allocation for the whole of the plan period 2020-2035. Wirral Council have stated their commitment to meet future development needs by utilising urban area and brownfield sites wherever possible. To achieve this a number of studies are being undertaken. An assessment of the Green Belt is also being undertaken to identify if any areas might exist where exceptional circumstances may justify a potential change to the boundary.

Nearly 27% of land in Wirral is currently used for agricultural purposes. The NPPF commits to conserving the benefits of the 'best and most versatile' (BMV) agricultural land. This is defined as land in grades 1, 2 and 3a of the Agricultural Land Classification. If development of agricultural land is demonstrated to be necessary, areas of poorer agricultural quality should be preferred.

To facilitate development of the Local Plan, ADAS has been commissioned to undertake a review of the agricultural economy and land in Wirral. The required outcomes are as follows:

- (i) A review of **current agricultural practices and land use in Wirral**, including a comparison with national trends. Specific attention is to be given to sites identified by the Council as part of their Initial Green Belt Review.
- (ii) A desk-based analysis of likely **farm income and viability for traditional enterprises in Wirral**. The potential impacts of possible changes to national agricultural policy in relation to food production, food security, government support and environmental controls should be provided.
- (iii) A summary of the **socio-economic impact of farming in Wirral**, particularly in relation to employment and income, based on Defra statistics, other published sources of information and expert opinion.
- (iv) A concise review of published **soils and geological information in Wirral**, together with climate limitations, providing an overview of land classification for the agricultural areas, based on desk research.
- (v) **Engagement of agricultural stakeholders** in Wirral to compliment desk research and inform Council policy and land use decisions.

This report will first set out the current agricultural and policy position influencing land use nationally (section 2). This will provide the context for the review of agriculture in Wirral which is set out in section 3. This includes a more in-depth view of farm enterprises on identified key sites. This will be

6

<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland>

followed in section 4 by a summary of farm income trends and policy changes that will impact on farming decisions in the future. In section 5, there is a summary of soil, geology and conditions impacting upon Agricultural Land Classification.

At the end of the main body of the report, there is a glossary which provides definitions of technical terms and phrases that may not be familiar to all readers. Finally the Appendices section provides detailed maps and additional data.

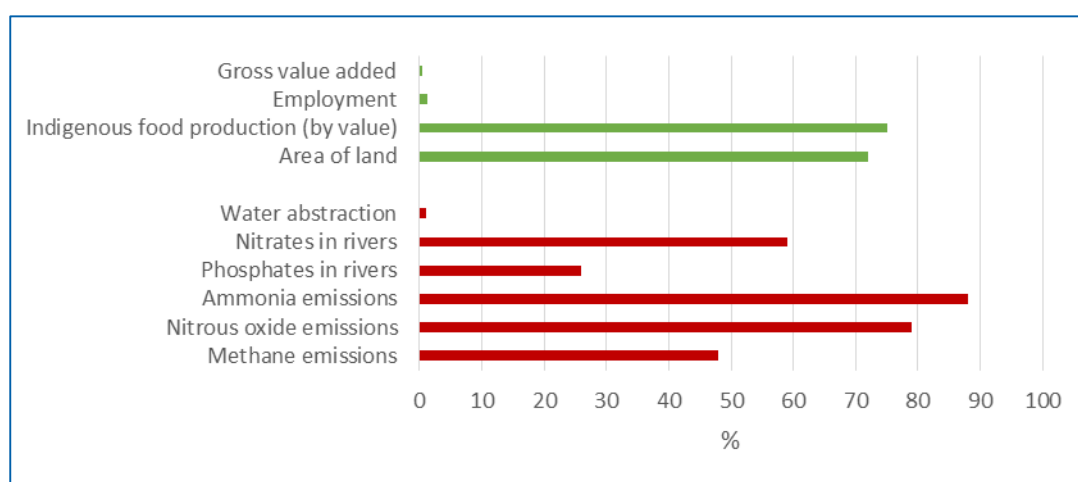
2 AGRICULTURAL AND POLICY CONTEXT

This section provides the national agricultural and policy context for the study, concentrating on those aspects considered most relevant to agriculture in Wirral.

Land-based agriculture is heavily influenced, at present, by financial support provided through the EU Common Agricultural Policy (CAP), by legislative controls and by national, regional and local strategies and priorities. Local Plans must demonstrate how local housing and employment needs can be met and take national policies into account. These policies cover climate change, environmental protection and food security. Addressing these environmental, social and economic issues is complex and contentious as there are often competing priorities.

At a national level, agriculture makes a positive contribution to the economy but it also has some adverse impacts on the environment. This relationship can be seen in Figure 1 below.

FIGURE 1: UK AGRICULTURE’S CONTRIBUTIONS TO THE ECONOMY AND THE ENVIRONMENT.



Source: Adapted from Defra, *Agriculture in the UK (2018)*⁷

The main contribution from agriculture to the UK economy is the production of food and Figure 1 shows that between 70 and 80% of food production is ‘indigenous’ (by value); however, the contribution of agriculture to gross value added (GVA) and employment is modest. Productivity is considered a key measure of the economic performance of agriculture and it is an important driver of farm incomes. However, agricultural productivity in the UK has plateaued since the late 1990s and it has failed to keep up with global competitors such as Germany, France and the USA. A detailed study on agricultural productivity in the UK, conducted by Defra, found that the greatest negative impact on productivity has resulted from reduced public sector investment in agricultural research and privatisation of farm advice⁸.

Figure 1 also demonstrates significant environmental impacts. These are mainly through emissions of pollutants which affect water courses (fertilisers, pesticides, soil particles) or air quality (ammonia, nitrous oxide and methane). Farming can also impact upon biodiversity, soil quality, water use and the recreational value of the countryside. Maintaining the balance between food production and protection of the environment has been critical in shaping policy both in the EU and the UK.

⁷ <https://www.gov.uk/government/statistics/agriculture-in-the-united-kingdom-2018>

⁸ <https://bit.ly/2WHmAUB>

Land use in the UK is also affected by the need for housing and commercial developments. This reflects a need to provide for more development, including housing to support changes in employment, economic activity and demographics.

2.1 Land use for food production

Land use for food production in the UK is influenced by four main factors. These are:

- **The productivity of the soil.** This is affected by type, quality, altitude, slope, drainage etc. This is largely static although in the medium to long-term it can be altered by water availability, flood-risk, climate change and soil erosion.
- **The economic returns of a particular enterprise.** This is dependent on the costs of the inputs and the value of the outputs at local, national or global level. In some cases, responses to the market can be rapid (e.g. with annual arable cropping); however, livestock enterprises may be slower to respond due to longer production cycles. For example, a dairy heifer will not contribute to milk sales until she is at least 2 years old.
- **Incentives and constraints** e.g. through CAP mechanisms and agri-environment schemes which provide financial support for environmental good. Future trading arrangements (e.g. as a result of Brexit) may also have significant impacts on certain sectors in future.
- **Proximity to market.** Enterprises are influenced by the distance to market or secondary processors. There are often benefits from being close to urban areas.

While the total area of land used for agriculture in the UK has remained relatively unchanged since 2000, there have been changes in the land areas occupied by different cropping and livestock systems.

This mainly reflects changes in supply and demand as well as longer term factors such as changes in population, and the influence of policy and technological advancement. In particular, the nature of Government support mechanisms can influence land use and cropping patterns. Grain prices impact upon the competitiveness of parts of the livestock sector because of their influence on feed prices, but this has less effect in extensive livestock systems used for sheep and for some types of beef and dairy production, where feeding is based mainly on forage (grass).

2.1.1 Agricultural subsidies and environmental stewardship

The most important policy influence on agricultural land use in the UK at present is the CAP, a system of EU agricultural subsidies and programmes to support agriculture and promote rural development. Pillar I of the CAP relates to direct subsidy payments to farmers. Following major reforms in 2005, payments to farmers are now separated from land use and livestock numbers. As a result, farmers in England are eligible for a direct payment for each hectare of land, subject to meeting specified environmental conditions. However, from 2015, farmers with under 5 ha of agricultural land are no longer eligible to receive payments. In the future, further changes in support provided to farmers are likely (see section 4).

Pillar II of CAP relates to rural development grants including agri-environment schemes, providing funding for environmental management in England, first through the Environmental Stewardship Scheme (from 2005) and then through its successor the Countryside Stewardship Scheme (from 2015). Farmer uptake of these schemes in turn influences land use and enterprise type.

2.1.2 Sustainable food production

In 2011, Defra published a national food strategy to provide a framework for a sustainable food system locally and globally. The strategy set out objectives to increase UK food production and enhance food security but with less impact on natural resources such as soil and water, on which food production depends. It is also recognised within the strategy that uncropped land (including field margins and land set-aside for environmental use) provides a range of important and valuable benefits that may outweigh the smaller and short term economic benefits realised through conversion to food production, housing or other uses.

The strategy recommends that food production ought to be flexibly integrated with other types of land use where possible to gain wider benefits, such as water management, outdoor access and habitat creation. The challenge in realising this strategy is that most land is privately owned and public priorities for land use can only be achieved through regulation or by providing incentives.

It is clear that a wide range of policy priorities exist for agricultural land use, with a focus on maintaining farming incomes and producing more food whilst also providing better environmental outcomes. A central theme is not to increase the area given over to agriculture, but to maximise the yield from the agricultural area.

2.2 Environmental protection

Policies that give greater protection to the environment are an important factor in shaping changes in agriculture. Key environmental themes are considered below along with relevant European and national policies.

2.2.1 Soil protection

Current EU and UK policies highlight the need to protect and manage soils sustainably, both for food production and for wider environmental benefits. For example, agri-environment measures within the CAP address the need to improve soil organic matter, soil biodiversity and the reduction of soil erosion, contamination and compaction. In particular, the provisions of cross-compliance - notably the obligation to keep agricultural land in good agricultural and environmental condition plays an important role in soil protection.

In the Defra 25 year Environment Plan, it is recognised that *“we need to ensure healthier soils by addressing factors in soil degradation such as soil erosion, compaction and the decline in organic matter.”* It also emphasises the importance of environmental protection in planning decisions and encourages **net environmental gains**, rather than the current focus on **net biodiversity gains**. This is expected to place greater emphasis on wider natural capital gains relating to water and air quality, flood protection and public access.

2.2.2 Climate Change Act 2008 & Clean Air Strategy 2018

The Climate Change Act 2008 established a new approach to managing and responding to climate change in the UK and created a legally binding target to reduce the UK’s emissions of greenhouse gases to at least 80% below 1990 levels by 2050. Figure 1 shows that agriculture is a key contributor to emissions of ammonia and methane which contribute to climate change.

The Clean Air Strategy 2018, sets out clear guidelines on actions that can be taken in agriculture to minimise emissions while acknowledging the requirement for food production and environmental management.

2.3 Planning Policy

The NPPF sets out the Government's planning policies for England. This was updated in 2019. Councils must take the NPPF into account when preparing their Local Plans and when making planning decisions. Importantly, the NPPF requires Local Plans to identify what their area's housing, employment and other development needs are and to demonstrate how they will be met. These needs should be balanced against other relevant planning matters and should be consistent with securing sustainable development.

Guidance of relevance to this study indicates that planning policies should:

- support economic growth in rural areas (paragraph 83-84);
- protect the Green Belt (paragraphs 133-147);
- contribute to and enhance the natural environment by (paragraph 170-183);
 - protecting and enhancing valued landscapes, geological conservation interests and soils;
 - recognising the wider benefits of ecosystem services;
 - minimising impacts on biodiversity and providing net gains in biodiversity.
- take into account the economic and other benefits of the BMV agricultural land. Where significant development of agricultural land is demonstrated to be necessary, seek to use areas of poorer quality land in preference to that of a higher quality (paragraph 170);
- where development is required, allocate land with the least environmental or amenity value, where consistent with other policies in the Framework (paragraph 171).

3 CURRENT AGRICULTURE AND LAND USE IN WIRRAL

Defra conduct an annual survey on the structure of agriculture in England⁹. Local authority level information is only surveyed every three years, when sample sizes are increased to provide more robust data. The results of these surveys have been used in this section, with national information presented alongside regional data. The latest survey information recorded at a local authority level was for 2016. New data collected in 2019, at a local authority level, will be published in 2020.

The survey can only be considered to be indicative, since estimates and extrapolations are made from the responses. They are also only able to provide a snapshot in time as, for example, livestock numbers change frequently.

For all years, data points which are based on fewer than five holdings are suppressed so that individual holdings cannot be identified.

3.1 Desk study of farming practices and land use in Wirral

3.1.1 Farm Holdings

In the Defra June Census (2016) there were 67 holdings recorded in Wirral, with a total farmed area of 4,304 hectares (ha). This is shown in Figure 2 below.

Data compiled to cross check this information from RPA CROME¹⁰ indicates that around 4,560 ha of land was in agricultural production in Wirral in 2016. This is broadly similar to the Defra census statistics for the same year (4,304 ha).

The large reduction in the number of holdings recorded from 2005 onwards is a result of them having to be 'commercial' in order to be included in the data from 2009. For arable farms, the threshold for 'commercial' is set at 5 ha of utilisable agricultural area. For more specialist crops such as soft fruits, the threshold is 1 ha. Livestock farms must have over 10 head of cattle or 20 sheep.

In addition, since 2015, farms with below 5 ha of land are no longer eligible to claim BPS payments. To keep this income source, some small parcels of land may be rented out to larger units that are eligible for payments and this would be reflected in the rental value of the land.

⁹ <https://www.gov.uk/government/statistical-data-sets/structure-of-the-agricultural-industry-in-england-and-the-uk-at-june>

¹⁰ <https://data.gov.uk/dataset/21c91d36-1770-475e-99ce-5c54ea4b3eae/crop-map-of-england-crome-2016-midlands>

FIGURE 2: TOTAL NUMBER OF HOLDINGS AND FARMED AREA IN WIRRAL, 1995 – 2016



Source: Defra, 2019¹¹

Fluctuations in farmed area (e.g. in 2013) are likely to be due to farmers in Wirral renting additional land which is outside of Wirral. This would have been captured in the census return¹².

Defra statistics divide the total number of holdings into size categories. Table 1 below shows that in 2016 the most prevalent were holdings between 5 and 20 ha. In data sets for 2000 and 2005 (i.e. before the ‘commercial’ definition was introduced), there were many more holdings in total and the most prevalent were those less than 5ha.

Recent changes in farm sizes - favouring smaller units under 5 ha and larger units over 100 ha – generally reflect national trends. Smallholdings are often favoured close to urban areas, providing additional income opportunities. Conversely, the creation of larger farm units builds critical mass, improves economies of scale and can spread enterprise risks.

TABLE 1: SIZE CLASS OF HOLDINGS – WIRRAL 2000-2016

Year	<5 ha	5<20 ha	20<50 ha	50<100 ha	>=100 ha	Total holdings
2000	44	33	15	18	#	119
2005	68	29	19	19	#	145
2009	7	21	17	22	10	77
2010	6	18	13	21	10	68
2013	7	17	15	19	11	69
2016	11	17	12	14	13	67

Source: Defra, 2019

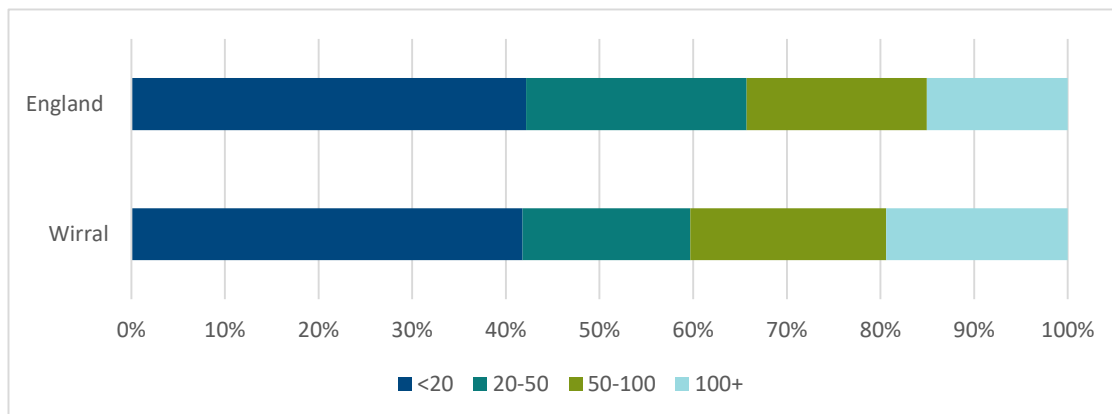
¹¹ <https://www.gov.uk/government/statistical-data-sets/structure-of-the-agricultural-industry-in-england-and-the-uk-at-june>

¹² <https://www.gov.uk/government/statistical-data-sets/structure-of-the-agricultural-industry-in-england-and-the-uk-at-june>

Data recorded as # reflects a return from five holdings or fewer.

Figure 3 shows that farm sizes in Wirral broadly reflect the rest of England. In 2016, the proportion of holdings smaller than 20 ha was similar at just over 40%, but there was a larger proportion of units over 100 ha. These account for almost 20% for Wirral compared to 15% nationally.

FIGURE 3: COMPARISON OF FARM SIZES – ENGLAND AND WIRRAL, 2016



Source: Defra, 2019

Wirral had a lower percentage of holdings in the 20-50 ha range in 2016 compared to England as a whole. This could reflect the fact that Wirral is a very urban area and this could limit the opportunities for smaller traditional farm enterprises to expand. Furthermore, there is likely to be competition from livery enterprises, able to pay high prices for small areas of land.

3.1.2 Farm Type

Defra classifies farm holdings into different farm types based on sales of different crops and livestock. The number of holdings categorised by type in Wirral for the period 1995 to 2016 is shown in Table 2 below.

TABLE 2: NUMBER OF HOLDINGS BY DOMINANT FARM TYPE IN WIRRAL 1995-2010

Main enterprises	Defra Farm type	1995	2000	2005	2009	2010	2013	2016
Cereals	Cereals	10	#	#	8	7	10	6
Oilseeds, peas, beans and root crops	General Cropping	#	#	#	13	8	11	13
Fruit and vegetables	Horticulture	25	18	17	#	#	#	#
Pigs	Specialist Pigs	4	5	#	0	0	0	#
Poultry	Specialist Poultry			#	#	#	#	#
Dairy	Dairy	19	19	16	10	10	9	7
Beef cattle and/or sheep and/or horses	Grazing Livestock	0	14	18	30	32	30	27

Main enterprises	Defra Farm type	1995	2000	2005	2009	2010	2013	2016
Mixed		11	#	9	#	#	#	#
Other enterprises	Other	33	39	62				
Unclassified					#	0	#	#
Total		102	95	122	61	57	60	53

Source: Defra, 2019

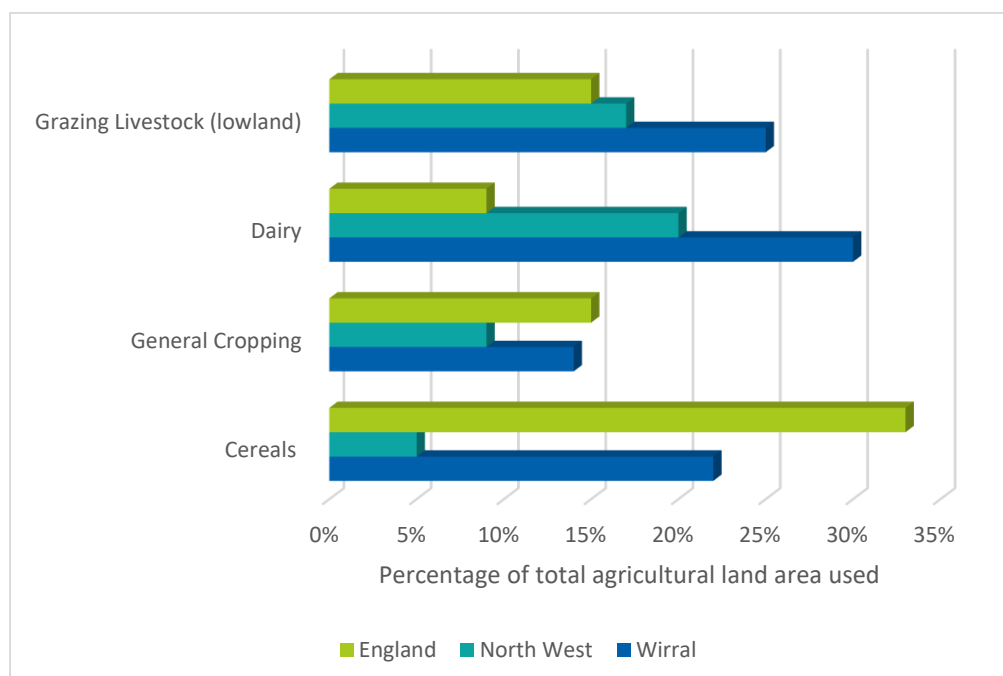
The relatively small number of holdings in Wirral makes accurate recording of sub-categories challenging and there are high instances of suppressed data. However, the high level trend indicates that agriculture in Wirral covers a range of both arable and based grassland enterprises.

