Review of Onshore Wind Energy in Fife

Strategic Cumulative Landscape and Visual Impact Assessment

Final Report

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EXECUTIVE SUMMARY

Objectives and Method

This study has considered the capacity of the Fife landscape to accommodate onshore wind energy development. The landscape capacity assessment is based on an assessment of landscape sensitivity and value of the different landscape character types and areas in Fife. This has involved a staged process:

- *Firstly identifying the inherent capacity of the Fife landscape to accommodate wind turbine development;*
- *Secondly assessing the degree of cumulative change that has resulted from the operating and consented wind turbines in the study area;*
- *Thirdly assessing the level of further cumulative development that could be acceptably accommodated within areas of Fife. This includes, where appropriate, commentary on the likely acceptability of currently proposed wind turbines.*

The study is based on the premise that, given current national policy for wind energy development, there will be a future level of landscape change and effects on visual amenity that requires careful management. In applying the assessment process, the study has addressed a number of concepts and issues that affect the perceived significance and acceptability of cumulative changes caused by multiple wind energy developments in the landscape.

The Fife Landscape

The landscape of Fife is highly varied, with lowland landscape areas interspersed between volcanic uplands, and surrounded on three sides by coastal landscapes. Much of the land is farmed. Fife local authority area has the third greatest population number in Scotland. There are a number of larger towns with industrial or mining backgrounds and many smaller settlements with farming communities throughout. In contrast with much of Scotland, there are no extensive large scale landscapes with minimal population.

The assessment has determined that there are no landscape areas of Fife suitable for development of extensive windfarms with large scale turbines. In contrast with much of Scotland there is no or very limited capacity for wind turbines in the highest upland areas, due to the limited extent, high visual sensitivity and landscape value of these areas within Fife.

Larger scale lowland farming areas have the greatest inherent capacity for wind turbine development, particularly in the more industrial areas of southern Fife Some smaller scale lowland valley and basin areas have no or very limited capacity. Some coastal areas have limited capacity. Similar areas, whilst of a suitable scale and character for wind turbines, are visually sensitive and have a high landscape value and therefore have no capacity for development.

Current Consented Wind Energy Development

Current operational and consented wind turbines in Fife comprise a total of 78 turbines over 25m high (with 77 under this height). Many of these are medium size turbines grouped singly or in small clusters in lowland and upland fringe areas.

The main area of wind energy development is in the lowland areas surrounding the principal towns of Kirkcaldy, Glenrothes and Dunfermline, where developments consented or in operation include four windfarms and paired or single larger scale turbines. The largest of the windfarms is Little Raith, near Cowdenbeath with 9x125m turbines at 25MW, which is a medium scale development by Scottish standards. However consented turbines also include a single 179m high turbine at Methil harbour.

Assessment of the cumulative effects of current operational and consented development indicates that there is some remaining capacity for further larger size turbine development in the lowland areas and some smaller scale turbines in some upland fringe, lowland and coastal areas. Nevertheless some areas are at or approaching capacity. There are two areas where no further cumulative development should take place if unacceptable levels of landscape change are to be avoided:

- *the Mossmorran area between Cowdenbeath/ Lochgelly and the Cullaloe Hills*
- *The area between Westfield Opencast Site and East Wemyss, including Strathore between Glenrothes and Kirkcaldy*

Current Wind Energy Proposals

Current applications for a total of 36 wind turbines include a number of clusters of larger scale turbines in the Kirkcaldy, Glenrothes and Dunfermline area and two similar scale proposals in the open sloping farmlands towards the East Neuk. Further applications are mainly for small and medium size turbines in lowland and upland fringe areas. There are almost no applications in upland and coastal areas.

This distribution largely conforms with the current distribution of larger and smaller turbines and the inherent landscape capacity for turbines. Nevertheless, some of the larger proposals lie close to sensitive landscapes; and some proposals, when considered with those already consented, would lead to cumulative effects that would exceed an acceptable level of cumulative development.

Opportunities and Constraints for Wind Energy Development

The principal areas of constraints and areas with future potential for development based on the assessment are detailed in the report. Detailed guidance on appropriate types and extents of future development is given for each landscape character type. This includes parameters for suitable turbine size, group size and separation between turbine groups. Areas where particular issues or constraints override other capacity factors are also identified.