Two changes relevant to the data collected are:

1. The size of holding included in census data changed in 2010. This is likely to be the reason for the reduction in horticultural enterprises (which now must have an area of at least 1 hectare).
2. From 2009, specialist horse holdings were moved from 'other enterprises' to 'grazing livestock'. This would contribute to the increased number of grazing livestock holdings from 2009 onwards.

Figure 4 compares land use in Wirral, the North West region of England and England as a whole in 2016. It shows that the main agricultural land use in Wirral was predominately dairy. This represented almost one-third of the total area. This was 10% higher than for the rest of the North West and 21% higher than England overall. Wirral benefits from the effects of the Gulf Stream which creates good grass growing conditions with early spring growth. Dairy farmers in Wirral may also enjoy market benefits from being close to large areas of population.

FIGURE 4: MAIN AGRICULTURAL LAND USES AS A PROPORTION OF TOTAL AGRICULTURAL LAND AREA – 2016



Source: Defra, 2019

Grazing livestock is the second most common land use in Wirral (25%) and with local urban populations, there is likely to be a heavy emphasis on horses. This farm type is also proportionally higher than the North West region (17%) and England as a whole (15%).

Land use attributed to cereals is also proportionately higher in Wirral (22%) than in the North West (5%) but lower than the rest of England (33%). Cereal production is a synergistic enterprise to livestock units, often providing a source of feed and straw for bedding.

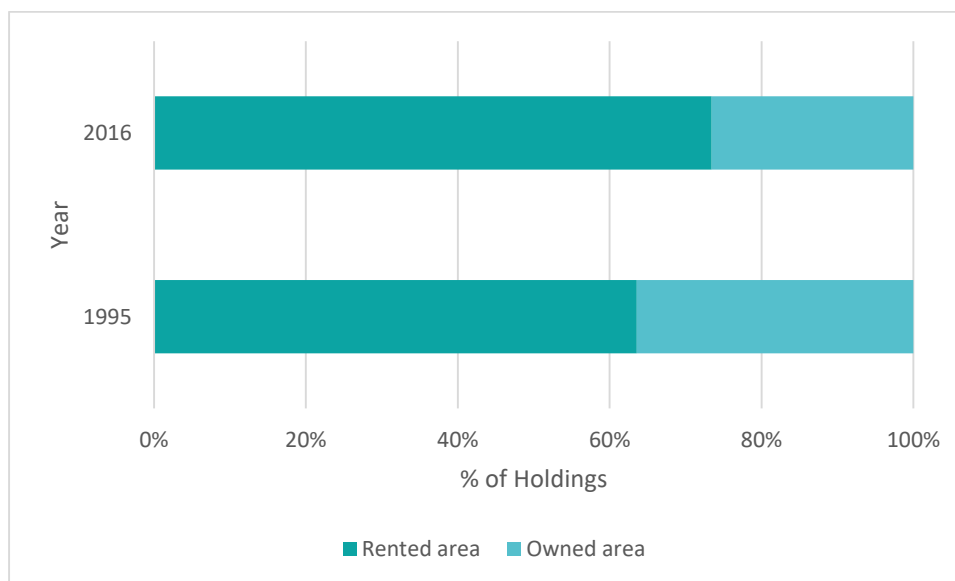
3.1.3 Land Tenure

A distinction may be made between farmers who own the land on which they farm, those who rent their land and buildings from others and those with a combination of both. For rented farms, the duration of tenancy varies greatly, from multi-generational to licences of less than one year. Defra statistics discussed here cover all types and durations of tenancy and therefore reflect varying degrees of security for tenants.

Statistics for Wirral show an increase in the rented area of nearly 16% between 1995 and 2016 with a consequent reduction in owner occupation (see Figure 5).

Marginal returns from traditional agriculture may have encouraged some land owners to lower the risk of exposure by offering land for rent. In particular, some older landowners may be renting their land as a way of retaining an income from agriculture. This is supported by Defra’s 2017/18 Farm Business Survey¹³, which indicates that 57% of farm businesses nationally have no nominated successor. In addition, with farms less than 5 ha now being ineligible for CAP payments, land rental potentially provides a better income source.

FIGURE 5: LAND TENURE COMPARISON IN WIRRAL : 1995 – 2016



Source: Defra, 2019

Farmers with rented land are generally less able to make big changes in land-use compared to owner-occupiers. Tenants often rely on landlords to support investment in infrastructure (buildings, diversification etc.) and may have to take a short-term view as a result of their tenancy agreement. Recent data from the CAAV’s Agricultural Land Occupation Survey 2017¹⁴ indicates that the average length of Farm Business

¹³ <http://www.farmbusinesssurvey.co.uk/regional/Reports-on-Farming-in-the-Regions-of-England.asp>

¹⁴ <https://bit.ly/324Lkon>

Tenancies is just under 5 years when seasonal lettings are excluded. In contrast, owner-occupiers may take a longer-term view of land use and have the financial strength to invest.

Overall, agricultural land remains a good long term investment and while the growth in agricultural land values is slowing, they have increased by 41% between 2008 and 2018.¹⁵ Therefore, renting out agricultural land is usually considered to be a more attractive prospect than selling.

3.1.4 Trends in cropping

Published statistics on cropping for Wirral are limited and comments in this section are based on overall trends and substantial changes. The Defra June Survey provides high level information as shown in Table 3 below but further breakdown (e.g. for potatoes, wheat, beans etc.) is not available.

TABLE 3: CHANGES IN CROPPING AREAS IN WIRRAL (HA)

	2007	2010	2013	2016
Cereals	961	1046	1147	1039
Arable (exc. Cereals)	349	346	574	544
Fruit & Vegetables	54	32	47	23
Grassland	2743	2885	2903	2516

Source: Defra, 2019

There has been a notable increase in arable crops, excluding cereals such as wheat and barley. This is likely to be due to an increase in land rented or contracted out to specialised growers e.g. for potatoes. Fruit and vegetable production appears to be in decline with a 43% decrease in area farmed between 2007 and 2016. Market prices over this period have improved for cereals, oilseeds and root crops, thus making these enterprises more attractive than fruit and vegetables.

Nationally, there has been growth in farming cash crops such as potatoes and field-grown vegetables (included in general cropping). This tends to be on fewer, more specialist units or land rented on short term agreements. In England there has been a 3% increase in general cropping farmed area since 2007 but a 13% reduction in the number of general cropping holdings. However, in Wirral the area has increased by 56% since 2007 but the number of holdings has remained unchanged at 13 (Table 2).

General cropping makes a higher gross margin than other arable activities but requires good soil to produce sufficient yields, specialised machinery and good access to markets. This means that there is a high likelihood that the increase in area has been driven by farmers letting land to specialised producers for general cropping such as potatoes.

Table 4 below estimates the cropping allocation for Wirral in 2016. This information has been derived by ADAS from a combination of RPA CROME data (2016) and the Defra June Agricultural Survey for 2016. The figures indicate a range of agricultural enterprises with a focus on lowland grazing livestock, cereal production and general cropping.

¹⁵ <https://bit.ly/2uARDQY>

TABLE 4: CROPPING ALLOCATION IN WIRRAL – 2016

Cropping	Area (Ha)
Permanent and Managed Grass	2582.41
Non-agricultural and Unknown	510.51
Wheat	449.67
Winter Barley	146.95
Maize	132.38
Woodland	131.82
Oil Seed Rape	105.35
Field Beans	80.56
Other Arable or Cereals	76.65
Spring Barley	73.98
Other Stockfeed	60.26
Other Vegetables	55.17
Fallow	45.72
Potatoes	45.31
Oats	33.23
Peas and Beans	29.73
Grand Total	4559.71

Source: ADAS, 2019

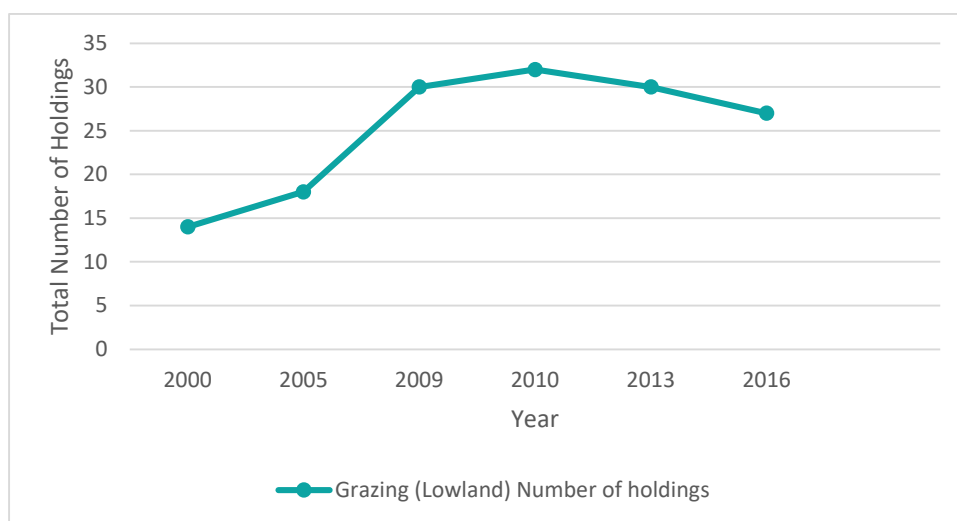
A map showing the location of these crops is included as [Appendix 2](#).

It can be seen that land used for cereal production and general cropping is not concentrated in one area of Wirral. Assumptions cannot be drawn on the correlation between enterprise type and agricultural land classification as other factors such as proximity to market, secondary processors and diversification opportunities also influence land use.

3.1.5 Livestock Holdings and Numbers

Lowland grazing farms (excluding dairy) account for more than 66% of the standard output in Wirral. As can be seen in Figure 6, there has been a 93% rise in the proportion of holdings entering or increasing their grazing livestock numbers since 2000.

FIGURE 6: TOTAL NUMBER OF HOLDINGS, GRAZING LIVESTOCK (LOWLAND), 2000 – 2016



Source: Defra, 2019

Table 5 shows a steady decline in cattle numbers in Wirral since 2007. These figures have been sourced from the Cattle Tracing System (CTS). The data include returns from all holdings with cattle so they are not subject to survey error.

TABLE 5: TREND IN CATTLE NUMBERS IN WIRRAL, 2007 – 2016

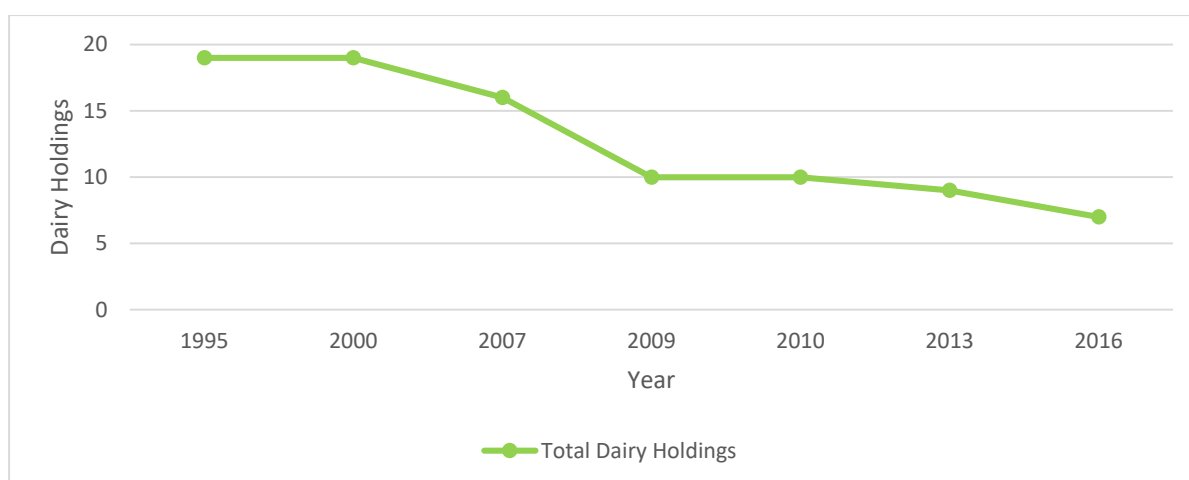
	2007	2010	2013	2016
Cattle	4,575	4,592	4,366	3,929

Source: Defra, 2018

The impact of the 2004 CAP reform is likely to have contributed to a fall in the numbers of livestock nationally (the incentives of a payment for each animal having been removed), particularly for cattle and sheep.

Figure 7 and Table 6 indicate a steady reduction in the number of both dairy holdings and dairy cattle in Wirral since 1995. However, as shown previously in Figure 4 approximately 30% of all land use in Wirral is attributed to dairy production, which is shown from Figure 7 to be on only seven dairy holdings.

FIGURE 7: TOTAL DAIRY HOLDINGS IN WIRRAL, 1995 – 2016



Source: Defra, 2019

TABLE 6: TOTAL DAIRY CATTLE IN WIRRAL, 1995 – 2016

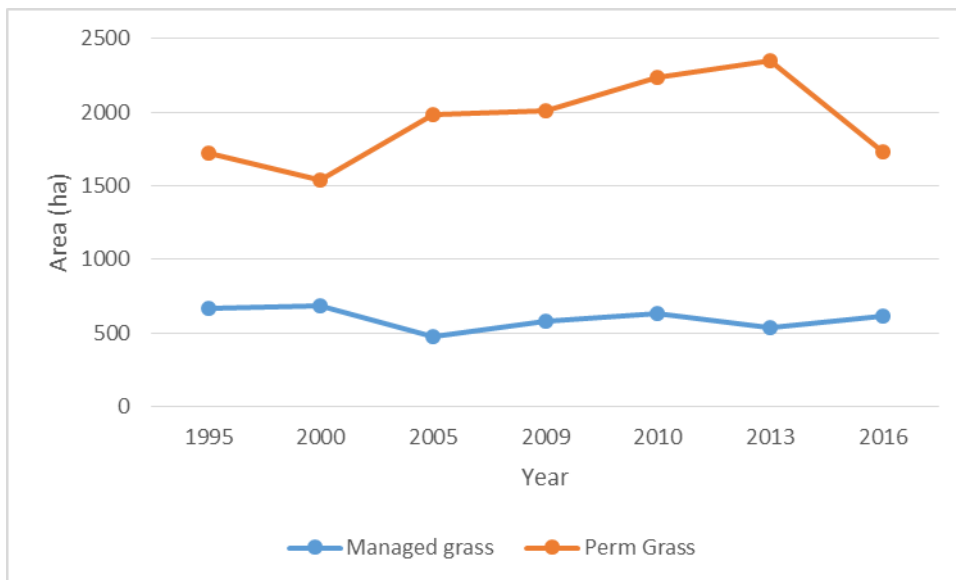
	1995	2000	2007	2009	2010	2013	2016
Dairy Cattle	2,208	2,222	#	#	1,668	1,720	1,549

Source: Defra, 2019

Land use in dairy enterprises would be typified by managed grassland used for a combination of grazing and/or conserved forage production. Other enterprises often seen alongside dairy units might include cereal production and beef rearing.

The reduction in dairy cattle numbers has not resulted in a reduction in managed grassland as can be seen in Figure 8. Variations in permanent grassland figures could potentially be due to fluctuations resulting from the small sample size.

FIGURE 8: PERMANENT AND MANAGED GRASSLAND, 1995 – 2016

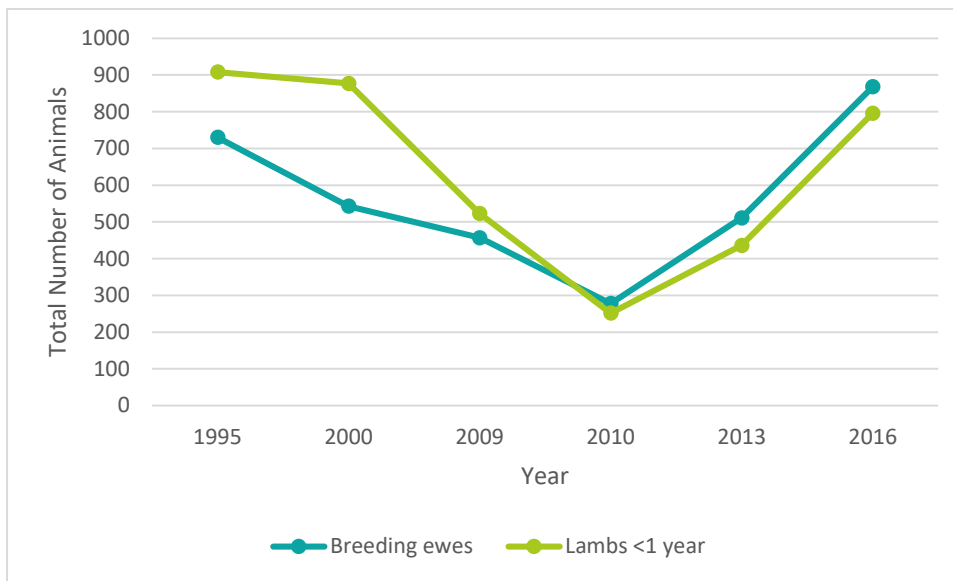


Source: Defra, 2019

These trends would indicate that another grass based enterprise has replaced the fall in dairy enterprises i.e. a change from dairy to lowland grazing.

The sheep flock in Wirral dropped between 1995 and 2010 but has increased since as can be seen in Figure 9. This is consistent with more land now being defined as 'lowland grazing'.

FIGURE 9: TOTAL NUMBER OF BREEDING EWES AND LAMBS LESS THAN 1 YEAR OLD, 1995 – 2016



Source: Defra, 2019

3.1.6 Labour Changes

The labour force involved in agriculture in Wirral is reported to have declined by 17% from 208 to 178 since 2000 (Figure 10). This is a slightly larger drop than for England as a whole, where labour numbers employed in agriculture dropped by 10% between 2000 and 2016.

FIGURE 10: TOTAL AGRICULTURAL LABOUR IN WIRRAL, 2000 – 2016



Source: Defra, 2019

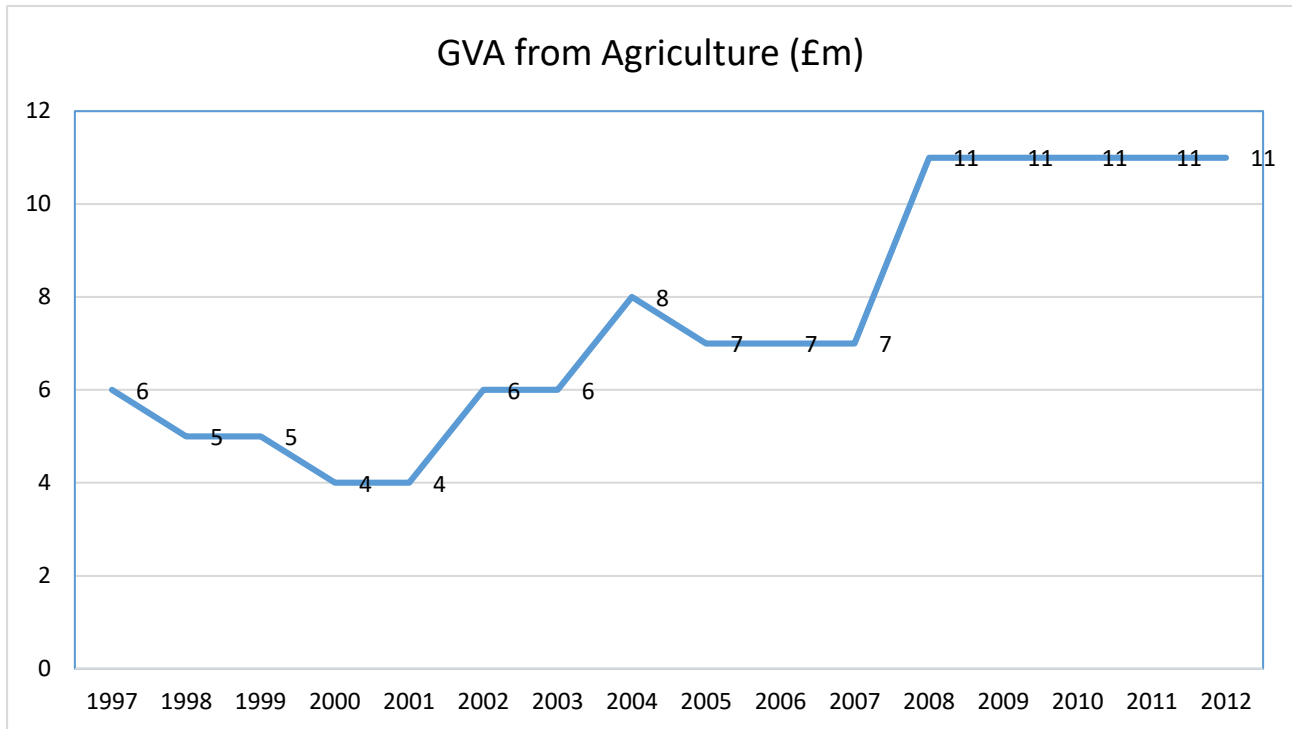
The reduction in full time employees is likely to be due in part to a change from more to less labour intensive enterprises (e.g. sheep) and to increased numbers of larger holdings. Poorer margins and market uncertainty are also likely to have influenced decisions and to have increased the need to generate income from off farm employment.

Total employment in Wirral stood at 102,400 in 2016. Employment in agriculture therefore represents only 0.2% of the total¹⁶.

3.1.7 Gross Value Added (GVA)

According to Office for National Statistics (ONS) data for 1997 to 2012, agriculture has contributed between £4m and £11 million per annum to the total economy in Wirral (see Figure 11). This accounted for only 0.2% of the GVA generated by the economy in the Borough in 2012. For the same year, this compares to 0.4% from the agricultural sector for the North West region and 0.7% for England, reflecting the urban nature of the Borough (calculated from regional GVA tables).

FIGURE 11: GVA GENERATED FROM AGRICULTURE IN WIRRAL, 1997-2012



Source: Office for National Statistics (ONS)¹⁷

Overall, the contribution of agriculture to the wider economy in Wirral is small both in terms of GVA and employment.

3.2 Physical Review of Agriculture in Wirral

A physical review of agriculture in Wirral was undertaken by ADAS on 9 May 2019. The focus of the review was on sites which are fully or partly in agricultural use and which have been identified for further investigation, as

¹⁶

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/localauthoritycountybusinessregisterandemploymentsurveybrestable5>

¹⁷ <https://www.ons.gov.uk/economy/grossvalueaddedgva/timeseries/ku37/ragy>

part of Wirral Council’s Initial Green Belt Review¹⁸. The purpose was to cross check emerging data from desk research outlined in section 3.1 and to provide a description of agriculture in these areas.

The following key points should be noted:

- Due to GDPR, ownership of land within identified sites is unknown. Observations on proximity to farm yard infrastructure and potentially-associated diversifications were made but no assumptions could be drawn on the impact of land use, or loss of land, on any particular farm unit.
- Observations were made on current land use but this does not necessarily correlate with the agricultural capacity of the land. This can only be determined by a physical Agricultural Land Classification survey.

A full list of sites reviewed and the enterprises recorded on the date of the review is shown in [Appendix 3](#).

3.2.1 Current agricultural land use in Wirral

A map has been created summarising the enterprises which were observed during the physical review of sites identified by Wirral Council for further investigation. This is shown in [Appendix 4](#). The original map of sites identified as part of the Initial Green Belt Review is shown in [Appendix 5](#).

In general, physical observations from the review support the published data gathered. The majority of agricultural land in Wirral is grassland, used for grazing purposes or forage production for winter-housed lowland grazing livestock.

Table 7 provides a summary of enterprises observed on the sites identified for further review. It should be noted that managed grassland observed may be part of an arable rotation i.e. grass grown before or after arable crops as opposed to being a permanent grass field. Information on horse locations has been provided where they have been observed.

TABLE 7: ENTERPRISE LOCATION SUMMARY

Type of Enterprise	Identified Sites
Grassland	SP001, SP002C, SP004A, SP005A, SP010A, SP013, SP032, SP033, SP035, SP036, SP037, SP042, SP044, SP045, SP046, SP061, SP062, SP064E, SP071
Horses	SP001, SP033, SP035, SP061, SP062
Cereals & General Cropping	SP013, SP019B, SP030, SP031, SP040, SP042, SP043, SP046, SP049, SP050, SP051, SP052, SP059E

Source: ADAS, 2019

There is no geographical trend in relation to the location of grassland or land used for arable production.

Lowland Grazing Livestock (e.g. beef cattle, sheep, horses)

On the date of the review, very few cattle or sheep were observed on the land. This could be due to ground conditions not yet being satisfactory to support livestock. Where it was possible to observe farm yard infrastructure from public highways or footpaths, larger numbers of housed beef cattle were observed. Sizeable blocks of land in grassland production were noted in Greasby, Heswall and Storeton (SP001, SP060, SP036, SP037 and SP041).

¹⁸ <https://www.wirral.gov.uk/planning-and-building/local-plans-and-planning-policy/local-plans/core-strategy-local-plan-7>

Horses were prevalent, particularly in the areas identified for further investigation. Horses are now included within agricultural survey data as lowland grazing livestock, though whether or not a horse paddock is considered agricultural land depends on how it is being used. There are differing opinions over what constitutes agriculture in relation to horses, though the legislative definition of agriculture remains, *“horticulture, fruit growing, seed growing, dairy farming, the breeding and keeping of livestock (including any creature kept for the production of food, wool, skins or fur, or for the purpose of its use in the farming of land) the use of land as grazing land, meadow land, osier land, market gardens and nursery grounds and the use of land for woodlands where that use is ancillary to the farming of land for other agricultural purposes.”*¹⁹.

Wirral has a high human population density, with a large proportion of agricultural land in the urban fringes. Due to high levels of demand, this area is attractive for horse grazing and DIY livery diversifications. Diversification was also evident in the form of direct beef sales through a box scheme in Storeton linked to a dairy and beef cattle unit.

Dairy

There are two notable blocks of permanent and managed grassland in the sites for further investigation in Greasby and Storeton (SP001, SP036, SP037 and SP041). These appear to align with two large dairy farms.

Due to proximity to areas of high population, there are opportunities to add value to milk produced. There was evidence of this in the form of milk sales direct to consumers and secondary processing of products such as ice cream. This diversification is likely to be in addition to a core contract with a wholesale milk processor.

Cereals and General Cropping

The majority of crops observed were cereals, especially winter wheat and spring barley, with lower acreages of winter oilseed rape, maize and beans. Sites identified for further investigation with sizeable areas in arable production were around Heswall, Poulton Hall, north of Lever Causeway and Eastham (SP033, SP042, SP043, SP050, SP051 and SP062). A site near Eastham Rake Station (SP046) was not visible from public highways or footpaths but, from satellite imagery, it appears to be in arable production.

It is likely that some of the cereals being grown will be used for cattle fodder on the same unit or by neighbouring dairy or cattle farms. In small agricultural communities like Wirral there is often a greater focus on self-sufficiency or symbiosis between complimentary enterprises. Dairy and cattle enterprises use cereals for feed and straw for bedding, while arable enterprises can make use of organic manures as fertiliser for crops.

3.2.2 Agricultural Infrastructure

There is limited agricultural infrastructure in Wirral, which is to be expected due to it being a peninsula; however, there is an increased range of agricultural services within an hour's drive including the following:

- Livestock Market
- Farm Animal Vets
- Agricultural Contractors
- Grain Merchant
- Farm Machinery & Repairs
- Dairy Wholesalers
- Agricultural Supplies

Many agricultural service providers travel to the farm, rather than farmers travelling out but large travel distances will have an impact on input costs and could therefore contribute to consolidation in the agricultural sector.

¹⁹ <http://www.legislation.gov.uk/ukpga/Geo6/10-11/48/contents>

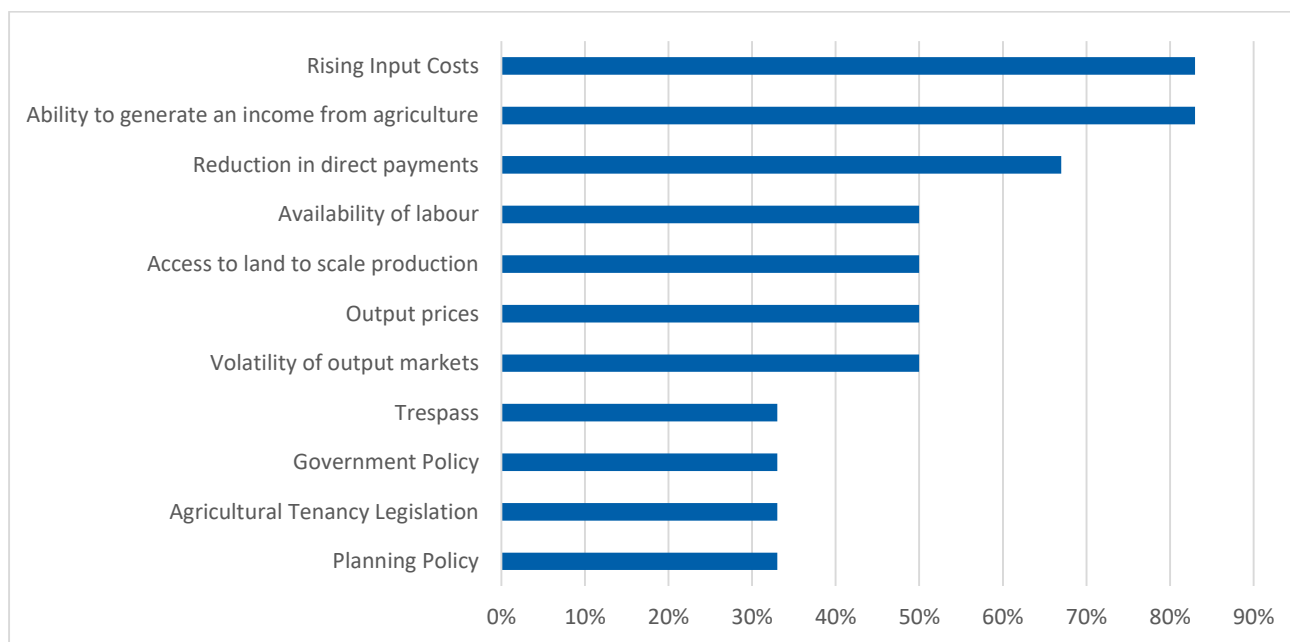
4 THE FUTURE DIRECTION OF AGRICULTURE IN WIRRAL

Incomes from agriculture are affected by a range of factors, not necessarily related to geographic location. This section reviews income trends at a national level. It also highlights the key challenges articulated by farmers in Wirral and what they believe the impact of these will be on the future direction of their business. To achieve this, a stakeholder consultation was undertaken to gather opinion from agricultural landowners, tenant farmers and statutory consultees. This was achieved by a mix of online and postal surveys and telephone interviews. Despite this mixed methodology, the response rate was low. The full set of survey questions are shown in [Appendix 11](#).

4.1 Farm returns and viability

Farm Business Income (FBI) varies greatly between different farming enterprises with 14% of UK farms failing to achieve a positive FBI in 2017/18. In the same year just under a third of UK farms had a FBI of over £50,000²⁰. This is supported by responses from Wirral farmers to the survey. As can be seen from Figure 12 below, 83% believed that the ability to generate a living income from agriculture was one of the most important challenges they currently face.

FIGURE 12: CURRENT CHALLENGES FACING WIRRAL FARMERS



4.1.1 Farm Business Income Trends

The overall trend in FBI reflects an increase in income across all farm types, except specialist poultry and pigs, since 2013/14. Table 8 shows that for each farm type there has been significant variation in income across this period, which highlights the vulnerability of the sector to market volatility.

²⁰ <https://www.gov.uk/government/statistics/agriculture-in-the-united-kingdom-2018>

TABLE 8: AVERAGE FARM BUSINESS INCOME BY TYPE OF FARM IN ENGLAND (£/FARM)

Farm Type	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19 forecast	% Change 2018/19 / 2017/18
At current prices							
Cereals	49,600	45,000	35,500	43,100	64,200	73,000	13%
General cropping	67,600	52,000	62,600	70,100	93,300	85,000	-8%
Dairy	87,800	83,800	43,900	50,000	119,700	93,000	-22%
Grazing livestock (Lowland)	15,100	18,500	12,000	16,100	21,900	16,000	-29%
Grazing livestock (LFA)	14,500	14,600	19,000	27,000	28,300	24,000	-17%
Specialist pigs (a)	65,200	49,400	21,600	57,800	31,300	1,000	-96%
Specialist poultry (a)	157,200	126,800	106,700	54,200	96,000	53,000	-45%
Mixed	29,600	21,600	18,400	28,800	41,800	38,000	-10%
In real terms at 2018/19 prices (b)							
Cereals	53,900	48,100	37,800	45,000	65,500	73,000	11%
General cropping	73,600	55,500	66,700	73,200	95,200	85,000	-10%
Dairy	95,500	89,500	46,800	52,100	122,200	93,000	-24%
Grazing livestock (Lowland)	16,400	19,700	12,800	16,800	22,300	16,000	-30%
Grazing livestock (LFA)	15,800	15,600	20,200	28,100	28,900	24,000	-19%
Specialist pigs (a)	70,900	52,800	23,000	60,300	31,900	1,000	-96%
Specialist poultry (a)	171,000	135,500	113,500	56,500	98,000	53,000	-46%
Mixed	32,200	23,100	19,600	30,000	42,700	38,000	-12%

Years ending end February. Data rounded to the nearest thousand. The percentages shown are calculated against the unrounded figures.

^(a)The sample sizes for specialist pig and poultry farms are relatively small and the confidence intervals relatively large. Results for individual farms can have a large influence on the overall results

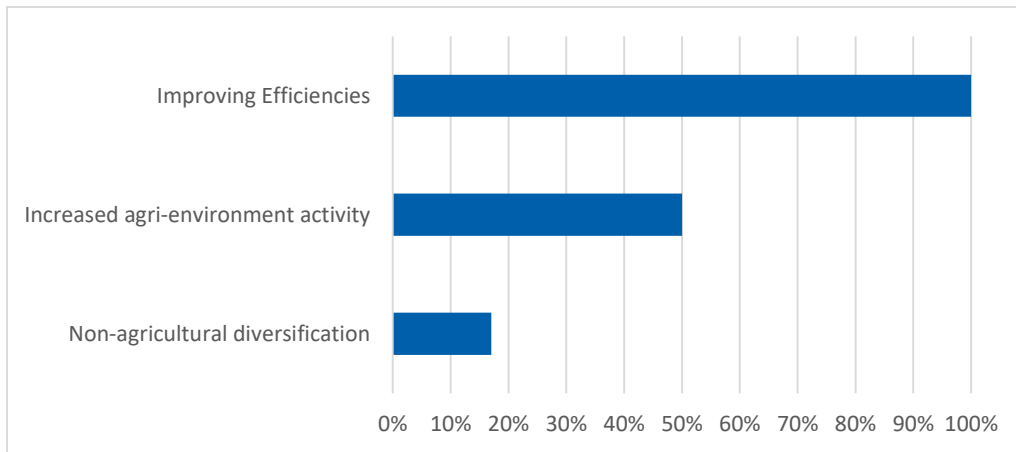
^(b) Uses GDP deflator

Source: DEFRA, 2019²¹

Input costs show less fluctuation but are increasing. Farmers often have to absorb higher costs, resulting in smaller margins and this impacts upon their ability to reinvest in measures to improve productivity. As shown in Figure 12 Wirral farmers also identified rising input costs and one of the main challenges to agriculture. This correlates with the output of the survey question relating to future priorities. Figure 13 shows that 100% of farmers responding to the consultation intend to focus on improving efficiencies in their existing enterprises. While farmers are unable to control rising input costs, reducing output prices, or changes to direct payments, improving efficiencies and productivity will reduce the impact on these on farm viability.

²¹ <https://www.gov.uk/government/statistics/farm-business-income>

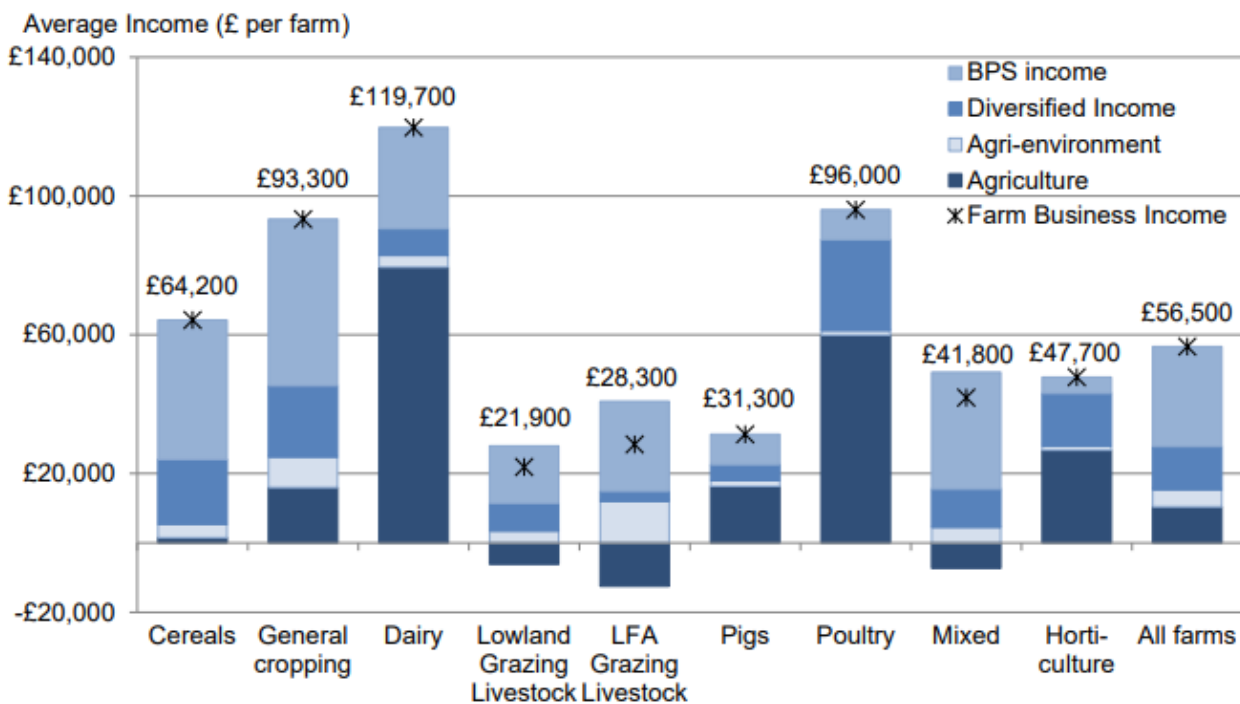
FIGURE 13: FUTURE PRIORITIES FOR WIRRAL FARMERS



4.1.2 Farm Business Income 2017/18

Figure 14 provides an average breakdown of farm incomes in 2017/18, by farm type. The total income figure here (e.g. £64,200 for cereals) is taken from Table 8. It is important to note that this represents only a ‘snapshot’ of incomes since there is variation between individual units and also from year to year due to factors such as market price fluctuations and growing conditions due to the weather.