1.0 INTRODUCTION

1.1 Background to Cumulative Landscape Issues

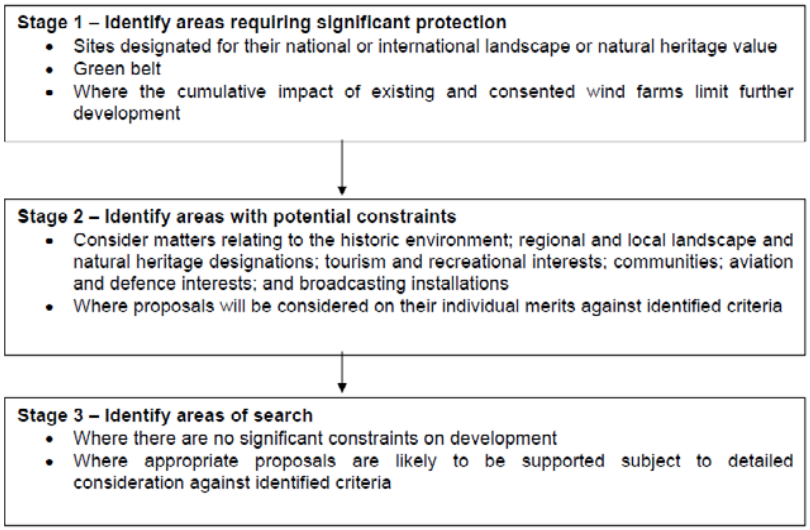
Scottish Planning Policy states that local authorities should make positive provision for the development of windfarms in locations where the technology can operate efficiently and environmental and cumulative impacts can be satisfactorily addressed. More recently the Scottish Government has strongly stated its support for renewable energy developments and encouraged Planning Authorities to ensure appropriate planning guidance is in place.

Fife Council's Supplementary Planning Guidance (SPG) for wind energy is being reviewed in the light of the recent increase in proposals and consents for wind energy projects, both for commercial windfarms and for single or small groupings of turbines as a result of the introduction of the Feed in Tariff. Given this factor and existing levels of development in upland areas, Scottish Government guidance states:

> *'Planning authorities are more frequently having to consider turbines within lower-lying more populated areas, where design elements and cumulative impacts need to be managed'.*

Scottish Government policy in SPP and web based guidance clearly indicates that cumulative wind energy development within areas may lead to eventual limits on further development and that this should be considered as a significant constraint. Areas where cumulative impact limits further development are a Stage 1 constraint in a Spatial Framework, requiring significant protection from further development:

Figure 1.1: Extract from Current Scottish Government Guidance on Preparing Spatial Frameworks



Fife's existing SPG defines Areas of Search for wind turbine development. It includes an indication of varying landscape capacity based on the findings of a study carried out by ASH in 2005. That study has determined the landscape capacity for different types of wind energy development across Fife, based on analysis of landscape character, quality and value and an assessment of significance of landscape change resulting from different potential scales of development.

The ASH study found that Fife has little landscape capacity for larger scales of development due to the spread of its population, modest scale and settled character of the landscape. Some upland and coastal areas were not deemed suitable for development due to their landscape quality. The remaining Areas of Search determine capacity based on the most suitable type(s) of development (size of turbines and numbers within clusters). However these do not give an indication of cumulative development capacity within and across areas.

1.2 Consultancy Appointments

Ironside Farrar was appointed by Fife Council in August 2012 to undertake a Strategic Cumulative Landscape Impact Assessment with respect to onshore wind energy development in Fife. Offshore wind energy was not a consideration in this study. The objectives were:

- Setting out a clearer vision for onshore wind farm development and to allow better understanding of the landscape constraints on wind energy in Fife and how these can or should be addressed;
- Reviewing the existing landscape capacity study and area of search for onshore wind turbines in Fife;
- Determining the thresholds of acceptable landscape change and identifying critical factors which are likely to present an eventual limit to development;
- Setting out clear assessment methodology that the Council can replicate to ensure cumulative impacts are minimised now and in the future; and
- Identifying areas of landscape most suitable for onshore wind energy development.

The draft study specifically addressed **landscape capacity** and the landscape and visual impact of cumulative onshore wind energy development, in order to determine where there is capacity for further development and where significant protection from further development may be required. The study addresses these requirements through a staged assessment process.

The landscape capacity study was published by Fife Council in November 2012 and was subject to public consultation as part of a wider review of wind energy planning issues in the emerging Local Development Plan Main Issues Report. More than 92 representations

were received to the consultation on wind energy issues, with 51 of these specifically relating to this study.

Ironside Farrar has been reappointed to address representations made to the public consultation. Following this the November 2012 report has been updated to take account of the following:

- actions and corrections resulting from the representations;
- the current (April 2013) status of wind turbine consents and applications;
- updating cumulative landscape capacity analysis and findings on the basis of the representations and current development status;
- updating the strategic spatial guidance to take account of the above changes.

1.3 National and Local Policy

National and local planning policies in Scotland are well disposed towards the development of onshore wind energy. However it is accepted that there are limitations imposed by environmental sensitivities and the capacity of areas to accept cumulative development. Therefore the acceptability of multiple windfarms and turbines and the cumulative landscape and visual impacts of development has to be considered in the light of national and development plan policy. **Appendix 1** reviews current national policy and guidance and Fife development plan policy and guidance.

1.4 Landscape Capacity and Cumulative Impacts

SPP and Scottish Government guidance identifies cumulative impacts and landscape capacity as being critical to the identification of broad areas of search for wind energy development.

This study has thus been prepared to inform the Council on the issues of landscape capacity and cumulative impact. Accordingly it comprises three main themes:

- A strategic landscape and visual capacity study, investigating the inherent capacity of landscapes within Fife to accommodate wind energy development;
- A landscape and visual impact assessment of the level of cumulative development of operating, consented and proposed onshore wind turbines and wind farms in Fife;
- Strategic spatial guidance on the levels and types of wind turbine development throughout Fife that would be acceptable in landscape and visual terms, taking into account the first two considerations.