FIGURE 14: FARM INCOME ACROSS ALL FARM TYPES IN ENGLAND



Source: DEFRA, 2018²²

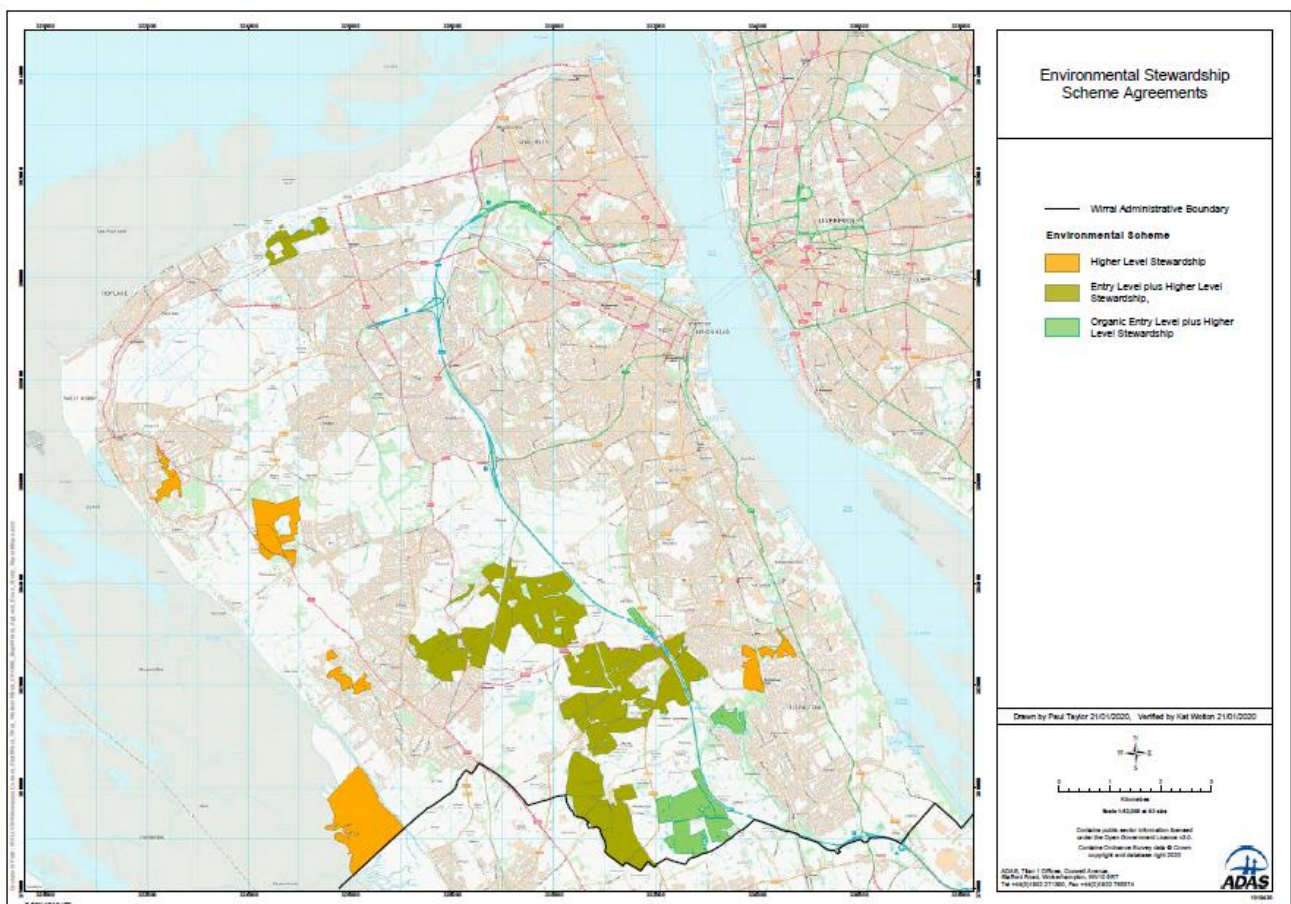
Note: Farm Business Income represents the surplus or deficit before imputing any notional charges such as unpaid family labour costs and rental value and is similar to net profit as used in financial accounts. The Cattle and Sheep (LFA) category refers to livestock farms in the uplands (Less Favoured Areas and is not relevant to Wirral).

²² <https://www.gov.uk/government/statistics/farm-business-income>

This highlights a high reliance across the agricultural sector on direct support payments (BPS) and (to a lesser extent) on agri-environment payments for income; however, this is currently less noticeable in the dairy sector, which has been buoyed by an increase in average output prices over the past two years²³.

The results show that farms in the lowland grazing livestock sector, which typically includes beef cattle and sheep farms nationally made a loss from agricultural production. They therefore relied heavily on BPS, diversification and agri-environment payments. Data on farm business incomes are not available below a national level, but it would be expected that farms in Wirral would follow national trends. As shown in Figure 4, dairy and lowland grazing are the predominant farm types in Wirral. Figure 15 shows the current area and location of land in agri-environment schemes in Wirral, which totals 1,273 hectares. In these areas, farmers continue to be supported financially, helping to maintain the viability of smaller businesses, but this can limit structural change and competitiveness. Furthermore, farmers can opt to manage land for environmental purposes, at the expense of food production. Some of the land around the Arrowe Brook near Prenton is in a high priority area for water quality and therefore, applicants in this area would be eligible to apply for capital grants in order to reduce sediment and phosphate in water courses.

FIGURE 15: LAND SUBJECT TO AGRI-ENVIRONMENT SCHEMES AGREEMENT IN WIRRAL



Source: Natural England, 2019²⁴

²³ <http://dairy.ahdb.org.uk/market-information/milk-prices-contracts/farmgate-prices/uk,-gb-and-ni-farmgate-prices/#.XQE5H4hKjIU>

²⁴ Contains OS data © Crown copyright and database right (2020)

These figures highlight the current importance and sensitivity of financial support to the agricultural sector but it is noted that the UK government is currently reviewing future support mechanisms (see section 4.2). It is therefore unsurprising that farmers, questioned on where they anticipate making changes to their farming business in future, identified an increase in agri-environment activity (as shown in Figure 13).

4.1.3 Farm Business Income Forecast

Current forecasts for England in 2018/19 predict a fall in incomes across all farm types except for cereals, largely due to assumed increases in input costs. Whilst only indicative, they are likely to have been substantially impacted by drought conditions experienced in the summer of 2018. This limited forage production for livestock feed, thus requiring higher quantities to be bought in.

Factors affecting the top four farm types in Wirral for 2018/19 are summarised in Table 9 below.

TABLE 9: FARM BUSINESS INCOME FORECAST SUMMARY (ENGLAND), 2018/19

Farm Type	Forecast (% income change)	Commentary
Dairy	-22%	A small increase in output driven by increased feeding will be negated by a rise in input costs, particularly livestock feed.
Grazing Livestock (Lowland)	-29%	Following challenging weather conditions, lowland grazing livestock units will have a particularly challenging year. A reduction in output prices as a result of reduced finished weights combined with increasing feed costs will further squeeze margins.
Cereals	+13%	Cereal enterprises will also have a challenge of increasing input costs, particularly for fuel and oil. However, challenging growing conditions has also resulted in lower yields, which has led to a reduction in supply. This has resulted in a forecasted increase in cereal prices.
General Cropping	-8%	Input costs are expected to rise more than output prices for arable crops, excluding cereals resulting in a small reduction in income.

Source: Adapted from DEFRA, Farm Business Income Forecast 2018/19²⁵

The forecasts in Table 9 only account for the agricultural enterprise. Individual units which undertake secondary processing or farm gate sales could add value to standard output prices (e.g. those farms observed across Wirral with direct milk sales, ice cream and beef boxes). Of the respondents from the stakeholder consultation, only 17% identified non-agricultural diversification as a key change to the future business.

Longer-term analysis undertaken by Savills indicates that farm incomes are unlikely to improve. Figure 16 indicates that while it will remain attractive to own farmland in the UK, the ability to generate a commercial income will prove harder to achieve without focusing on diversity and quality of output.

²⁵ <https://www.gov.uk/government/statistics/farm-business-income>

FIGURE 16: UK FARMLAND FORECASTS 2019 – 2023



Source: Savills Research, 2019²⁶

4.2 Future changes in agricultural policies

The current political situation means that there is uncertainty about the future of the agricultural sector. However, the Government has released policy documents setting out its vision for the future.

4.2.1 Agriculture Bill 2017 - 19

The Agricultural Bill 2017 - 19²⁷ was introduced and had its first reading in September 2018. It covers issues such as expenditure on agriculture, direct support payments (BPS), causes for intervention in agricultural markets and World Trade Organisation regulations.

Nearly £4 billion is currently allocated to farmers across the UK through the Common Agricultural Policy. The Government has stated its plans to reduce these direct payments by phasing them out during a transition period. Currently it is intended that BPS payments will be reduced in stages from 2021-2027, with none available in 2028. In 2021, businesses receiving up to £30,000 in BPS face a reduction of up to 5%, with a 25% reduction for those receiving £150,000 or more.

It is proposed that from 2025 BPS payments and the existing Countryside Stewardship scheme will start to be replaced with a new Environmental Land Management scheme. This would pay farmers for environmental services that manage the natural capital of the land i.e. benefits derived. A transition to payment for this type of approach could mean that less emphasis is placed on food production in certain areas. However, the method and rate of payment has not yet been decided and so it is uncertain whether it will fully replace the void left by the outgoing BPS payments.

The proposed redirection of direct subsidies to payment for provision of public goods e.g. improved water and air quality, flood management, recreational services and biodiversity, is well publicised. This is likely to be

²⁶ https://www.savills.co.uk/research_articles/229130/273890-0/spotlight--the-farmland-market---january-2019

²⁷ <https://services.parliament.uk/Bills/2017-19/agriculture.html>

influencing the likelihood that farmers in Wirral will increase agri-environment activities in the future, as shown in Figure 13.

4.2.2 25 year Environment Plan

In 2018 the Government released their 25 year Environment Plan²⁸. The priorities and targets in this plan relate to:

- clean air;
- clean and plentiful water;
- thriving biodiversity;
- reducing harm on the environment caused by hazards;
- sustainable and efficient use of natural resources;
- enhancing cultural heritage;
- mitigating and adapting to climate change;
- minimising waste;
- managing exposure to chemicals;
- improving biosecurity.

The Environment (Principles and Governance) Bill²⁹ sets out, in part, how the Government will implement the 25 year plan. It will involve setting up an environmental body (currently referred to as the Office of Environmental Protection) which will plan, monitor and report on implementation.

²⁸ <https://www.gov.uk/government/publications/25-year-environment-plan>

²⁹ <https://www.parliament.uk/business/committees/committees-a-z/commons-select/environmental-audit-committee/inquiries/parliament-2017/copy-this-page-inquiry-name-17-191/>

5 REVIEW OF SOIL AND GEOLOGICAL INFORMATION

This section of the report gives the results of a desk study of the potential agricultural land quality across Wirral. It includes a review of published soil and geology data, provisional Agricultural Land Classification (ALC) maps and publicly available site soil survey findings.

A climate study has also been undertaken to determine the limitations that climate places on potential agricultural and horticultural land use. This covers direct climate limitations as well as details of how the varying climates might interact with the physical soil characteristics to limit land use.

5.1 Mapped Soils

The principle physical factors influencing agricultural production are climate, site and soil. These factors together with interactions between them form the basis for classifying land into ALC grades, with grade 1 land being of excellent quality and grade 5 land of very poor quality. Accurate figures for ALC grades of agricultural land in Wirral 'as a whole' are not available and could only be established by extensive survey work. However, data published in 1993 provides estimates of the areas of agricultural land within each major soil association³⁰. Whilst the area of agricultural land is likely to have reduced since this data were published, it is thought to still provide a reasonable estimate of agricultural soils in Wirral.

Wirral soils are shown on the National Soil Map as falling predominantly within five major soil associations; namely Clifton, Bridgnorth, Blackwood, Sandwich and Salwick, distributed as shown in Table 10. [Appendix 6](#) shows an extract of the National Soil Map for Wirral with soil descriptions.

TABLE 10: MAJOR SOIL ASSOCIATIONS OF WIRRAL

Major Soil Associations	Area (ha)	% of total	% of non-urban
Clifton	681	8.2%	36
Bridgnorth	287	3.5%	15
Blackwood	227	2.7%	12
Sandwich	220	2.7%	12
Salwick	102	1.2%	5
Other associations	365	4.4%	19
Unclassified/Urban	6,414	77.3%	-

Source: Landis, 2019

The table shows that unclassified and urban areas represent some 77% of the total and these are likely to comprise a mix of the five named associations. Other soil associations mapped in Wirral include Wick 1 and Enborne. Brief descriptions of soil associations found in Wirral³¹ are set out below.

³⁰ Agricultural Statistics for the Metropolitan Borough of Wirral, National Environmental Database, ADAS Leeds, 1993

³¹ Landis.org.uk

Clifton: Slowly permeable seasonally waterlogged reddish fine and coarse loamy soils and similar soils with slight seasonal waterlogging. Some deep coarse loamy soils seasonally affected by groundwater. These soils are found extensively throughout Wirral and make up a very large proportion of all soils in the region, particularly away from the west and north coastlines. However, much of this land is now urban, which results in Clifton making up only 36% of agricultural land (in 1993).

Bridgnorth: Well drained sandy and coarse loamy soils over soft sandstone. Occasional deeper soils. Risk of water and wind erosion. These soils are found throughout Wirral, predominantly in areas of slightly higher altitude than Clifton soils; mostly at 40-70m.

Blackwood: Deep permeable sandy and coarse loamy soils. Groundwater controlled by ditches. Only found close to the northern coastline in Wirral, approximately 300-800m inland.

Sandwich: Mainly deep well drained calcareous and non-calcareous sandy soils. Some sparsely vegetated unstable soils. Waterlogged soils in hollows locally. Shingle bars and spits locally extensive. Risk of wind erosion. Only found along the northern coastline.

Salwick: Deep reddish fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging. Some deep well drained coarse loamy soils. Some fine loamy soils affected by groundwater. Mostly found along the western coastline, south of West Kirby.

Wick 1: Deep well drained coarse loamy and sandy soils locally over gravel. Some similar soils affected by groundwater. Slight risk of water erosion. These soils are found in the south-eastern corner of Wirral within a mile of the coast, to the north of Eastham.

Enborne: Deep stone-less fine loamy and clayey soils variably affected by groundwater. Flat land. Risk of flooding. Only found close to the northern coastline in Wirral, slightly inland from Sandwich soils.

5.2 Mapped geology

A review was made of the geology across Wirral, as described by the British Geological Survey³².

- Sandstone makes up the solid geology of the majority of Wirral; namely Helsby, Wilmslow, Chester and Delamere Formations. This is sedimentary bedrock formed approximately 240 to 252 million years ago in the Triassic Period.
- Sidmouth Mudstone Formation bedrock is found to the north and west of Upton. This is sedimentary rock formed approximately 228 to 250 million years ago in the Triassic Period.
- Bedrock to the south of Upton, down to the south of Irby, is of the Tarporley Siltstone Formation – siltstone, mudstone and sandstone. This is also sedimentary rock formed approximately 242 to 250 million years ago in the Triassic Period.
- Away from the coastline, Devensian Till deposits of clay, sand and gravel make up most superficial geology in Wirral. These deposits formed up to 2 million years ago in the Quaternary Period.
- Close to the east coast and slightly inland of the northern coastline, tidal flat deposits of clay, silt and sand are found. These deposits formed up to 2 million years ago in the Quaternary Period.
- Superficial deposits of blown sand are found close to the northern coastline. These deposits were formed up to 3 million years ago in the Quaternary Period.

Detailed geology maps can be found in [Appendix 7](#) (bedrock) and [Appendix 8](#) (superficial).

³² British Geological Survey ©UKRI. All rights reserved

5.3 Agricultural Land Classification (ALC)

When undertaking an ALC investigation, the climate, site and soil of the land is graded individually on a scale of 1 – 5. All locations in Wirral have an ALC climate grade of 1, which indicates that there are no overall climate limitations on ALC grade within Wirral. However, variations in climate between individual sites will interact with the physical soil characteristics to define the overall limitations and ALC grade. For example, it is possible that the land at the northern end of Wirral peninsula near the coast may be subject to local climatic factors (exposure) which could pose a climatic limitation on the ALC grade of the land.

Details for 16 ALC surveys within Wirral were found during this study. A brief summary of each is presented in [Appendix 9](#) and summarised in Table 11.

TABLE 11: SUMMARY OF ALC SURVEY AREAS IN WIRRAL FROM 1988 TO 1997

ALC Survey Location	SP/SHLAA Ref	Mapped soil association	Area of ALC grade (ha)					Total area (ha)	
			1	2	3a	3b	4		5
Land west of Birch Road, Meols	0904	Blackwood			7.0				7.0
Land south of Fornalls Green Lane, Meols	1933	Blackwood				1.0			1.0
Land east of Raby Hall, Raby	SP045	Bridgnorth			2.7				2.7
Irby Road, Thurstaston	SP059E	Bridgnorth			18.1	2.6			20.7
Greenhouse Farm, Greasby	SP010A	Bridgnorth		3.2	1.0				4.2
Diamond Farm, Saughall Massie	SP004A	Clifton			8.1				8.1
Chester High Road, Gayton	SP071	Clifton			8.3	6.1			14.4
Vineyard Farm, Poulton	SP043	Clifton		3.0	9.8				12.8
Land east of Raby Hall, Raby	SP045	Clifton			0.9				0.9
Land north of Greasby	SP001	Clifton				12.2			12.2
Land west of Harrock Wood	SP060	Clifton			1.8	2.4			4.2
Land east of Harrock Wood	SP060	Clifton			1.5	7.2			8.7
China Plate farm, Newton	1965	Clifton			13.6	5.7			19.3
Land south of Pickmere Drive, Eastham	SP049	Clifton			2.3				2.3
Irby Road, Thurlaston	SP059E	Clifton			11.9	17.8			29.7

ALC Survey Location	SP/SHLAA Ref	Mapped soil association	Area of ALC grade (ha)					Total area (ha)	
			1	2	3a	3b	4		5
Greenhouse Farm, Greasby	SP010A	Clifton		0.6	2.9				3.5
Carr Lane, Moreton	1950	Enborne			1.6	1.0	5.2		7.8
Riverbank Road, Heswall	1939,1968	Salwick		2.1					2.1
The Birches, Birkenhead Road, Meols	n/a	Sandwich			0.3	0.9			1.2
Land south of Pickmere Drive, Eastham	SP049	Wick 1		2.7	2.5				5.2

Table 12 shows the total area represented by each soil association and the proportion of the total which is within each ALC grade. It can be seen that around 90% of agricultural land within these particular surveys was graded as either 3a or 3b.

TABLE 12: SUMMARY OF ALC SURVEY RESULTS BY SOIL TYPE

Mapped soil association	Area ALC grade (ha)						Total area (ha)
	1	2	3a	3b	4	5	
Blackwood	0.0	0.0	7.0	1.0	0.0	0.0	8.0
Bridgnorth	0.0	3.2	21.8	2.6	0.0	0.0	27.6
Clifton	0.0	3.6	61.1	51.4	0.0	0.0	116.1
Enborne	0.0	0.0	1.6	1.0	5.2	0.0	7.8
Salwick	0.0	2.1	0.0	0.0	0.0	0.0	2.1
Sandwich	0.0	0.0	0.3	0.9	0.0	0.0	1.2
Wick 1	0.0	2.7	2.5	0.0	0.0	0.0	5.2
Total	0	12	94	57	5	0	168.0
%	0%	7%	56%	34%	3%	0%	

In Table 13, the percentages of the major soil associations in non-urban land (as set out in Table 10) have been combined with the breakdown of land in each ALC class (from Table 11) to produce an overall estimate of soil association and ALC grade for all agricultural land in Wirral. In effect, this extrapolates the results from the 16 ALC surveys reported. The findings should be used for general guidance only at this stage, pending more detailed investigations.

TABLE 13: ESTIMATES OF LAND AREA OF EACH ALC GRADE WITHIN MAJOR SOILS ASSOCIATIONS FOUND IN WIRRAL

Mapped soil association	Area (ha)	% of agricultural land	Calculated area of each ALC grade (ha) within agricultural land in Wirral					
			1	2	3a	3b	4	5
Blackwood	227	12	0	0	199	28	0	0
Bridgnorth	287	15	0	33	227	27	0	0
Clifton	681	36	0	21	358	301	0	0
Salwick	102	5	0	102	0	0	0	0
Sandwich	220	12	0	0	55	165	0	0
Total	1517		0	156	839	522	0	0
%		80	0	8	44	28	0	0

Figures in Table 13 do not include estimates of ALC grades within less commonly found soil associations, which make up approximately 20% of agricultural land in Wirral predominantly Enborne and Wick 1 associations.

Enborne soils (as detailed in 5.1) are seasonally waterlogged, wetness class (WC) III and IV. In this location it is likely that the majority of these soils would be limited to ALC grades 3b or 4 due to soil wetness, (i.e. not BMV agricultural land). Table 11 shows that 80% of the survey area at Carr Lane, Moreton (Enborne) was graded as 3b or 4.

Wick 1 soils (as detailed in 5.1) are deep, freely draining loamy and sandy soils and generally classed as good quality farm land³³. It is anticipated that most Wick 1 soils in Wirral would be classed as BMV land. Table 11 shows that all of the survey area in land south of Pickmere Drive, Eastham with Wick soils was graded as 2 or 3a (BMV).

5.3.1 Sites for Further Investigation – ALC Grade Range

While it is not possible to determine the ALC grade of particular land parcels without a detailed technical survey of the soil, it is possible to make an assessment of the likely grade range. This section provides a desk assessment of the likely ALC grade ranges for the sites identified for further investigation, that are in agricultural use, as shown in [Appendix 5](#).

The National Soils Map³⁴ indicates that the 32 sites in non-urban land identified for further investigation are covered by three soil associations; namely Clifton (29 sites), Bridgnorth (4) and Wick 1 (3). Each 'soil association' includes several 'soil series', each which have differing characteristics. The standard descriptions of each association and series are available in the Landis Soils Guide³⁵. These descriptions detail the typical horizon depths, soil textures and structures within each series nationally. Whilst it is not possible to estimate a specific grade for each site using these 'general' soil descriptions, it is possible to provide a likely range of ALC grades for each soil series where the series has been sufficiently well studied and defined. Importantly it should also be noted that the National Soils Map give a broad indication of the soils that may be present in a given area and is not accurate to field scale. It also does not define which specific soil series may be present

³³ Landis.org.uk

³⁴ The National Soil Map of England and Wales – NATMAP, landis.org.uk

³⁵ Cranfield University 2019. *The Soils Guide*. Available: www.landis.org.uk. Cranfield University, UK.

at each site, only the association. This is one of the key reasons why a desk assessment cannot be relied upon to identify areas of BMV land and why technical ALC surveys would be required.

Clifton Association

Soils of the Clifton Association make up approximately 36% of non-urban land in Wirral. However, 25 of the 32 (78%) non-urban sites identified for further investigation are in locations mapped as entirely or mostly of this association. Clifton soils are described in the Landis Soils Guide as slowly permeable, seasonally waterlogged loams.

There are four main component soil series in this association; namely Clifton, Claverley, Salwick and Quorndon (45%, 20%, 20% and 10% of Clifton Association soils nationally, respectively). However, it is not possible to establish which soil series can be found at each site without undertaking soil surveys. Soils within the Clifton, Claverley and Quorndon series are mostly likely to be gleyed within 40cm of the soil surface and be classed as WC IV (poorly drained), resulting in an ALC grade of 3b for soil wetness. Salwick soils are not generally gleyed within 40cm of the soil surface and are likely to be WC II (well drained) or III (imperfectly drained) and ALC grade 3a for soil wetness.

Combining data for Clifton Association soils from previous ALC surveys in Wirral with the standard descriptions found in the Soils Guide indicates that soils can fall into WC II, III or IV. In Wirral this likely results in ALC grades 3a or 3b for soil wetness. It is not possible to identify which sites are likely to be BMV land in this desk study and it would require ALC surveys to do so.

Bridgnorth Association

Four of the 32 sites for further investigation are mapped within the Bridgnorth Association. These soils are described in the Soils Guide as well drained sandy soils over sandstone, with a risk of water and wind erosion. There are four main component soil series in this association; namely Bridgnorth, Bromsgrove, Cuckney and Newport. These represent 50%, 20%, 15% and 10% respectively of Bridgnorth Association soils.

Bridgnorth and Cuckney series soils are described as loamy sand topsoils, over loamy sand or sandy loam subsoils, over sandstone. They are most likely to be limited to ALC grades 3a or 3b by soil droughtiness. Newport soils are described as having sandy loam/loamy sand topsoil over loamy sand/sand upper subsoil and sandy lower subsoils. The greater depth of soil (compared to Bridgnorth and Cuckney series) ensures that Newport soils are not as prone to drought and potentially ALC Grade 1 or 2 based on soil droughtiness. Bromsgrove soils are mostly good quality agricultural land. They are less likely to be droughty than other Bridgnorth Association soils as they are described as relatively deep sandy loams over sandstone. As soil wetness in these permeable soils is also unlikely to limit the agricultural value of the land, they are likely to be BMV (ALC grades 1, 2 or 3a).

These investigations show that a wide range of ALC grades can be found at sites covered by the Bridgnorth Association nationally. However, as no grade 1 land was identified in the 16 ALC surveys identified by this study, it is anticipated that sites with Bridgnorth soils in Wirral are likely to be classed as ALC grades 2, 3a or 3b.

Wick 1 Association

Wick 1 Association soils are mapped at the remaining three of the 32 sites identified for further investigation. These are deep, well drained coarse loamy and sandy soils resulting in good farmland allowing flexible cropping, with cereals, potatoes and some horticultural crops grown nationally on this Association. As no grade 1 land was identified in the 16 ALC surveys identified by this study, it is likely that sites in Wirral with Wick 1 Association soils would be classed by ALC surveys as grades 2 or 3a and so, BMV.

TABLE 14: SOIL ASSOCIATIONS AND RANGE OF LIKELY ALC GRADES IN THE 32 SITES FOR FURTHER INVESTIGATION IN WIRRAL³⁶

Site code	Grid Ref	Main Soil Association	Secondary Association	Soil	Likely ALC grades
SP001	SJ251881	Clifton			3a, 3b
SP002C	SJ253888	Clifton			3a, 3b
SP004A	SJ254890	Clifton			3a, 3b
SP005A	SJ253888	Clifton			3a, 3b
SP010A	SJ260868	Bridgnorth			2, 3a, 3b
SP013	SJ232857	Bridgnorth (80%)	Clifton (20%)		2, 3a, 3b
SP019B	SJ265853	Clifton			3a, 3b
SP030	SJ303854	Clifton			3a, 3b
SP031	SJ301846	Clifton			3a, 3b
SP032	SJ304846	Clifton			3a, 3b
SP033	SJ309848	Clifton (75%)	Bridgnorth (25%)		2, 3a, 3b
SP035	SJ313854	Clifton (50%)	Bridgnorth (50%)		2, 3a, 3b
SP036	SJ310843	Clifton (60%)	Bridgnorth (40%)		2, 3a, 3b
SP037	SJ314836	Bridgnorth (60%)	Clifton (40%)		2, 3a, 3b
SP040	SJ324828	Clifton			3a, 3b
SP041	SJ307840	Clifton			3a, 3b
SP042	SJ329820	Clifton			3a, 3b
SP043	SJ337820	Clifton			3a, 3b
SP044	SJ335814	Clifton			3a, 3b
SP045	SJ330809	Clifton (75%)	Bridgnorth (25%)		2, 3a, 3b
SP046	SJ337799	Clifton (80%)	Bridgnorth (20%)		2, 3a, 3b
SP049	SJ357792	Clifton (70%)	Wick 1 (30%)		2, 3a, 3b
SP050	SJ364794	Clifton (80%)	Wick 1 (20%)		2, 3a, 3b
SP051	SJ369796	Wick 1 (70%)	Clifton (30%)		2, 3a, 3b
SP052	SJ361801	Wick 1			2, 3a
SP053	SJ362804	Wick 1			2, 3a
SP059E	SJ251846	Bridgnorth			2, 3a, 3b
SP060	SJ261844	Clifton			3a, 3b

³⁶ Based on soil descriptions in the Landis Soils Guide and climate data for the Wirral

Site code	Grid Ref	Main Soil Association	Secondary Association	Soil	Likely ALC grades
SP061	SJ277841	Clifton			3a, 3b
SP062	SJ277828	Clifton			3a, 3b
SP064E	SJ285824	Clifton			3a, 3b
SP071	SJ284809	Clifton			3a, 3b

5.4 ALC Climate Calculations and Interactive Limitations

A table of climate values for each site identified by the client for further investigation is given in [Appendix 10](#). Soil moisture deficit figures show the amount of rain needed to bring the soil moisture content back to field capacity. In an average year, the production of agricultural crops is not considered to be limited by climate since all locations are classed as ALC Climate Grade 1. The region does not routinely suffer from excessively dry, wet, hot or cold conditions that may impact upon crop production.

With more than 175 Field Capacity Days (FCDs) per year across Wirral, land with medium clay loam and heavy clay loam topsoils that are classed as WC I or II will fall into respectively ALC grade 2 or 3a for soil wetness.

To be classed as WC I soils with these textures and 176-182 FCDs (see [Appendix 10](#)) the soil profile must not be gleyed within 40cm of the surface and have no slowly permeable layer (SPL) starting within 80cm depth.

To be classed as WC II with 176-182 FCDs there can be gleying within 40cm of the surface provided that there is no SPL starting above 75-77cm depth. Alternatively, there can be gleying within 70cm but not within 40cm of the surface and no SPL starting above 65-67cm depth.

Medium clay loam topsoils in WC III will also be graded 3a for soil wetness. To be classed as WC III with 176-182 FCDs there can be gleying within 40cm of the surface provided that there is no SPL starting above 47-49cm depth. Alternatively, there can be gleying within 70cm but not within 40cm of the surface and no SPL starting within 67-65cm depth.

Land with medium clay topsoils that is graded as being WC IV and heavy clay loam topsoils that are WC III or IV (see below for criteria for WC IV) would be graded 3b or 4 for soil wetness.

In areas with lighter soils, soil droughtiness will often be the limiting factor for ALC grade, however soil wetness may be limiting where sandy topsoils are found overlying clay subsoils. Land with sandy loam and sandy clay loam topsoils can be graded as 3b (not BMV) if they fall into WC IV. To receive this wetness grade, subsoil would need to be gleyed within 40cm and have an SPL within 47-49cm of the soil surface (dependent on the exact FCD of the location).

It is not possible to give a simple guide to the requirements for ALC grades to be limited by droughtiness in areas with lighter soils. Soil texture, structure and stone content all need to be considered down to 120cm depth.

6 CONCLUSIONS

The total area of farmed land in Wirral has been variously estimated as 4,304 hectares (Defra, 2016) and 4,560 hectares (RPA CROME, 2019). The land area of Wirral as a whole is around 60 square miles (15,540 hectares) and so farmed land currently represents just under 30% of the total. The number of separate farm holdings most recently reported is 67. Records suggest that this number has stabilised in recent years after a reduction which may in part at least have been due to changes in data collection methodology.

Farm sizes in Wirral are broadly similar to England as a whole. There is a reasonably even distribution between the smallest category (< 5 hectares, 11 holdings) and the largest (>100 hectares, 13 holdings). The most prevalent size is between 5 and 20 hectares (17 holdings).

The proportion of farmed land in Wirral which is rented as opposed to being owner-occupied has increased and currently stands at over 70% of the land total. Rental arrangements can mitigate against long term investments and strategic changes, whereas owner-occupiers may take a longer-term view of land use and have more financial strength to invest.

Desk studies conclude that approximately 57% of Wirral's agricultural land is grassland, which is reflected in its predominant farm types; dairy and grazing for lowland livestock. Around 30% of agricultural land use in Wirral in 2016 was being used by seven holdings in the dairy sector. There is evidence of a historic decrease in the number of dairy farms in Wirral with a disproportionately smaller reduction in dairy cattle. This reflects wider changes in the sector which has focused on larger units and on improving milk output efficiencies.

There are 27 holdings in Wirral that identify as lowland grazing livestock farms. This category includes beef cattle, sheep and horses and represents approximately 25% of all agricultural land use. Cereals and a range of other general cropping enterprises were also noted but no geographical trends were apparent.

A physical review of agricultural areas in Wirral carried out as part of this study generally supported the data gathered from the desk studies. Within the 'grazed livestock' category, horses were found to be the most prevalent type of livestock observed during the review, whilst winter wheat and spring barley were the main crops seen. A high number of horses is typical of urban fringe areas. It is likely to provide a higher monetary return than renting the same area of land for other agricultural purposes or use in a lowland grazing enterprise.

Incomes made from agriculture in average farm businesses are often small and dependent on farm type. Market volatility, climatic conditions and the rising costs of inputs are just some of the factors that impact on already tight margins. This has resulted in a national trend of farm consolidation, which is reflected in Wirral, where large farms are becoming larger and smaller farms are seeking opportunities to spread risk through agricultural and non-agricultural diversification and/ or renting out land. This is further supported by the output of the consultation survey where farmers have indicated that they intend to focus on improving efficiencies in their existing enterprises and identifying opportunities through agri-environment activities.

On the basis of standard farm business income data, the dairy sector earned the highest income across all farm types in 2017-18, due to reasonably buoyant farm gate milk prices. However, 2018/19 is likely to be more challenging due to drought conditions in 2018, which meant that higher feed costs were incurred. Lowland grazing livestock farms tend to have a heavier reliance on public monies from direct payments, agri-environment schemes and private income from diversification. Holdings that have diversified their businesses to include direct sales, further processing and alternative enterprises (including horses) have the potential to exceed standard farm income estimates.

In terms of soils, approximately 36% of the agricultural area in Wirral is covered by the Clifton soil series, which mainly supports cereals and grass. There did not appear to be a clear correlation between land use and soils and geology.

Historic agricultural land classification surveys undertaken in Wirral, show a predominance of ALC Grade 3a land. However, as a seasonally wet soil type, agricultural land classification can change depending on the

specific location of the site, so no assumptions can be made on how the surveys previously undertaken may correlate with other agricultural areas in Wirral. It is therefore recommended that technical agricultural land classification surveys be undertaken on potential development land to determine the soil classification.

Current European agricultural policy focuses on direct payments to farmers, related to areas of land in agricultural use. At present, many farming enterprises in England – including those in Wirral - are likely to be highly reliant on these payments to supplement their incomes from agriculture. Forthcoming changes to the Common Agricultural Policy and following the UK's departure from the European Union are expected to change the nature of support provided to farmers. These are therefore important factors in determining the future direction and viability of farm businesses throughout England.

That said, there remains an appreciation of the need to protect indigenous food production. To do this, it will be necessary to protect the best and most versatile agricultural land. Not only is this a stated intention in the National Planning Policy Framework, it is highlighted in Defra's 25 year Environment Plan.

7 NEXT STEPS

Land identified as having potential for development should be subject to further scrutiny before a determination of the impact on the agricultural unit can be made. This report has provided a desk based analysis of the likely grade range in relation to sites identified for further investigation in agricultural use. However, a detailed technical survey of the soil is required to define the ALC grade and identify whether the site is BMV agricultural land.

In parallel with an ALC survey, it is suggested that the impact of the loss of the land to the agricultural unit should also be considered. A viability and impact assessment undertaken for each unit affected by loss of land to development would be necessary to understand the potential effect on the farm and the local economy. In the case of tenant farmers, the position of the landlord, any potential mitigation measures, and the impact of these, should also be taken into account.