1.5 Limitations of the Study

It is emphasised that this is a strategic level study. It provides a context for consideration of landscape capacity and the cumulative landscape and visual effects of existing and potential future onshore wind turbine developments in Fife. No site specific conclusions should be drawn from it in relation to currently proposed or potential future wind turbines and windfarms. Offshore wind energy has not been a consideration of this assessment.

As a strategic landscape and visual study this does not address specific localised impacts such as effects on specific or individual residential receptors or other sensitive receptors. All wind energy proposals should be considered on their own unique locational and design characteristics as well as their strategic context. All proposals should be subject to consideration of landscape, visual and cumulative impact assessment including (if required) a full environmental impact assessment.

2.0 METHODOLOGY FOR CUMULATIVE LANDSCAPE AND VISUAL IMPACT AND CAPACITY ASSESSMENT

2.1 Purpose of Methodology

The purpose of the following assessment is to determine the landscape capacity of Fife to accommodate wind energy development and to determine the levels of cumulative development that would be acceptable across Fife. The assessment takes into account current cumulative development within and around Fife and is based on the premise that current renewable energy policies will lead to a future level of landscape change within Fife that requires careful management.

The key objectives of the study are outlined in Chapter 1. The methodology serves these objectives through a clear assessment of landscape and visual sensitivity and capacity across Fife; together with an assessment of the cumulative effects of current consented wind energy development and the potential for accommodating future development.

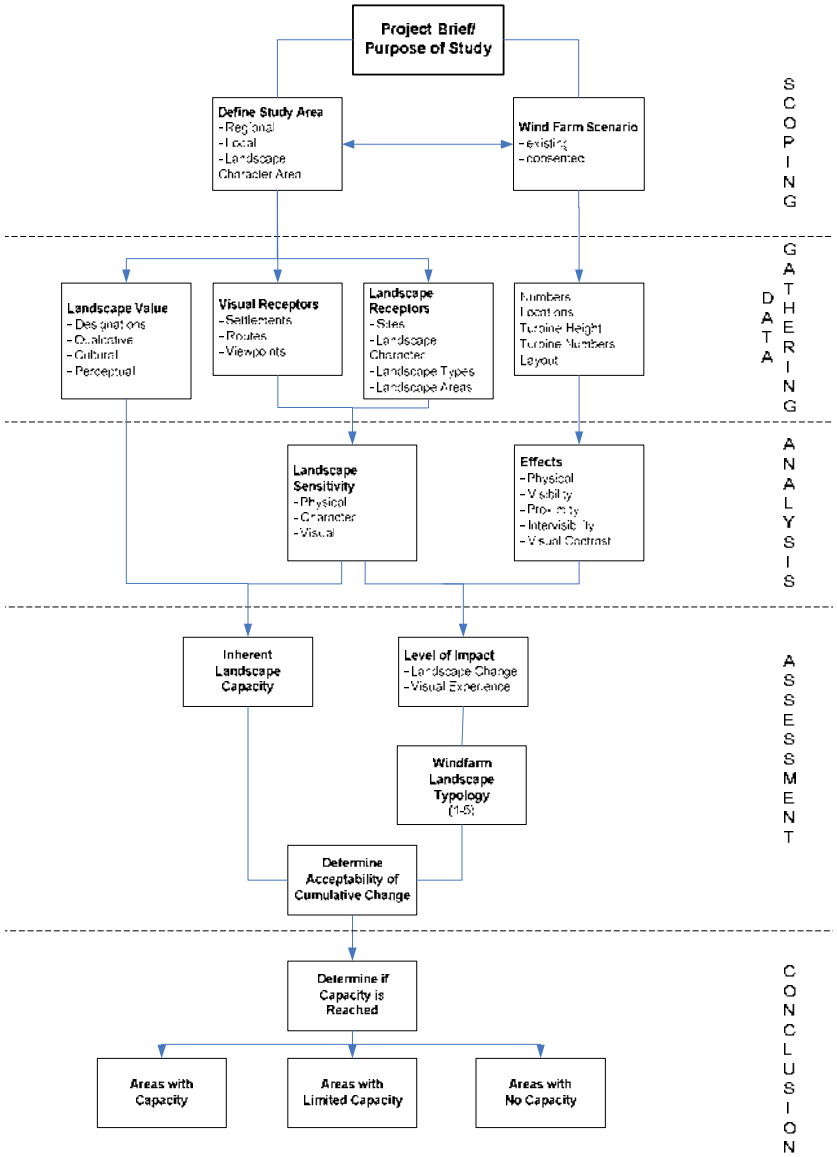
Nevertheless, it is recognised in guidance that the assessment of landscape capacity and cumulative impacts is not a straightforward exercise. The background considerations and detailed methodology for this process are detailed in **Appendix 2** of this report. The following summarises the methodology and explains how the findings and recommendations are presented.

2.2 Study Stages

The assessment comprises the following stages (see Figure 2.1 opposite).

1) Define study area, characterise landscape and visual baseline and scope wind energy types to be included in the strategic study.
2) Assess landscape/ visual sensitivity and landscape value based on landscape character types (LCTs) and landscape character units (LCUs) in Fife.
3) Assess the inherent capacity of the Fife landscape to accommodate wind energy development of different types and scales, based on the assessment of sensitivity and value of the LCTs and LCUs.
4) Record the current type and extent of consented wind energy development in Fife and the surrounding local authorities.
5) Determine the extent to which the cumulative consented development has reached the capacity of the landscape to accommodate wind energy developments.
6) Further to the assessment of landscape capacity and cumulative development identify areas in which:
   - there is no inherent landscape capacity for wind energy development;
   - there is inherent landscape capacity for wind energy development.
   - consented cumulative development in areas with inherent capacity limits landscape capacity for further wind energy development;

Figure 2.1. Cumulative Impact and Landscape Capacity Methodology Flowchart



The resulting spatial strategy is supported by guidance on appropriate types and levels of wind energy development for the areas in which there is capacity, taking note of the potential limitations imposed by already consented development. Currently proposed developments are assessed in the light of the assessment findings and proposed strategy.

2.3 Scope of Assessment

2.3.1 Area Covered

The study focuses primarily on the local authority area of Fife, although areas beyond the boundary are considered in terms of the visual influence of nearby wind turbines and neighbouring contiguous landscape types.

2.3.2 Wind Energy Development Types

The study considers all sizes of turbines and developments operating, consented or proposed, as well as the potential future scenarios where appropriate.

However turbines under 25m to blade tip are not included in the strategic assessment. These are better considered in terms of localised generic siting and design criteria. Turbines under 25m are not considered to have the same qualities of scale, prominence and widespread visibility that lead to the wider cumulative impacts that characterise larger turbines with a blade tip higher than 25m.

2.4 Landscape and Visual Baseline

The landscape baseline assessment includes a description and classification of landscape character and records of designations and other features that contribute to landscape value.

The **landscape character assessment** is based on landscape character types (LCTs) and landscape character units (LCUs) in Fife identified and described in the *Fife Landscape Character Assessment* (David Tyldesley Associates for SNH, 1999). Further landscape character types in neighbouring areas are also identified. These are detailed in other publications in the national series.

Some minor changes to LCUs are made based on the recent assessment of local landscape designations in the *Fife Local Landscape Designation Review (*LUC in association with Carol Anderson and the Small Town and Rural Development Group, 2009). This is detailed in **Appendix 3.** The boundaries to expanding urban areas have also been updated.

Landscape value is determined partly through landscape designations. There are no national designations in Fife. Local landscape designations have recently been reviewed and cover extensive parts of the local authority area. A Regional Park designation covers the Lomond Hills and Benarty Hill and there are green belts adjacent to Dunfermline and St Andrews. There are also many Historic Gardens and Designed Landscapes throughout Fife. Related designations that contribute to landscape value and character are recorded. These include natural and cultural heritage designations, recreational/ visitor facilities and core paths.

The **visual baseline** assessment is detailed in **Chapter 4**. It involves a computer-based intervisibility assessment based on different turbine heights and receptor types. This approach should not be considered in isolation from other factors such as landscape character. Nevertheless it is a comprehensive visibility test which helps to identify the areas that are most likely to be visually sensitive and areas in which wind turbines of different heights might be visible or more easily concealed.

2.5 Determining Landscape Sensitivity and Capacity

A method for determining landscape sensitivity and capacity is detailed in **Appendix 2**. This involves consideration of the two main elements outlined in 2.2 above:

1) The sensitivity of the landscape fabric and character to wind energy development, which includes landscape features, elements and characteristics and its visual sensitivity which includes intervisibility and receptors types.
2) The value of the landscape as determined by stakeholders. This may include national or local recognition by landscape designation or cultural association, or value to a community of interest such as a local residents or an interest group.

Appendix 2 describes a breakdown of the physical and perceptual characteristics that contribute to landscape character, visual sensitivity and value. Each criterion is described and evaluated in terms of its sensitivity to wind energy development. An overall assessment of **high, medium** or **low** is derived from a composite of all the criteria. There is no consistent relative weighting of criteria as, in the case of each landscape type, different criteria are likely to be critical in the sensitivity assessment.

Following the above assessment, an overall professional judgement on capacity for developments of different types is made on the basis of sensitivity and value. Landscape capacity is rated according to the degree to which wind turbines may be accommodated without adverse effects on sensitivity and value. The descriptive criteria below for **high, medium** and **low** describe the main thresholds on a continuum between no capacity and high capacity.

Low Capacity: A landscape that is both sensitive to wind turbine development and has a high value, where only a slight level of change can be accommodated without significantly affecting any of the key defining criteria

Medium Capacity: A landscape that has some sensitivity to wind turbine development and has some aspects of value; where a moderate level of change can be accommodated which may significantly affect some of the defining criteria

High Capacity: A landscape that has low sensitivity to wind turbine development and has low value, and can accommodate change that significantly affects most of the key defining criteria

Broadly speaking there is an inverse relationship between landscape sensitivity/value and capacity. However, this is not a simple relationship that can be expressed in a matrix: a balance of judgement is made in each case as landscape value may be a more important factor than sensitivity in some cases; and vice versa in others.

Turbines of particular heights and the sizes and layout of types of turbine development may relate better to some LCTs than others and limited geographical extent of LCUs of some otherwise suitable LCTs may limit capacity for development.