8 GLOSSARY

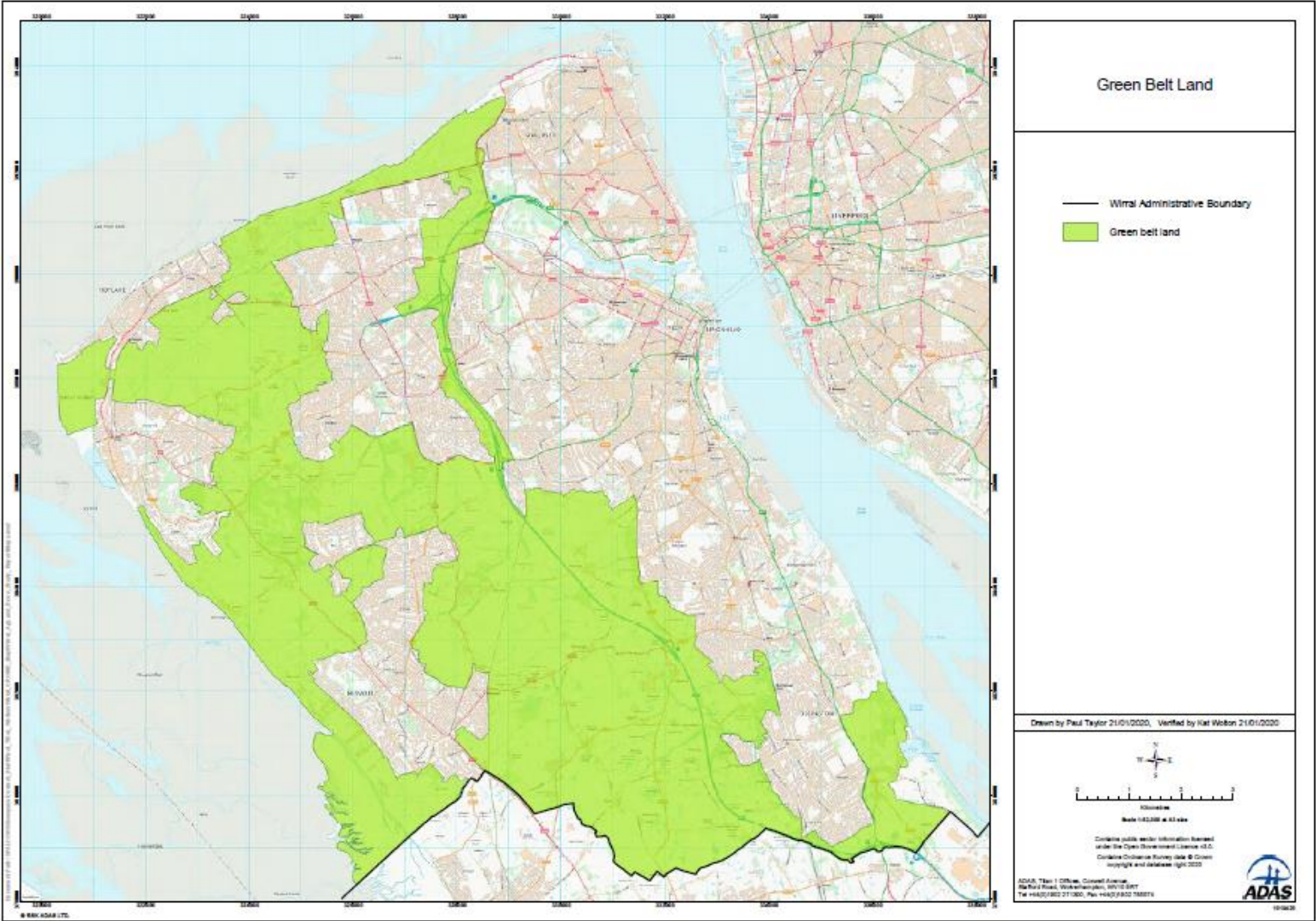
Agri-environment schemes	Agri-environment schemes provide financial incentives for farmers to adopt environmentally beneficial land management practices in order to support wildlife conservation; protection of the historic environment; maintenance and enhancement of landscape quality and character; promotion of public access and understanding; and resource protection.
Agricultural Land Classification (ALC)	Agricultural land is classified into five grades depending on its versatility and suitability for growing crops. Grade one is best quality and grade five is poorest quality. A number of consistent criteria are used for assessment which include climate (temperature, rainfall, aspect, exposure, frost risk), site (gradient, micro-relief, flood risk) and soil (depth, structure, texture, chemicals, stoniness).
ALC Climate Grade	The grade of the land is determined by the most limiting factor present. The overall climate is considered first because it can have an over-riding influence on restricting land to lower grades despite other favourable conditions. The conditions are also graded on a scale of 1 (most favourable) to 5 (least favourable) in determining the overall grade.
Basic Payment Scheme	The Basic Payment Scheme is a European funding scheme to support the farming industry. Payments are made to eligible farming units over 5 hectares and are based on the area of land in agricultural production.
Best and most versatile agricultural land	Land in grades 1, 2 and 3a of the Agricultural Land Classification.
Common Agricultural Policy (CAP)	The EU policy that provides support to farmers in all Member States. 'Pillar I' support is paid directly to farmers on a 'per hectare' basis. 'Pillar II' provides discretionary funding to farmers to improve global competitiveness, sustainability and environmental benefits.
Crop Map of England (CROME)	The Crop Map of England (CROME) is a polygon vector dataset mainly containing the crop types of England. The dataset contains approximately 32 million hexagonal cells classifying England into over 20 main crop types. The dataset was created to aid the classification of crop types from optical imagery, which can be affected by cloud cover. The results were checked against survey data collected by field inspectors and visually validated.
Defra June Agricultural Survey	An annual survey of agricultural census information. Regional information is captured annually, whereas more local breakdowns are surveyed every 3 years.

Drought(iness)	Soils susceptibility to running out of available water before the end of the growing season for a specific crop. Measured as the difference between what the soil can hold and the potential evapotranspiration rate for the crop.
General cropping	For the purposes of this report general cropping is all arable activity excluding cereals e.g. oilseed rape, beans, pea and potatoes.
Gleyed	Gleyed soils are developed under conditions of poor drainage, resulting in reduction of iron and other elements and also in a typical grey / blue soil colouring.
Farm diversification	The entrepreneurial use of farm resources for a non-agricultural purpose for commercial gain. Diversification reflects the reduced dependence of farmers on agriculture as a source of income.
Field Capacity Days	The median number of days per annum when the soil contains as much water as it can hold.
Forage	Feed for cattle and other livestock.
Gross Value Added (GVA)	GVA is a measure in economics of the value of goods and services produced in an area, industry or sector of an economy. In national accounts GVA is output minus intermediate consumption (the total monetary value of goods and services consumed or used up as inputs in production by enterprises, including raw materials, services and various other operating expenses).
Holding	A single unit, both technically and economically, operating under a single management which undertakes agricultural activities within the economic territory of the European Union, either as its primary or secondary activity. Other supplementary (non-agricultural) products and services may also be provided by the holding.
Horizon Depths	Depths of different soil layers.
Horticulture	The intensive cultivation of plants for human use. It is very diverse in its activities, incorporating plants for food and non-food crops such as flowers, trees, shrubs, turf-grass, hops and medicinal herbs.
Less Favoured Area (LFA)	LFA is a term used to describe an area with natural handicaps (lack of water, climate, short crop season and tendencies of depopulation), or that is mountainous or hilly, as defined by its altitude and slope.
Loam(y)	A mix of soil particles made up of sand, silt and clay.

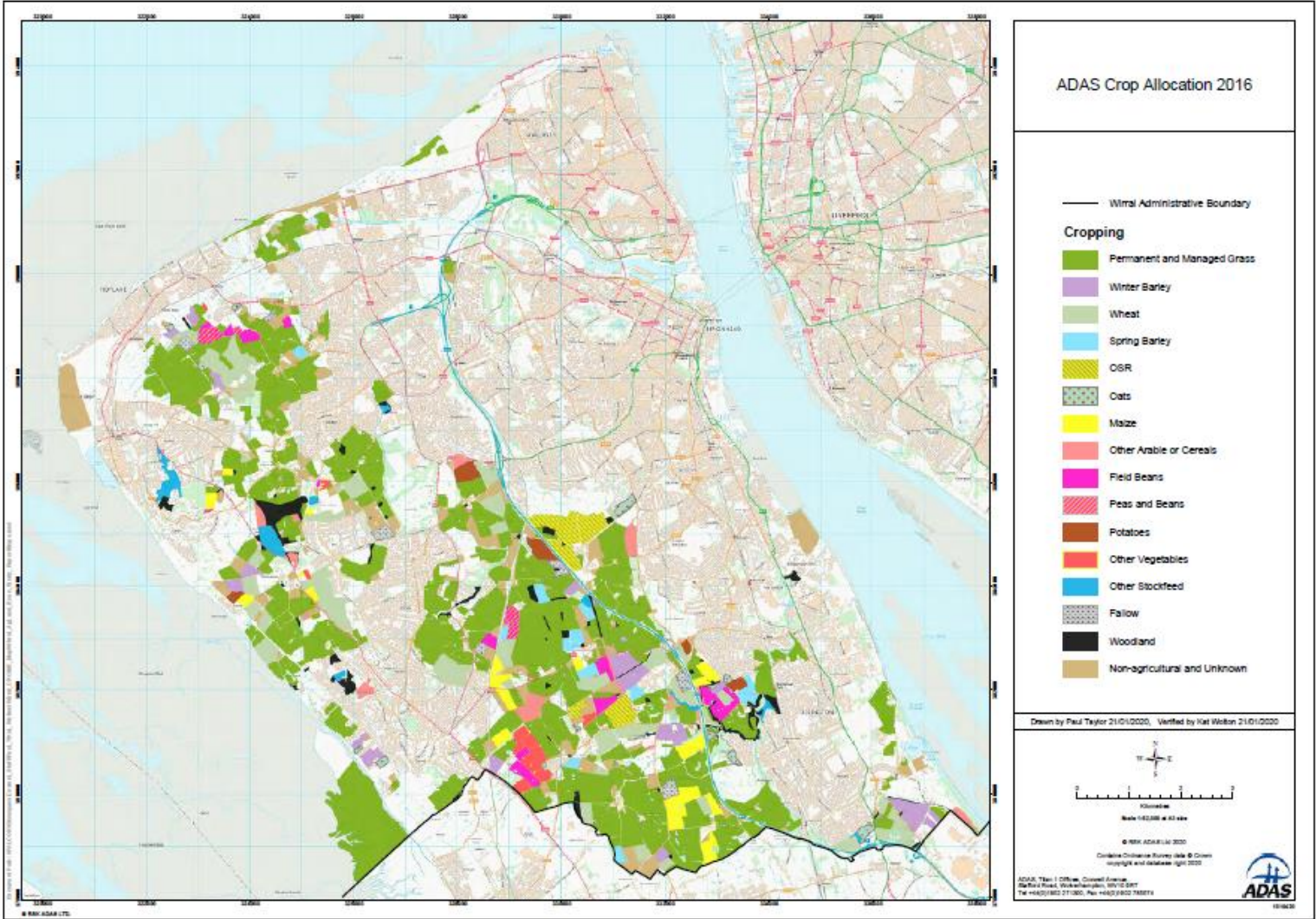
Local Plan	Local planning authorities must prepare a local plan which sets planning policies in a local authority area. Local plans must be consistent with national policy and the National Planning Policy Framework.
Managed grass	For the purpose of this report the term managed grass is used to describe grass that has been fertilised to provide forage for winter feeding. This distinguishes it from year round grazing grass. At certain times of year, it may be difficult to determine whether managed grass is part of an arable rotation or permanent grass.
Permanent grass	A grass ley that has been in place for over 5 years.
Ring fenced	A block of land fully enclosed by fencing and not bisected by a geographical or non-geographical feature such as a road or river.
Sand(y)	A soil texture containing mineral particles in the size range 0.06-2mm
Set aside land	Land removed from production for environmental or other purposes. Set aside no longer applies after 2013 ³⁷ .
Slowly permeable layer	A dense or heavy textured layer of soil which reduces water flow through the soil.
Soil association	A grouping of different soils which regularly occur together in the landscape.
Soil structure	An assessment of the way soil particles hold together.
Soil texture	A physical description of the soil's sand, silt and clay content, which can be modified by organic matter.
(Soil) Wetness (Class) (WC)	A measure of the average duration of waterlogging at specified depths in the soil; WC 1 is well drained and WC 4 -6 are poorly drained.

³⁷ <https://publications.parliament.uk/pa/cm201011/cmselect/cmenvfru/671/671i.pdf>

Appendix 1 – Area of green belt – Wirral



Appendix 2 – Cropping allocation in Wirral 2016



Appendix 3 – Physical evaluation of agriculture in Wirral

Strategic Parcel	Site Location	Description	Type of Enterprise	Added Value Services	Location
SP001	North of Greasby	Permanent grassland used within a paddock system. Small fields separated by hedge network. Used primarily for horses, and cattle grazing [from farm at Three Lanes End]. Adjacent to Greasby Equestrian Centre, which appears to be well developed infrastructure. Some fields used as intensive grassland for silage / haylage.	Supporting a mix of enterprises including a diversified livery business and dairy unit.	Diversified livery enterprise, which would provide non-agricultural income support to a lowland grazing livestock enterprise.	Proximate to both a dairy unit and livery business. Ring fenced with livery business. Good access for forage production.
SP002C	North of Barnacre Lane	Permanent grassland used for livestock grazing. Livestock not present. In close proximity to some farm infrastructure (ownership unknown) but in an isolated block.	Lowland grazing livestock.	Not evident.	No infrastructure within the boundary of the land.
SP004A	North of Saughall Massie	Intensively managed grassland. Appears to be adjacent to a beef unit (silage clamp, livestock buildings) no cattle visible in fields.	Forage production for lowland grazing livestock or dairy cattle.	Not evident.	Adjacent to substantial, modern, improved farm buildings.
SP005A	East of Garden Hey Road	Intensively managed grassland.	Forage production for lowland grazing livestock or dairy cattle.	Not evident.	No infrastructure within the boundary of the land.

Strategic Parcel	Site Location	Description	Type of Enterprise	Added Value Services	Location
SP010A	East of Rigby Drive	Intensively managed grassland.	Diversified dairy unit with direct farm sales.	Farm gates sales and secondary processing i.e. ice cream.	Ring fenced block with central farm infrastructure. Good access for livestock and machinery.
SP013	West of Column Road	Mixed block. Areas closest to Caldry Road / A540 roundabout in permanent pasture paddocks used for horses. Some evidence of grassland management in central area. Top agricultural blocks used for arable production. Beans and recent sowing evident.	General cropping and what appears to be recreational horse paddocks.	Not evident.	No infrastructure within the boundary of the land.
SP019B	East of Glenwood Drive	Cereal production - currently in winter wheat.	Large blocks in cereal production.	Not evident.	Part of an arable block bisected by Arrowe Brook. No infrastructure within the boundary of the land.
SP030	North of Lever Causeway	Cereal production - currently in winter wheat.	Large blocks in cereal production. Soil analysis received demonstrating good land management practices in years previous.	Not evident.	No infrastructure within the boundary of the land. Several units nearby, which could potentially benefit from the land.

Strategic Parcel	Site Location	Description	Type of Enterprise	Added Value Services	Location
SP031	West of Landican Lane	Cereal production - currently in winter wheat.	Large blocks in cereal production. Soil analysis received demonstrating good land management practices in years previous.	Not evident.	No infrastructure within the boundary of the land. Several units nearby, which could potentially benefit from the land.
SP032	Little Storeton	Permanent grassland used for livestock grazing. No livestock present.	Lowland livestock grazing.	Not evident.	Isolated block. No infrastructure within the boundary of the land. Several sizeable units nearby but the size of the field would be unlikely to make a detrimental impact in isolation.
SP033	North of Rest Hill Road	Horse grazing in paddock system in a ring fenced block. Close to a modern equine stabling facility. Some intensively managed grassland potentially used for haylage production.	Lowland livestock grazing and / or a livery diversification. Potentially a separate business, not involved in agricultural production.	Potentially a livery as a diversification of an existing agricultural business. This is not known.	Several units and/or one sizeable unit nearby that could benefit from the land.
SP035	North of Marsh Lane	Horse grazing in paddock system in a ring fenced block. Close to a modern equine stabling facility.	Lowland livestock grazing and / or a livery diversification. Potentially a	Potentially a livery as a diversification of an existing agricultural	Several units and/or one sizeable unit nearby that

Strategic Parcel	Site Location	Description	Type of Enterprise	Added Value Services	Location
			separate business, not involved in agricultural production.	business. This is not known.	could benefit from the land.
SP036	North of Red Hill Road	Permanent grassland in a ring fence used for dairy and beef cattle grazing. Adjacent to modern farm infrastructure with evidence of diversified direct boxed beef sales.	Dairy unit with associated beef cattle enterprise.	Direct boxed beef.	Ring fenced block with central farm infrastructure. Good access for livestock and machinery.
SP037	East of Brimstage Lane	Permanent grassland used for dairy and beef cattle grazing. In close proximity to modern farm infrastructure with evidence of diversified direct boxed beef sales.	Dairy unit with associated beef cattle enterprise.	Direct boxed beef.	Close proximity to main unit. Good access for livestock and machinery.
SP040	North of Clatterbridge Road	Majority of site in arable production - currently in maize. Small permanent pasture field with grazing sheep.	Predominantly cereal and general cropping.	Adjacent to diversified farm business with farm shop. It is unknown whether the land is associated.	Adjacent to diversified farm business. No evidence of farm operations within this site.
SP041	West of Brimstage Lane	Permanent grassland used for dairy and beef cattle grazing. Some evidence of intensive management on some blocks. In close proximity to modern farm infrastructure with evidence of diversified direct boxed beef sales.	Dairy unit with associated beef cattle enterprise.	Direct boxed beef.	Close proximity to main unit. Good access for livestock and machinery.

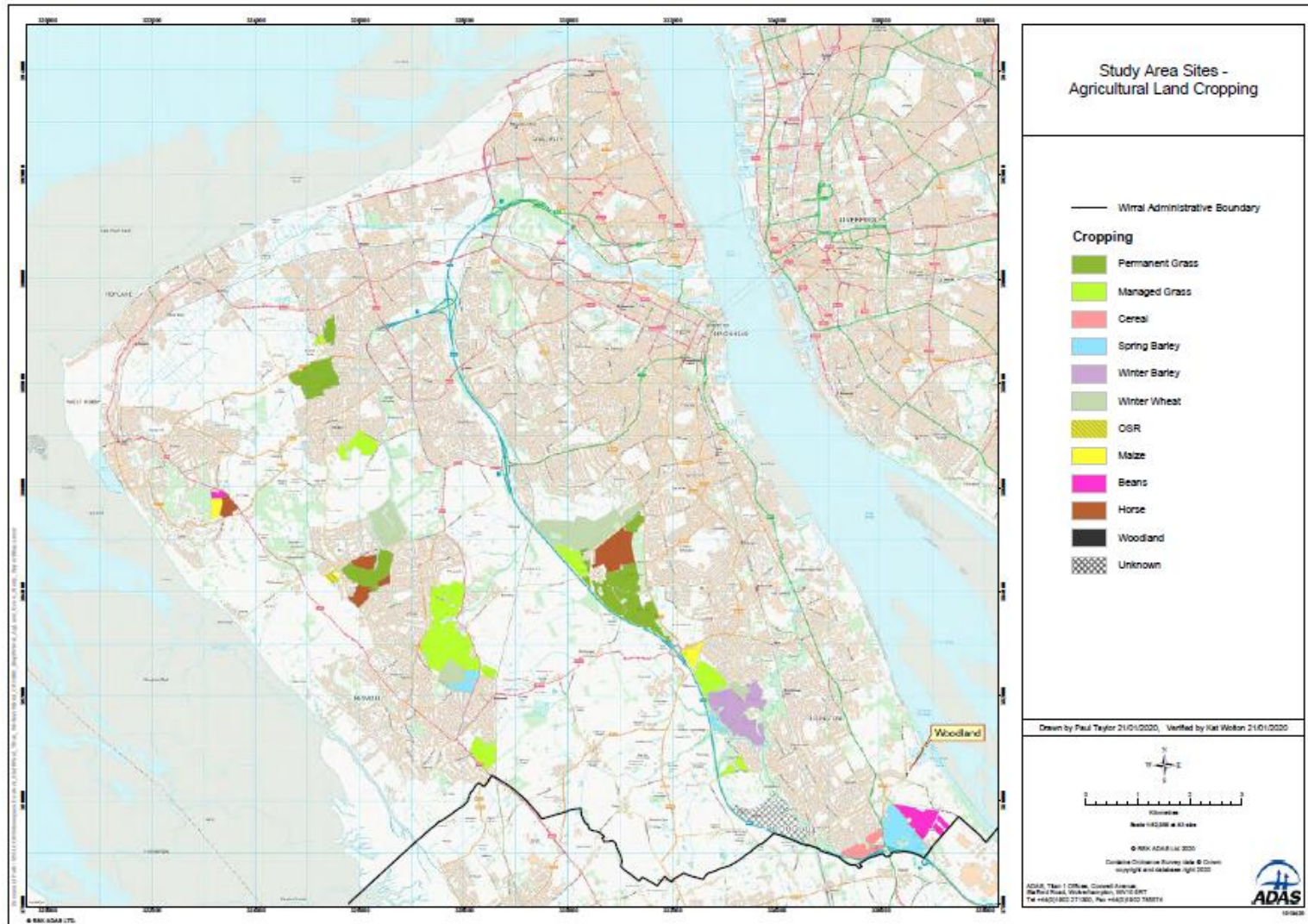
Strategic Parcel	Site Location	Description	Type of Enterprise	Added Value Services	Location
SP042	North of Poulton Hall Road	Mixed use block, split between fruit produced adjacent to farm diversification infrastructure and permanent grass block with evidence of intensive management. Majority of site is used for cereal production - currently in winter and spring barley varieties.	Mixed enterprises: soft fruit, permanent grass, cereals.	Adjacent to diversified farm business with farm shop. It is unknown whether all of the land is associated.	Several units that could benefit from the land. Not ring fenced. Bisected by woodland /scrub.
SP043	East of Poulton Road	Arable production in a ring fence - currently in winter wheat and winter barley.	Cereal production.	Not evident.	Ring fenced block with central farm infrastructure. Good access for livestock and machinery.
SP044	West of Dibbinsdale Road	Extensively managed permanent pasture / parkland used for lowland grazing of livestock.	Lowland grazing livestock.	Not evident.	Parkland grazing for large home. Contained within a ring fence. Minimal infrastructure suggesting a small enterprise.
SP045	West of Raby Drive	Appears to be managed grass within an arable rotation.	Forage production for lowland grazing livestock or dairy cattle.	Polytunnels and allotments observed linked to site used as an educational / community support centre.	Isolated block. No infrastructure within the boundary of the land.