2.6 Defining Landscape Change and Cumulative Capacity

An understanding of cumulative impacts and change in the landscape is key to determining acceptable levels of development and whether or not areas have reached cumulative capacity. This is discussed below and in further detail in **Appendix 2.**

2.6.1 Cumulative Capacity

Scottish Government Guidance for Onshore wind turbines (web based update 24 Oct 2012) underlines the landscape and visual issues associated with increasing levels of cumulative wind turbine development:

> *'In areas approaching their carrying capacity the assessment of cumulative effects is likely to become more pertinent in considering new wind turbines... In other cases, where proposals are being considered in more remote places, the thresholds of cumulative impact are likely to be lower, although there may be other planning considerations.'*

SNH guidance *Siting and Designing Windfarms in the Landscape (Dec 2009)* and Assessing the Cumulative Impact of Onshore Wind Energy Developments (March 2012) lists the factors that affect the perception of cumulative impact of windfarm development:

- *the distance between individual windfarms (or turbines),*
- *the distance over which they are visible,*
- *the overall character of the landscape and its sensitivity to windfarms,*
- *the siting and design of the windfarms themselves, and*
- *the way in which the landscape is experienced.*

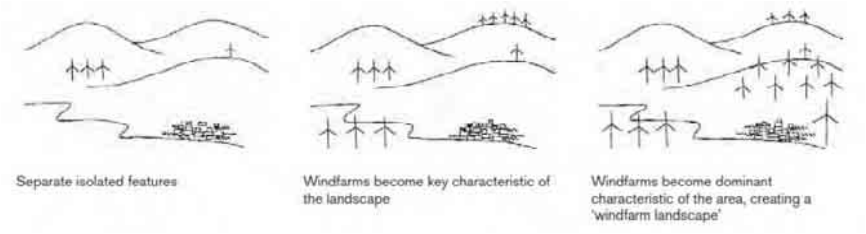
To this list might be added turbine height and windfarm size. In determining an acceptable level of development, it is necessary to clearly define what differing levels of development actually entail. The methodology therefore sets out defined levels of change to the landscape and visual environment that might occur or be experienced depending on the size, number and location of turbines to be built within an area.

The descriptions in Table 2.1, opposite, set out a gradated landscape typology that defines increasing levels of cumulative landscape and visual impact of turbines by describing their effect on landscape character and the experience of those living in or travelling through the landscape.

Table 2.1: Description of Levels of Cumulative Wind Turbine Development

Wind Turbine Landscape Type	Landscape Character	Visual Experience
Landscape with no Wind Turbines	A landscape type or area in which no, or a minimal number/size of wind turbines is present, or visible from neighbouring areas.	There would be no, or negligible, effects on visual receptors.
Landscape with Occasional Wind Turbines	A landscape type or area in which windfarms or wind turbines are located and/or are close to and visible. However they are not of such a size, number, extent or contrast in character that they become one of the defining characteristics of the landscape's character.	Visual receptors would experience occasional close-quarters views of a windfarm or turbines and more frequent background views of windfarms or turbines. Some of the turbines would not be perceived as being located in the landscape character type or area. No overall perception of wind turbines being a defining feature of the landscape.
Landscape with Wind Turbines	A landscape type or area in which a windfarm, windfarms or wind turbines are located and/or visible to such an extent that they become *one* of the defining characteristics of the landscape character. However, they are clearly separated and not the single most dominant characteristic of the landscape.	Visual receptors would experience frequent views of windfarms or wind turbines as foreground, mid-ground or background features, affecting their perception of the landscape character. However there would be sufficient separation between windfarms and turbines and sufficient areas from which wind turbines are not visible such that they would not be seen as dominating the landscape over all other landscape features.
Wind Turbine Landscape	A landscape type or area in which windfarms or wind turbines are extensive, frequent and nearly always visible. They become the dominant, defining characteristic of the landscape. Nevertheless there is a clearly defined separation between developed areas.	Visual receptors would experience views of windfarms as foreground, mid-ground and background features, to the extent that they are seen to dominate landscape character. Few areas would be free of views of wind turbines.
Windfarm	Landscape fully developed as a windfarm with no clear separation between groups of turbines. Few if any areas where turbines not visible.	Visual receptors would always be close to and nearly always in full view of wind turbines.

Further generic illustration of this concept is provided in Part 1 section 5 of the SNH guidance (see 5.5 and 5.6 of the SNH guidance and the following illustrative sketches).



2.6.2 Determining Acceptable Levels of Change

The SNH siting and design guidance identifies three broad levels of cumulative change in the landscape that may be set by local authorities depending on landscape sensitivity and value and local policy objectives:

- **Landscape Protection:** Maintain existing landscape character.
- **Landscape Accommodation:** Accept a degree of change providing this does not fundamentally alter key landscape characteristics and visual resources.
- **Landscape Change:** Accept large amounts of change that may fundamentally alter key landscape characteristics and visual resources.

The descriptions in Table 2.1 provide a basis on which to understand and determine levels of change. However it is the collective decision of stakeholders including local authorities and their population that ultimately determines the levels of landscape change that are acceptable across their area.