Strategic Parcel	Site Location	Description	Type of Enterprise	Added Value Services	Location
SP046	West of Plymyard Dale	Unable to observe the land from any public highway or footpath. Aerial photographs suggest the site is a ring fenced mix of permanent grassland used for beef cattle grazing, intensively managed grass for silage purposes and arable production, which is likely to be used for winter fodder.	Forage production for lowland grazing livestock or dairy cattle and cereal production.	Not evident.	Ring fenced block with central farm infrastructure. Good access for livestock and machinery. Sizeable block that appears to support a single unit.
SP049	South of Mill Park	A mixed use site, isolated from an agricultural holding. The majority of the site is currently used for arable production, with a smaller area of permanent grass.	It is unknown what enterprise the land supports.	Not evident.	Isolated block. No infrastructure within the boundary of the land. Poor access off of a main thoroughfare.
SP050	West of Rivacre Road	Cereal production - currently spring barley.	Cereal production.	Not evident.	Some poor quality agricultural buildings present within the ring fence but isolated from a main agricultural holding.
SP051	East of Rivacre Road	Arable production - currently beans.	General cropping	Not evident.	Isolated block. No infrastructure within the boundary of the land. Proximate to several units that could benefit from the land.

Strategic Parcel	Site Location	Description	Type of Enterprise	Added Value Services	Location
SP052	Eastham Village Conservation Area	Only a very small part of the total area applies. Arable production - beans.	General cropping	Not evident.	Isolated block. No infrastructure within the boundary of the land. Proximate to several units that could benefit from the land.
SP053	St Davids Road	Permanent grassland. No livestock present. No evidence of associated farm infrastructure.	Lowland grazing livestock.	Not evident.	Isolated block. No infrastructure within boundary.
SP059E	Rear of Irby Hall	Arable production - currently oil seed rape.	General cropping.	Not evident.	Isolated block. No infrastructure within the boundary of the land. Proximate to several units that could benefit from the land.
SP060	South of Thingwall Road	Permanent pasture within a ring fence - livestock grazing. Predominantly horse paddocks. Grazing dairy heifers also observed. Infrastructure for a separate livery business within ring fence. Buildings were large and modern, indicative of an established business.	Lowland grazing livestock.	It is unknown whether the recreational horse paddocks relate to a diversified agricultural business or separate rural enterprise.	Ring fenced block with infrastructure for a livery business. It is unknown whether the agricultural fields are managed from this unit.

Strategic Parcel	Site Location	Description	Type of Enterprise	Added Value Services	Location
SP061	North of Gills Lane	Intensively managed grassland opposite horse paddocks, potentially used for haylage production.	Forage production for lowland grazing livestock or dairy cattle. Infrastructure for livery evident but is unknown what enterprise the land supports.	Stables and menage adjacent to land. It is unknown whether the recreational horse paddocks relate to a diversified agricultural business or separate rural enterprise.	Ring fenced unit with good access for livestock and machinery.
SP062	East of Pensby	A ring fenced arable unit currently in winter wheat, oilseed rape, spring barley and intensively managed grass. Land along roadside of Gills Lane are horse paddocks. Permanent pasture were also observed for grazing livestock, though no livestock present.	Cereal and general cropping enterprises. Recreational horse paddocks. Lowland grazing livestock.	Livery enterprise. The land is also subject to an agri-environment agreement.	Sizeable unit in a ring fence, with good infrastructure.
SP064E	North of Whitehouse Lane	Arable production - currently intensive grassland.	Forage production for lowland grazing livestock or dairy cattle.	Not evident.	Isolated block. No infrastructure within the boundary of the land. Proximate to a sizable unit that could benefit from the land.
SP071	Land at Chester High Road	Arable production - currently intensive grassland. Adjacent to farm infrastructure in a ring fence.	Forage production for lowland grazing livestock or dairy cattle.	Not evident.	No infrastructure within the boundary of the land.

Appendix 4 – Land use map of sites for further investigation

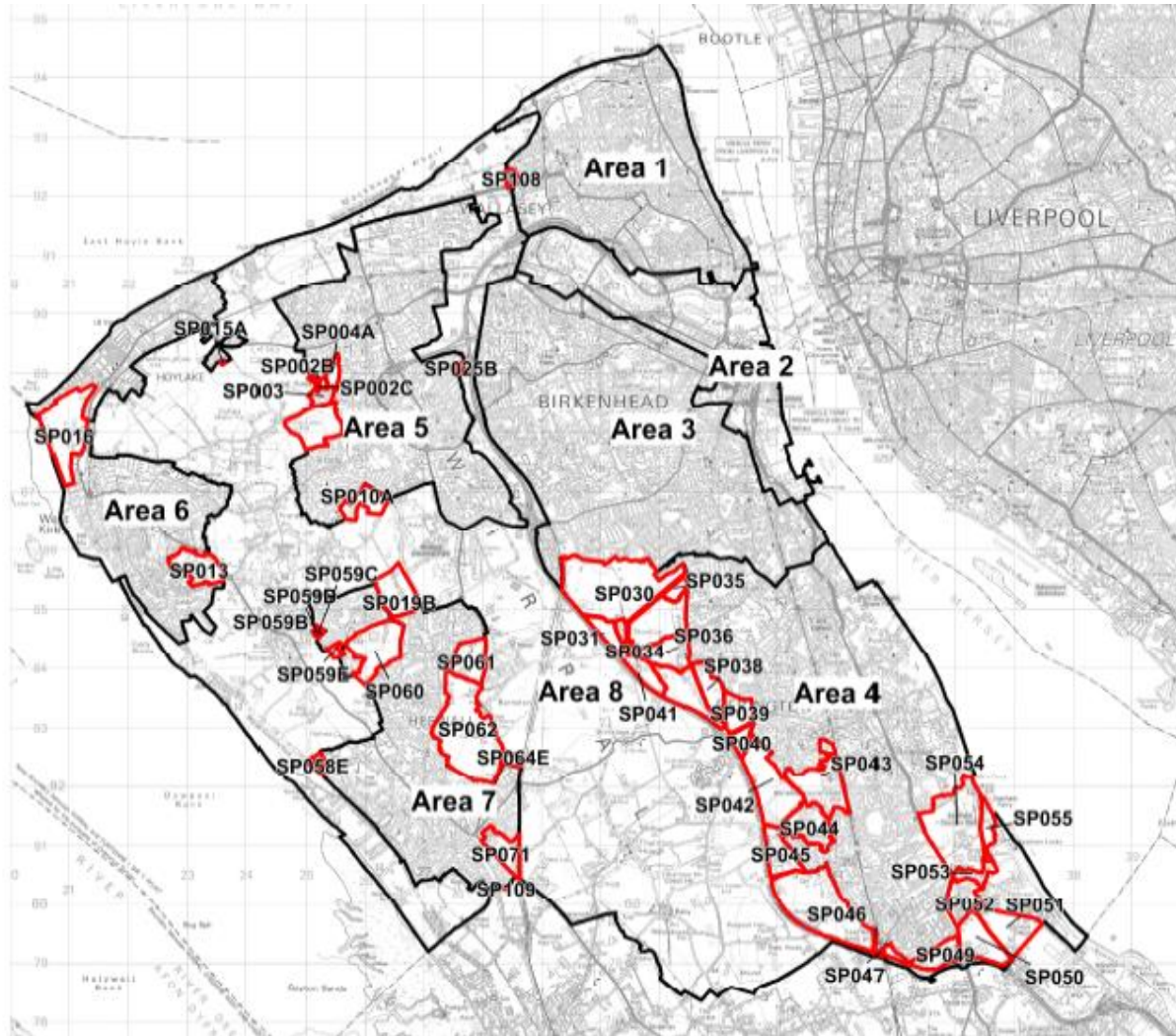


Wirral Council

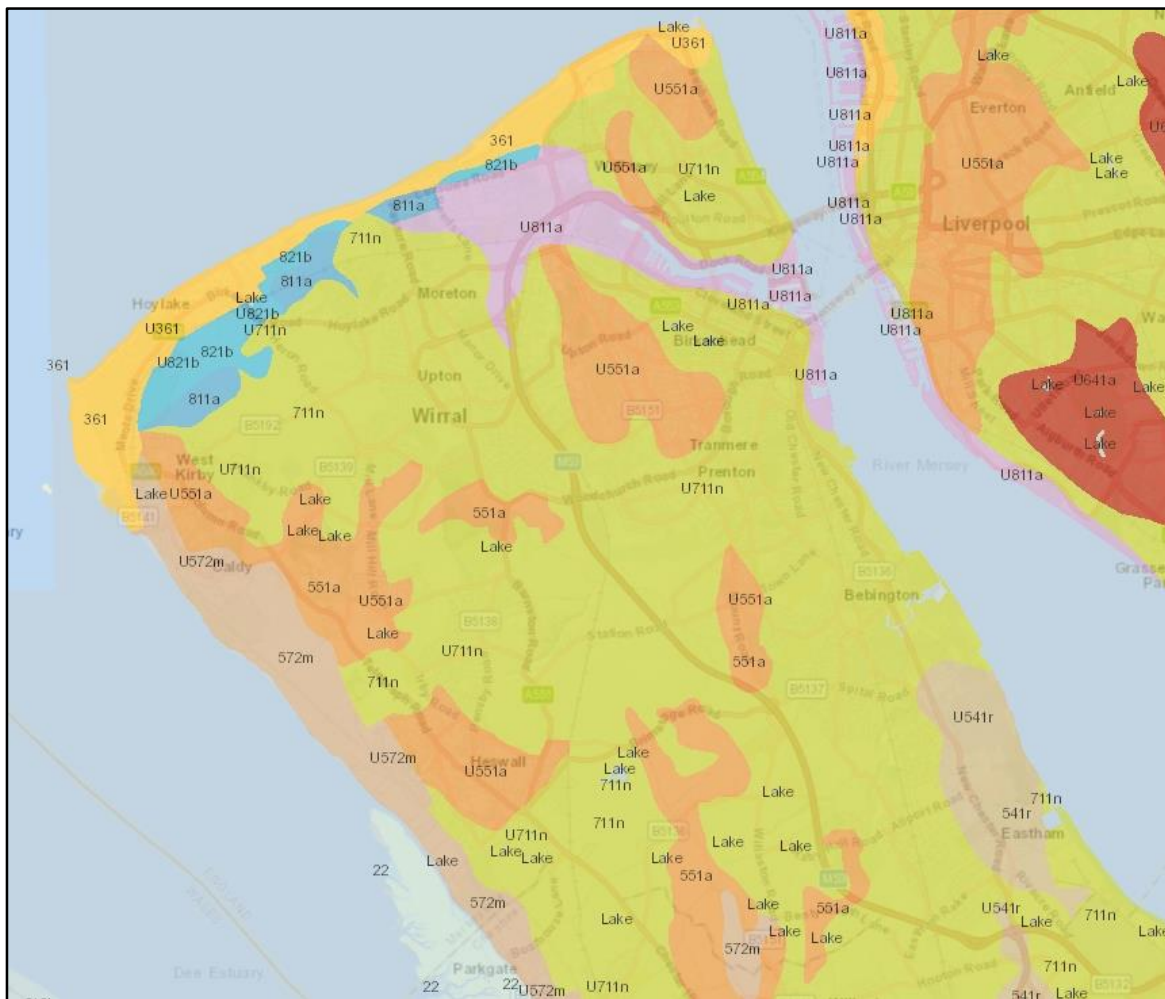
Study of Agricultural Economy and Land in Wirral

Project no. 1010420-1 (00)

Appendix 5 – Sites identified for further investigation



Appendix 6 – Soil map of Wirral



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Soil Associations Key

361: Sandwich: Mainly deep well drained calcareous and non-calcareous sandy soils. Some sparsely vegetated unstable soils. Waterlogged soils in hollows locally. Shingle bars and spits locally extensive. Risk of wind erosion.

541r: Wick 1: Deep well drained coarse loamy and sandy soils locally over gravel. Some similar soils affected by groundwater. Slight risk of water erosion.

551a: Bridgnorth: Well drained sandy and coarse loamy soils over soft sandstone. Occasional deeper soils. Risk of water and wind erosion

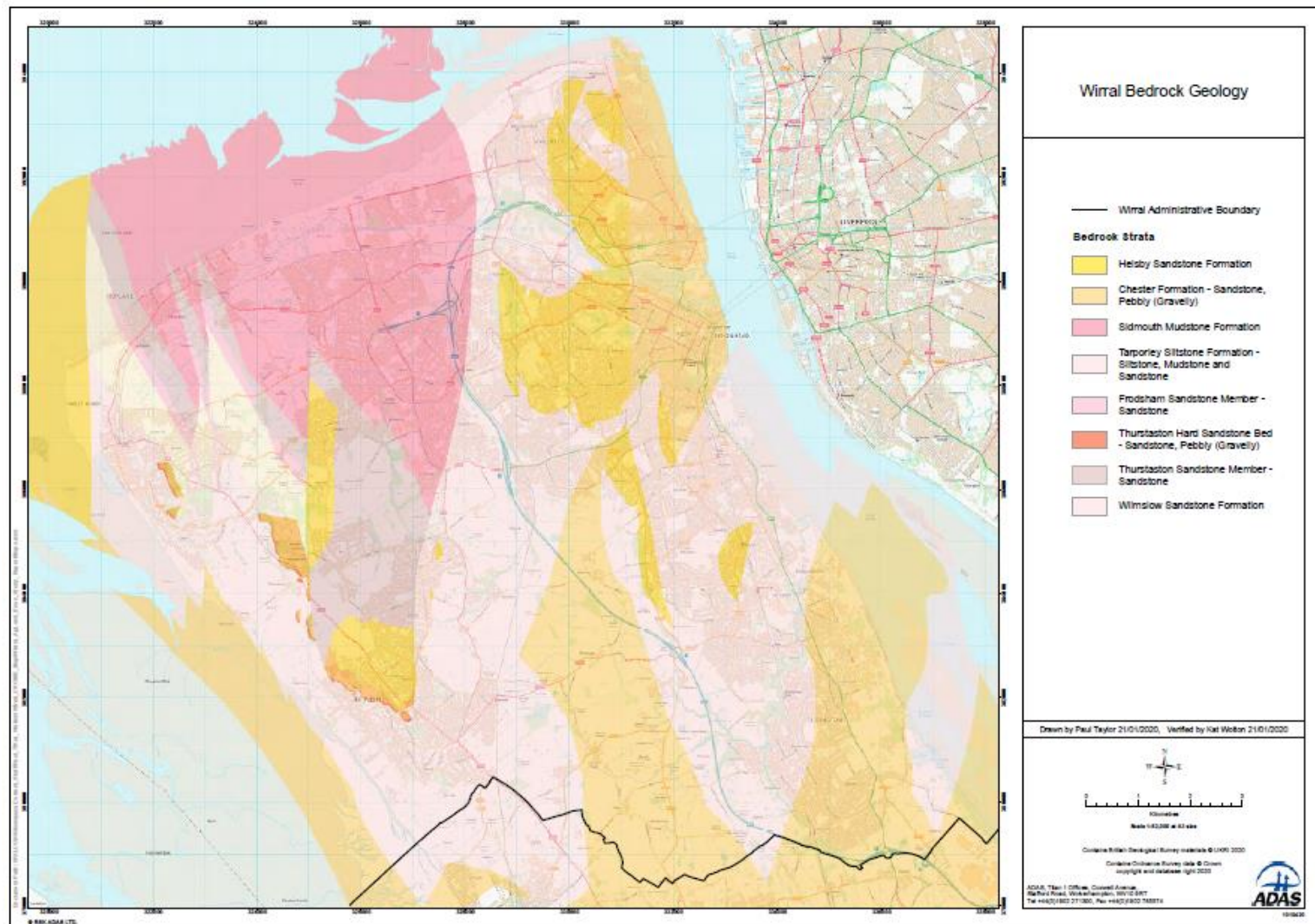
572m: Salwick: Deep reddish fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging. Some deep well drained coarse loamy soils. Some fine loamy soils affected by groundwater.

711n: Clifton: Slowly permeable seasonally waterlogged reddish fine and coarse loamy soils and similar soils with slight seasonal waterlogging. Some deep coarse loamy soils seasonally affected by groundwater.

811a: Enborne: Deep stone-less fine loamy and clayey soils variably affected by groundwater. Flat land. Risk of flooding.

821b: Blackwood: Deep permeable sandy and coarse loamy soils. Groundwater controlled by ditches.

Appendix 7 – Bedrock Geology map

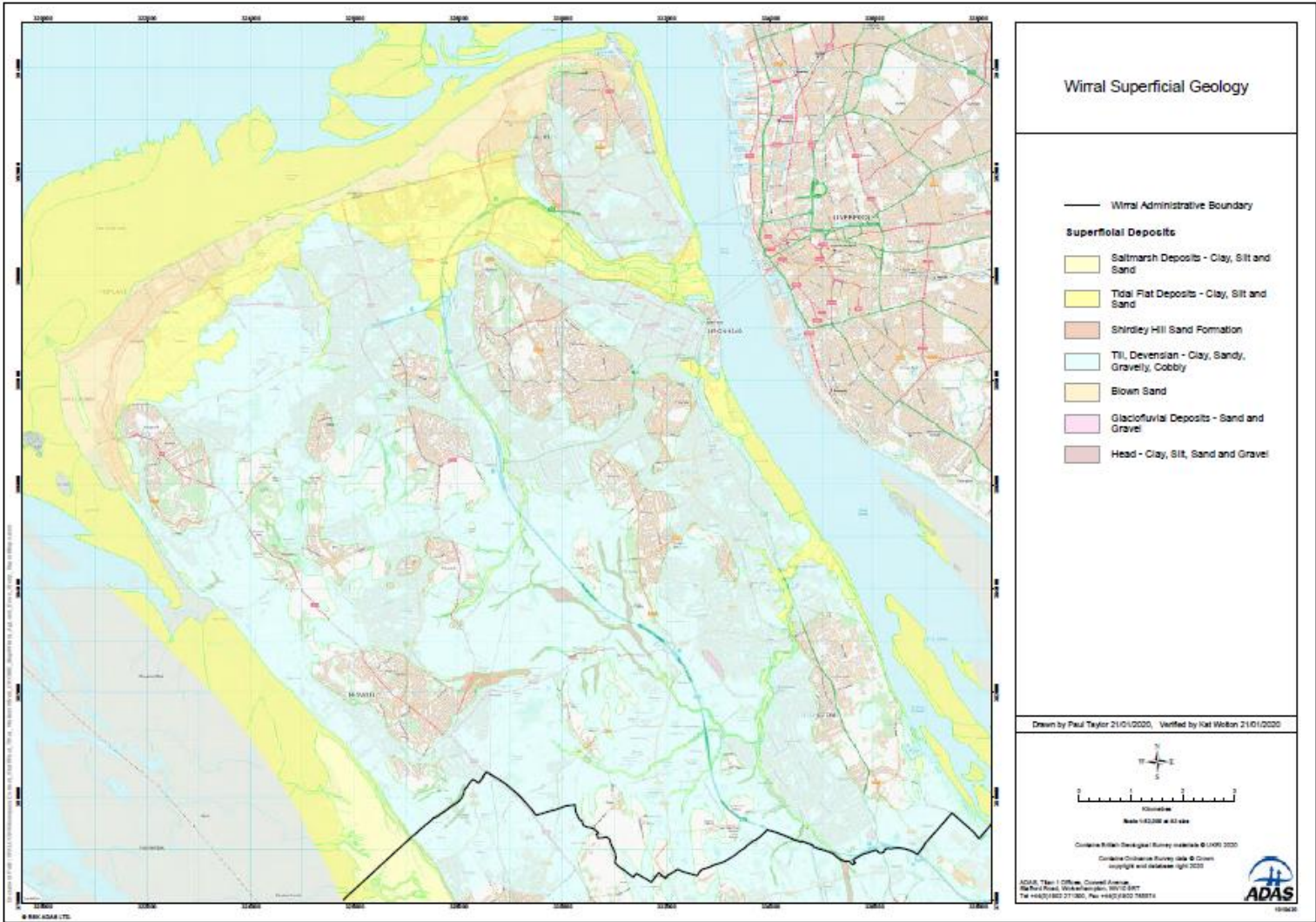


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Study of Agricultural Economy and Land in Wirral

Project no. 1010420-1 (00)

Appendix 8 – Superficial geology map



Appendix 9 – Summary of existing ALC surveys in Wirral

Diamond Farm, Saughall Massie (ADAS, 1995)

8.1ha of mixed arable and grassland.