2.7 Presentation of Assessment and Findings

The study assessment and findings are presented in the following chapters:

Chapter 3: Landscape Baseline

This chapter defines and describes the study area, including the geographical extent and landscape character of Fife and its surroundings. It also reviews other relevant information including landscape designations and other landscape-related constraints such as natural heritage and cultural heritage designations.

The information in Chapter 3 informs the assessment of the sensitivity and value of each LCT or LCU, as detailed in Chapter 6.

Chapter 4: Visual Baseline

This chapter details the analysis carried out to establish the relative visibility and visual sensitivity of different parts of Fife. This involves a computer-based intervisibility assessment based on different turbine heights and receptor types. The resulting maps are shown in **Appendix 4.**

The information in chapter 4 informs the assessment of landscape sensitivity as detailed in Chapter 6.

Chapter 5: Wind Turbines in the Study Area

This chapter describes the operating, consented and proposed wind turbine developments in the study area at April 2013. A detailed list of existing and consented developments and applications is given in **Appendix 4** and illustrated in Figures 5.1 and 5.2. There is an analysis of turbine size ranges and distribution in relation to landscape. Following this there is a discussion of the factors involved in wind turbine location, size, design and distribution that affect landscape, visual and cumulative impacts.

Chapter 6: Assessment of Landscape Capacity and Cumulative Change

This chapter analyses and assesses the information in the previous sections to determine the landscape and visual impacts of, and capacity for, wind energy development across Fife. The assessment is summarised in **Table 6.1** and **Figures 6.1 to 6.3.** The assessment informs the subsequent spatial strategy and includes guidance on turbine size and distribution. Further details of how to read Table 6.1 together with the figures are given in at the start of Chapter 6.

This assessment is carried out for each of the fifteen LCTs in Fife. The capacity assessment and current cumulative change for each of the LCTs is then combined to come to an assessment of capacity and cumulative effects on the three main regional landscape areas of Fife:

1) Volcanic Uplands of the Midland Valley;

2) Midland Valley Lowland Landscapes;

3) Midland Valley Coastal Landscapes.

Finally an assessment is made for the whole local authority area. Further spatial guidance regarding areas with restricted capacity and areas with capacity for further development are given at the end of Chapter 6**.**

2.8 Potential Opportunities and Constraints

The main spatial findings of the detailed assessment are summarised on a map in **Figure 6.4**. This shows the distribution of the following areas:

- Areas with highest potential landscape capacity for wind energy development
- Areas with limited inherent landscape capacity for wind energy development
- Areas with no inherent landscape capacity for wind energy development
- Areas where capacity is limited by cumulative development (which overlap with parts of the above areas)

2.9 Limitations to Assessment

It is emphasised that this assessment is focused on landscape and visual issues. Areas which have been identified as having capacity for wind energy development on this basis may be restricted by other unrelated factors such as protection of wildlife, effects on residential amenity, aviation restrictions or lack of grid connection. These potential constraints are not the subject of this assessment and are covered separately by the SPG.

3.0 LANDSCAPE BASELINE

The following section defines and describes the study area, including the geographical extent and landscape character of Fife and its surroundings. It also reviews other relevant information including landscape-related designations, natural heritage and cultural heritage constraints. Most of these constraints are identified in Stages 1 and 2 of the spatial framework, however it is the extent to which may have a bearing on landscape character and value that is the primary consideration in this cumulative impact study.

3.1 Study Area

The study area for this assessment is shown in Figure 3.1. Fife is a large peninsula of lowlands and hills located in south-eastern Scotland to the north of Edinburgh. It borders the North Sea and is bounded by the Firth of Tay to the north and the Firth of Forth to the south. It has inland boundaries with Perth and Kinross to the north-west and Clackmannanshire to the west. Angus and the City of Dundee lie to the north, and the Lothians to the south.

The study focuses on the local authority area of Fife for the purposes of determining landscape capacity. Nevertheless, there are a number of existing, consented and proposed windfarms and turbines in neighbouring local authority areas. Some consideration has been given to these, due to the extensive visual influence exerted by most wind turbines. The study area therefore includes a 15km buffer around its boundary.

3.2 Baseline Landscape Character Assessment

3.2.1 Landscape Context

The landscape of Fife sits broadly within the Midland Valley of Scotland between the Grampian Highlands to the north and the Southern Uplands to the south. Fife is a peninsula, with its landscape merging into two of ten surrounding council areas and the others separated by the broad Firths of the Tay and Forth. It has a total area of 1,325 km² and a population of approximately 363,460.

- To the north, across the Tay is the urban landscape of Dundee, with the Sidlaw Hills in Angus and Perth & Kinross forming the backdrop to the estuary and the flat hinterlands around the Carse of Gowrie;
- The eastern edge of the Ochils is divided between Stirling, Clackmannanshire and Perth & Kinross and Fife. The height of the hills drops as it crosses into Fife and forms the northern boundary with the Firth.
- To the west, the upland landscape of the Ochils gives way to a more lowland character where Fife borders Perth & Kinross and Clackmannanshire.
- Across the Firth of Forth in the south lie the City Edinburgh and the towns of Linlithgow, Falkirk and Bo'ness. The higher ground of the Pentlands and Slamannan Plateau are a backdrop to the developed urban landscape around the M9 corridor.

The landscape of Fife is diverse with an extensive coastline and varied topography creating extensive areas of low lying arable farmland and higher pasture and prominent higher hills. The varied topography of Fife and its surroundings is illustrated in Figure 3.2.

Upland areas such as the Lomond, Benarty and Cleish Hills were formed from resistant igneous rocks, as were the foothills of the Ochil Hills, the Cullaloe Hills and further localised, occasionally very prominent landforms such as Largo Law. These form distinctive silhouettes and skylines often with recognisable shapes, peaks and slopes which give a strong sense of place and orientation.

There are three main lowland areas in which undulating or flat farmland predominates. The largest area extends from the border with Clackmannanshire in the west through to the east of Fife and surrounds most of the main settlements in south and west Fife. In the west it lies between the Cliesh Hills and the Firth of Forth, whereas east of Dunfermline it lies between upland areas including the Cullaloe Hills and Lomonds, eventually grading into coastal types in the East Neuk. A smaller area of gently sloping windswept farmland lies between the East Neuk and St Andrews. The third area lies along the Eden valley stretching from the M90 in the west, surrounding the towns of Ladybank and Cupar to the coastal landscapes surrounding Edenmouth in the east. A number of narrow valleys or Dens characterise the lowlands as well as former glacial meltwater valleys draining to the north. Occasional small loch basins such as Loch Ore and Loch Gelly add variety.

Coastal areas surround Fife on three sides. Mostly low lying undulating landscapes border the Firth of Forth, with occasional small headlands and steeply sloping braes, becoming flatter and more open to the east. Along the north sea coast there are small coastal cliffs and extensive areas of flat land including West Sands and Tentsmuir lying between Edenmouth and the Firth of Tay. Along the north coast, the topography slopes steeply towards the Firth of Tay.

3.2.2 Landscape Character

The *Fife Landscape Character Assessment* (David Tyldesley and Associates 1999), published by SNH, identifies 3 regional landscape character areas which are primarily determined by elevation, landform, land use and proximity to the sea.

- Volcanic Uplands of the Midland Valley
- Midland Valley Lowland Landscapes
- Midland Valley Coastal Landscapes

These upland, lowland and coastal regional character areas have been divided into 15 landscape character types with further subdivisions into local Landscape Units as set out in Table 3.1 below. Regional and local landscape character areas are shown in Figures 3.3 and 3.4.

The 1999 assessment of Fife was updated in 2009 with minor alterations to Landscape Character Units as part of the *Fife Local Landscape Designation Review (*LUC in association with Carol Anderson and the Small Town and Rural Development Group).

This was to draw together Landscape Character Units of very similar character, and sub-divide those areas where a distinct variation was identified. It also took into account changes to the landscape which had taken place since 1999. Further minor updates have been undertaken in this study, reflecting changes in the landscape such as the eastern urban expansion of Dunfermline. These changes are described in Appendix 2.

Table 3.1. Landscape Character Areas in Fife (based on revised Fife Landscape Character Assessment)

Regional Character Areas	Landscape Character Types	Principal Landscape Units
THE MIDLAND VALLEY OF SCOTLAND		
Volcanic Uplands of the Midland Valley	1. The Uplands	*The Ochil Hills, Lomond Hills, Benarty Hill, Cleish Hills*
	2. Upland Slopes	*Lomond Slopes North, Lomond Slopes East, Benarty Slopes, Cleish Slopes North, Cleish Slopes West, Cleish Slopes East (Blairadam), Thornton Slopes*
	3. Upland Foothills	*Ochil Foothills – Newport, Ochil Foothills – Gauldry, Ochil Foothills – Lucklaw, Ochil Foothills – Brunton, Ochil Foothills – Letham and Black Hill, Lomond Foothills, Cleish Foothills*
	4. Pronounced Volcanic Hills and Craigs	*Blebocraigs, Ceres, Clatto, Tarvit, Largoward, Largo Law, Redwell Hill, Cowdenbeath Hills, Cullaloe Hills, Kincraig*
Midland Valley Lowland Landscapes	5. Lowland Hills and Valleys	*North West Cupar, East Cupar, Tarvit Mill, Strathmiglo, NE Dunfermline, Fordell, West Dunfermline, South Dunfermline, South Oakley, Black Devon, Bluther Burn, Devillla Forest, Cameron, Prior Muir, Falkland*
	6. Lowland Open Sloping Farmland	*East Fife Slopes, Strathkinness*
	7. Lowland Dens	*Corbie Den, Dura Den, Claremont, Kinaldy, Largo*
	8. Lowland Glacial Meltwater Valleys	*Motray Water, Dunbog, Lindores*
	9. Lowland River Basin	*Collessie Howe of Fife East, Dunshelt Howe of Fife West, Milton Mid Leven Valley*
	10. Lowland Loch Basin	*Leven, Ore, Gelly, Fitty, Kilconquhar*
COASTAL LANDSCAPES OF SCOTLAND		
Midland Valley Coastal Landscapes	11. Coastal Hills	*Tayport, Balmerino, Balinbreich, North Strathkinness, South St Andrews, Kincardine to Culross, Valleyfield to Charlestown, Limekilns, Castlandhill, Ferry Hills, Letham Hill, Aberdour Hills, Wemyss, Kinghorn*
	12. Coastal Terrace (Raised Beaches)	*Eden Coastal Terrace, Kingsbarns, Fife Ness, Crail – St Monans, Elie, Newburgh*
	13. Coastal Cliffs	*St. Andrews, Kinkell Coastal Cliffs, South Kincraig*
	14. Coastal Wooded Braes	*Birkhill Coastal Wooded Braes, Culross, Torryburn – Limekilns, Aberdour - Burntisland*
	15. Coastal Flats	*Tents Muir Forest, Morton – Leuchars, Earlshall Muir, Eden Coastal Flats, The Links, NW St Andrews, Newburgh, Mugdrum Island, St. Ford Links, Kincardine, Longannet, Valleyfield Ash Lagoons, Rosyth*
	16. Coastal Islands	*Incholm, Inchkeith, Isle of May*