ALC grade 3a, limited by soil wetness.

Clay loam overlying sandy clay loam and clay to depth. Wetness classes II and III.

Keuper red marl solid geology, overlain by glacial boulder clay and recent alluvium (BGS Sheet 96, Liverpool 1:50,000).

Mapped as Clifton association soil (711n).

<http://publications.naturalengland.org.uk/publication/5716091065073664>

Chester High Road, Gayton (ADAS, 1995)

14.4 ha of mixed arable and grassland, 6.7 ha non-agricultural, urban and open water.

8.3 ha ALC grade 3a (58% of agricultural land surveyed), limited by soil wetness. Clay loam topsoil overlying sandy clay loam to depth or sandy clay loam and clay to depth. Wetness classes II and III.

6.1 ha ALC grade 3b (42% of agricultural land surveyed), limited by soil wetness. Clay loam topsoil overlying clay to depth. Wetness class IV.

Bunter upper mottled sandstone solid geology, overlain by glacial boulder clay (BGS Sheet 96, Liverpool 1:50,000).

Mapped as Clifton association soil (711n).

<http://publications.naturalengland.org.uk/publication/5639640244551680>

Land west of Birch Road, Meols (ADAS, 1995)

7.0 ha of scrub at time of survey.

ALC grade 3a, limited by soil wetness. Loamy sand topsoil overlying sand and clay to depth. Wetness class III.

Triassic upper mottled sandstone solid geology, overlain by glacial boulder clay (BGS Sheet 96, Liverpool 1:50,000).

Mapped as Blackwood association soil (821b).

<http://publications.naturalengland.org.uk/publication/5215034408960000>

Vineyard Farm, Poulton (ADAS, 1995)

12.8 ha of agricultural land, 1.3 ha non-agricultural, urban and woodland.

3.0 ha ALC grade 2 (23% of agricultural land surveyed), limited by soil droughtiness. Sandy loam topsoil overlying sandy clay loam and sand at varying depths. Wetness class I.

9.8 ha ALC grade 3a (77% of agricultural land surveyed), limited by soil wetness. Clay loam topsoil overlying heavy clay loam or sandy clay loam subsoil and clay to depth. Wetness classes II and III.

Bunter upper mottled sandstone solid geology, overlain by glacial boulder clay (BGS Sheet 96, Liverpool 1:50,000).

Mapped as Clifton association soil (711n).

<http://publications.naturalengland.org.uk/publication/5081346975203328>

Land east of Raby Hall, Raby (ADAS, 1995)

3.6 ha of grassland at time of survey.

ALC grade 3a, limited by soil droughtiness. Sandy loam topsoil overlying sand and sandstone. Wetness class I.

Bunter upper mottled sandstone solid geology, overlain by glacial boulder clay (BGS Sheet 96, Liverpool 1:50,000).

Mapped as Clifton association soil (711n) to the north of the site and Bridgnorth association (551a) to the south of the site.

<http://publications.naturalengland.org.uk/publication/5807629300400128>

Land north of Greasby (ADAS, 1995)

12.2 ha of grassland at time of survey.

ALC grade 3b, limited by soil wetness. Clay loam topsoil overlying heavy clay loam and clay to depth. Wetness class IV.

Keuper red marl solid geology, overlain by glacial boulder clay and recent alluvium (BGS Sheet 96, Liverpool 1:50,000).

Mapped as Clifton association soil (711n).

<http://publications.naturalengland.org.uk/publication/5807629300400128>

Land west of Harrock Wood (ADAS, 1995)

4.2 ha of agricultural land, 0.2 ha of non-agricultural land.

1.8 ha ALC grade 3a (43% of agricultural land surveyed), limited by soil wetness. Clay loam topsoil overlying clay loam and clay. Wetness class III.

2.4 ha ALC grade 3b (57% of agricultural land surveyed), limited by soil wetness. Clay loam topsoil overlying clay loam and clay. Wetness class IV.

Keuper marl solid geology, overlain by glacial boulder clay (BGS Sheet 96, Liverpool 1:50,000).

Mapped as Clifton association soil (711n).

<http://publications.naturalengland.org.uk/publication/5116248282103808>

Land east of Harrock Wood (ADAS, 1995)

8.7 ha of agricultural grassland at time of survey.

1.5 ha ALC grade 3a (17% of agricultural land surveyed), limited by soil droughtiness. Clay loam topsoil overlying shattered waterstone bedrock. Wetness class I.

7.2 ha ALC grade 3b (83% of agricultural land surveyed), limited by soil wetness. Clay loam topsoil overlying sandy clay loam or heavy clay loam and clay to depth. Wetness class IV.

Keuper waterstone solid geology, overlain by glacial boulder clay (BGS Sheet 96, Liverpool 1:50,000).

Mapped as Clifton association soil (711n).

<http://publications.naturalengland.org.uk/publication/5518292922925056>

China Plate Farm, Newton (ADAS, 1995)

19.3 ha of agricultural grassland at time of survey.

13.6 ha ALC grade 3a (70% of agricultural land surveyed), limited by soil wetness. Clay loam topsoil overlying sandy clay loam or clay loam and clay to depth. Wetness classes II and III.

5.7 ha ALC grade 3b (30% of agricultural land surveyed), limited by soil wetness. Clay loam topsoil overlying sandy clay loam or heavy clay loam and clay to depth. Wetness class IV.

Bunter upper mottled sandstone solid geology, overlain by glacial boulder clay (BGS Sheet 96, Liverpool 1:50,000).

Mapped as Clifton association soil (711n).

<http://publications.naturalengland.org.uk/publication/4660145465851904>

Land south of Pickmere Drive, Eastham (ADAS, 1995)

7.5 ha of agricultural land and 1.1 ha of woodland.

2.7 ha ALC grade 2 (36% of agricultural land surveyed), limited by soil droughtiness. Sandy loam topsoil overlying sandy clay loam or occasionally loamy sand and sand to depth. Wetness class I.

4.8 ha ALC grade 3a (64% of agricultural land surveyed), limited by soil wetness. Clay loam topsoil overlying sandy clay loam to depth or sandy clay loam and clay to depth. Wetness class III.

Bunter pebble beds solid geology, overlain by glacial boulder clay and fluvio sand and gravel (BGS Sheet 96, Liverpool 1:50,000).

Mapped as Wick 1 association (541r) to the east of the site and Clifton association soil (711n) to the west.

<http://publications.naturalengland.org.uk/publication/6343624441724928>

Land south of Fornalls Green Lane, Meols (ADAS, 1995)

1.0 ha of grassland at time of survey.

ALC grade 3b, limited by soil wetness. Clay loam topsoil overlying sandy clay loam and clay to depth. Wetness class IV.

Triassic upper mottled sandstone solid geology, overlain by glacial boulder clay (BGS Sheet 96, Liverpool 1:50,000).

Mapped as Blackwood association soil (821b).

<http://publications.naturalengland.org.uk/publication/4990762222616576>

Riverbank Road, Heswall (ADAS, 1995)

2.1 ha of agricultural land.

ALC grade 2, limited by soil wetness. Sandy loam topsoil overlying sandy clay loam to depth or sandy clay loam, sandy loam and sand to depth. Wetness class II.

Bunter upper mottled sandstone solid geology, overlain by glacial boulder clay (BGS Sheet 96, Liverpool 1:50,000).

Mapped as Salwick association soil (572m).

<http://publications.naturalengland.org.uk/publication/5428830767415296>

Carr Lane, Moreton (MAFF, 1990)

7.8 ha of agricultural land.

1.6 ha ALC grade 3a (21% of the site), limited by soil wetness. Heavy clay loam topsoil overlying deep permeable sandy/silt soils. Wetness class I or II.

1.0 ha ALC grade 3b (13% of the site), limited by soil wetness. Medium clay loam topsoil overlying clay.

5.2 ha ALC grade 4 (67% of the site), limited by soil wetness. Heavy clay loam or clay topsoil overlying clay. Waterlogged for prolonged periods.

Mapped as Enborne association soil (811a).

<http://publications.naturalengland.org.uk/publication/4541298160697344>

Irby Road, Thurlaston (FRCA, 1992)

50.4 ha of agricultural land and 0.4 ha of non-agricultural land

30.0 ha ALC grade 3a (60% of agricultural land surveyed), limited by soil droughtiness or wetness. Sandy loam and medium clay loam topsoils, over sandstone and sandy clay loam or medium clay loam topsoils over clay.

20.4 ha ALC grade 3b (40% of agricultural land surveyed), mostly limited by soil wetness. The majority of land at this grade was medium clay loam topsoil over clay. One small area of shallow sandy loam over sandstone was limited to grade 3b by soil droughtiness.

Red sandstones of the Sherwood Sandstone Group solid geology, overlain by drift deposits of boulder clay.

Mapped as Bridgnorth association (551a) to the north of the site and Clifton association soil (711n) to the south.

<http://publications.naturalengland.org.uk/publication/5746227625852928>

Greenhouse Farm, Greasby (FRCA, 1988)

7.7 ha of agricultural land and 0.5 ha of non-agricultural land

3.8 ha ALC grade 2 (49% of agricultural land surveyed), limited by soil wetness. Medium clay loam topsoils, over sandy silt loam and sandy clay loam. Wetness class I.

3.9 ha ALC grade 3a (51% of agricultural land surveyed), mostly limited by soil wetness. Medium clay loam topsoils, over sandy clay loam upper subsoil and clay lower subsoil. Wetness class II or III.

Keuper waterstone solid geology, overlain by drift deposits of boulder clay (BGS Sheet 96, Liverpool 1:50,000).

Mapped as Bridgnorth association (551a) to the west of the site and Clifton association soil (711n) to the east.

<http://publications.naturalengland.org.uk/publication/4791232663388160>

The Birches, Birkenhead Road, Meols (ADAS, 1997)

1.2 ha of agricultural land and 0.1 ha of non-agricultural land.

0.3 ha ALC grade 3a (25% of the agricultural land surveyed), limited by soil wetness. Sandy loam topsoil overlying either sand, sandy clay loam or medium clay loam and silty clay to depth. Wetness class III.

0.9 ha ALC grade 3b (75% of the agricultural land surveyed), limited by soil texture. Fine sand topsoil overlying medium sand and silty clay. Wetness class III.

Alluvium solid geology (BGS, 1974).

Mapped as Sandwich association soil (361).

<http://publications.naturalengland.org.uk/publication/5981477194956800>

Appendix 10 – Summary of ALC climate calculations in Wirral

Site code	Grid Ref	Altitude (m AOD)	Average annual rainfall (mm)	Accumulated temperature above 0°C, January to June	Field Capacity Days	Soil moisture deficit – wheat (MDW) (mm)	Soil moisture deficit – potatoes (MDP) (mm)	ALC Climate Grade
SP001	SJ251881	15	761	1445	180	96	85	1
SP002A	SJ253888	15	765	1444	181	96	85	1
SP002B	SJ253888	15	765	1444	181	96	85	1
SP002C	SJ253888	15	765	1444	181	96	85	1
SP003	SJ252886	15	764	1444	181	96	85	1
SP004A	SJ254890	10	764	1450	181	97	86	1
SP005A	SJ253888	15	765	1444	181	96	85	1
SP010A	SJ260868	40	758	1417	179	94	82	1
SP013	SJ232857	35	742	1424	177	98	87	1
SP015A	SJ236892	5	756	1456	180	99	89	1
SP016	SJ209882	5	741	1458	177	103	94	1
SP019B	SJ265853	55	756	1401	179	93	80	1
SP025B	SJ276891	5	770	1455	181	96	85	1
SP030	SJ303854	40	786	1417	184	91	79	1
SP031	SJ301846	45	787	1412	184	91	79	1
SP032	SJ304846	50	789	1406	184	90	78	1
SP033	SJ309848	45	788	1412	184	91	78	1

Site code	Grid Ref	Altitude (m AOD)	Average annual rainfall (mm)	Accumulated temperature above 0°C, January to June	Field Capacity Days	Soil moisture deficit – wheat (MDW) (mm)	Soil moisture deficit – potatoes (MDP) (mm)	ALC Climate Grade
SP034	SJ305843	50	789	1406	184	90	78	1
SP035	SJ313854	55	800	1400	186	89	76	1
SP036	SJ310843	40	787	1417	184	91	79	1
SP037	SJ314836	35	787	1423	183	92	80	1
SP038	SJ319837	40	792	1417	184	91	79	1
SP039	SJ323833	40	794	1417	184	91	79	1
SP040	SJ324828	35	790	1423	183	92	80	1
SP041	SJ307840	45	788	1412	184	91	78	1
SP042	SJ329820	30	786	1429	182	93	81	1
SP043	SJ337820	35	793	1423	182	92	80	1
SP044	SJ335814	35	789	1424	181	92	80	1
SP045	SJ330809	20	776	1441	179	95	83	1
SP046	SJ337799	25	775	1436	177	95	84	1
SP047	SJ347793	25	779	1436	178	95	83	1
SP048	SJ349792	25	779	1436	178	95	83	1
SP049	SJ357792	30	779	1430	178	94	82	1
SP050	SJ364794	30	772	1430	176	94	83	1
SP051	SJ369796	25	763	1435	175	95	84	1

Site code	Grid Ref	Altitude (m AOD)	Average annual rainfall (mm)	Accumulated temperature above 0°C, January to June	Field Capacity Days	Soil moisture deficit – wheat (MDW) (mm)	Soil moisture deficit – potatoes (MDP) (mm)	ALC Climate Grade
SP052	SJ361801	35	788	1424	180	92	80	1
SP053	SJ362804	30	785	1429	180	93	81	1
SP054	SJ359813	35	791	1423	181	92	79	1
SP055	SJ365813	30	786	1429	180	92	80	1
SP058C	SJ252824	55	755	1402	178	92	79	1
SP058D	SJ252824	55	755	1402	178	92	79	1
SP058E	SJ252824	55	755	1402	178	92	79	1
SP059B	SJ251846	70	749	1384	178	92	79	1
SP059C	SJ251846	70	749	1384	178	92	79	1
SP059D	SJ251846	70	749	1384	178	92	79	1
SP059E	SJ251846	70	749	1384	178	92	79	1
SP060	SJ261844	75	755	1379	179	91	78	1
SP061	SJ277841	65	771	1390	181	90	77	1
SP062	SJ277828	65	768	1390	180	90	77	1
SP064E	SJ285824	55	767	1402	180	91	79	1
SP071	SJ284809	60	764	1396	178	91	79	1
SP108	SJ285923	10	774	1448	182	94	83	1
SP109	SJ283803	60	763	1397	178	91	79	1

Appendix 11 – Consultation Survey Questions

Wirral Agricultural Economy and Land Survey

- 1. Are you an agricultural landowner or a farm tenant?**
 - a. Agricultural landowner
 - b. Farm tenant
 - c. Both

- 2. How many hectares do you farm in Wirral?**
 - a. 0 – 20 hectares (0 – 50 acres)
 - b. 20 – 50 hectares (50 – 125 acres)
 - c. 50 – 100 hectares (125 – 250 acres)
 - d. Over 100 hectares (Over 250 acres)

- 3. Please indicate the general location of this land (select all that applies)**
 - a. Barnston
 - b. Bidston
 - c. Brimstage
 - d. Clatterbridge
 - e. Eastham
 - f. Frankby
 - g. Gayton
 - h. Greasby
 - i. Heswall
 - j. Hoylake
 - k. Irby
 - l. Landican
 - m. Leasowe
 - n. Meols
 - o. Newton
 - p. Pensby
 - q. Raby
 - r. Saughall Massie
 - s. Storeton
 - t. Thingwall
 - u. Thornton Hough
 - v. Thurstaston
 - w. Upton
 - x. West Kirby
 - y. Woodchurch
 - z. Dee Coast
 - aa. Other (please specify)
 - bb.

4. What is your main farm enterprise? (select only one)

Enterprise	Select Only One	No of Animals in Main Enterprise
Dairy		
Beef Cattle		
Breeding ewes		
Poultry		
Total Pigs – Sows + Weaners		
Horses (Livery)		
Other livestock [specify]		
		No of Hectares used for Main Enterprise
Combinable crops		
Non-combinable crops		
Horticulture		
Other crop [specify]		

5. What are your secondary enterprises? (select all that apply)

Enterprise	Select all that apply	No of animals in enterprise
Dairy		
Beef Cattle		
Breeding ewes		
Poultry		
Total Pigs – Sows + Weaners		
Horses (Livery)		
Other livestock (specify)		
		No of hectares used

Enterprise	Select all that apply	No of animals in enterprise
Combinable crops		
Non-combinable crops		
Horticulture		
Other crop (specify)		
Non-agricultural diversification e.g. campsite or horse grazing [please specify]		

6. How much land, within your management control, is subject to a Countryside Stewardship agreement?

- a) Less than 1%
- b) 1 – 3%
- c) 3 – 5%
- d) 5% +

7. What are the main challenges you face as a farming business and to agriculture in Wirral?

	1 (Most Important)	2	3	4	5 (Least Important)
Input costs					
Output prices					
Income from agriculture					
Access to markets					
Reduction in direct payments					
Reduction in yields					
Threat of animal disease					
Output market volatility					
Availability of labour					
Equipment costs					

	1 (Most Important)	2	3	4	5 (Least Important)
Insufficient innovation in farming technology					
Access to agricultural support services [specify]					
Access to secondary processors [specify]					
Government policy					
Access to agricultural livestock markets					
Access to available land to scale production					
Land quality					
Agricultural tenancy legislation					
Planning policy					
Trespass and other disturbance [specify]					
Other [specify]					

8. How likely is it that you will make any of the following changes to your farming activity in the next five years?

	1 (Most likely)	2	3	4	5 (Least Likely)
Improved efficiencies					
Change in agricultural enterprise - if so, what? [specify]					
Non-agricultural diversification - if so, what? (use space below)					
Increased agri-environment activities					

	1 (Most likely)	2	3	4	5 (Least Likely)
Rent out land for agricultural purposes					
Rent out land for non-agricultural purposes (including horses) – if so – please state for what? [specify]					
Land sale for agricultural use					
Land sale for development or other alternative use – if so, for what? [specify]					
More off-farm work					
Retiring					
No changes planned					
Other [specify]					

9. If you are planning to retire or leave farming in the next 10 years, what are your future plans?

- a. Retire and sell farm for agriculture.
- b. Retire and sell farm for development.
- c. Retire and rent out land on a Farm Business Tenancy (FBT).
- d. Retire and hand land back to landowner.
- e. Succession to family member.
- f. No plans have been made yet.
- g. Not applicable.

10. What proportion of your income comes from the farming business? The farming business includes all agricultural income, subsidies, agri-environment schemes and diversification.

- a. 1 – 10%
- b. 10 – 25%
- c. 25 – 50%
- d. 50 -75%
- e. 75 - 99%
- f. 100%
- g. Prefer not to say

11. Any other comments.