3.3 Landscape Designations

Landscape designations are an indication of landscape value as determined by society. Landscape designations form part of the baseline for both the assessment of landscape capacity, and the preparation of a spatial framework. Landscape designations within the study area are noted below, and are shown in Figure 3.5a, in relation to landscape character units.

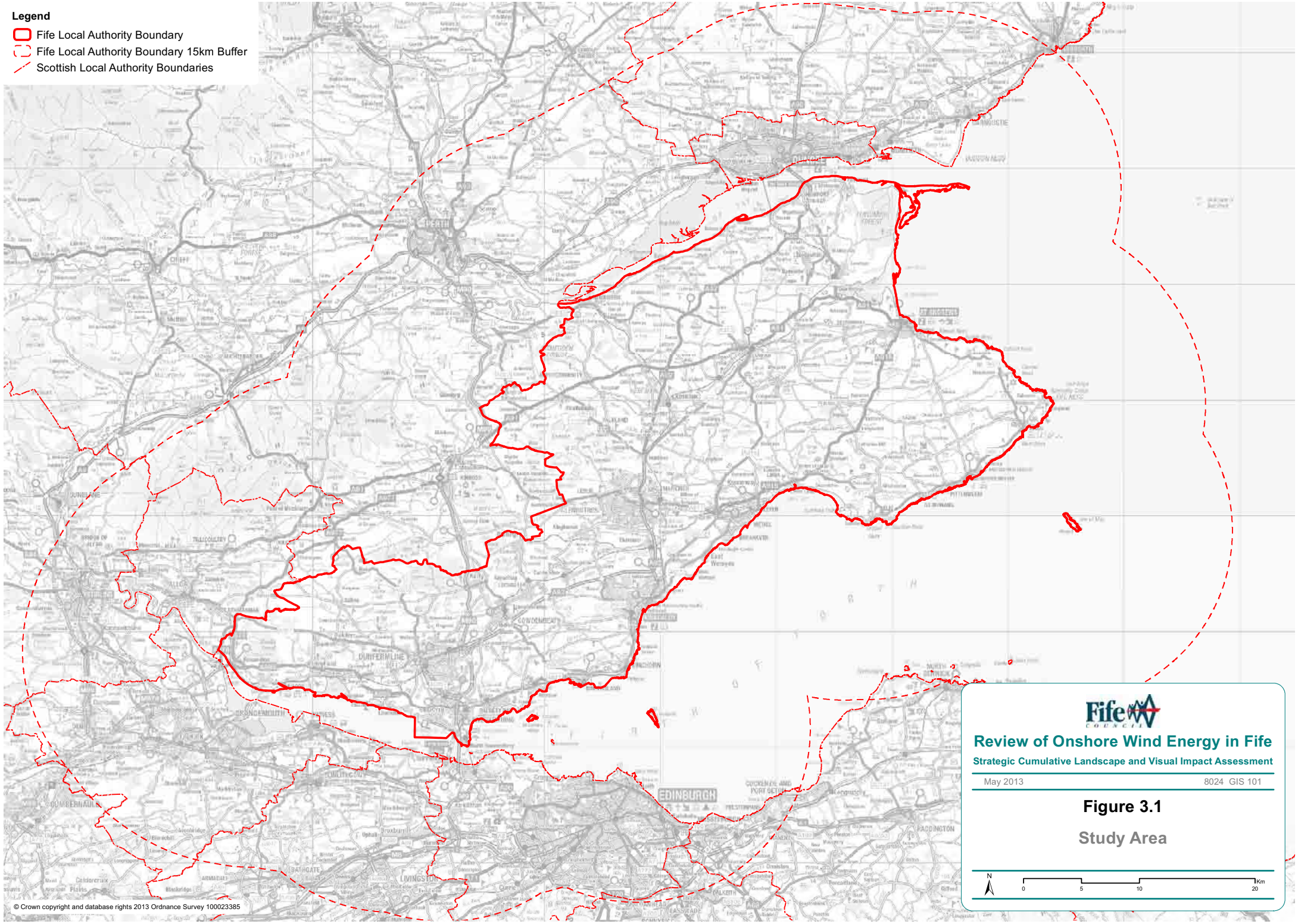
3.3.1 National Landscape Designations

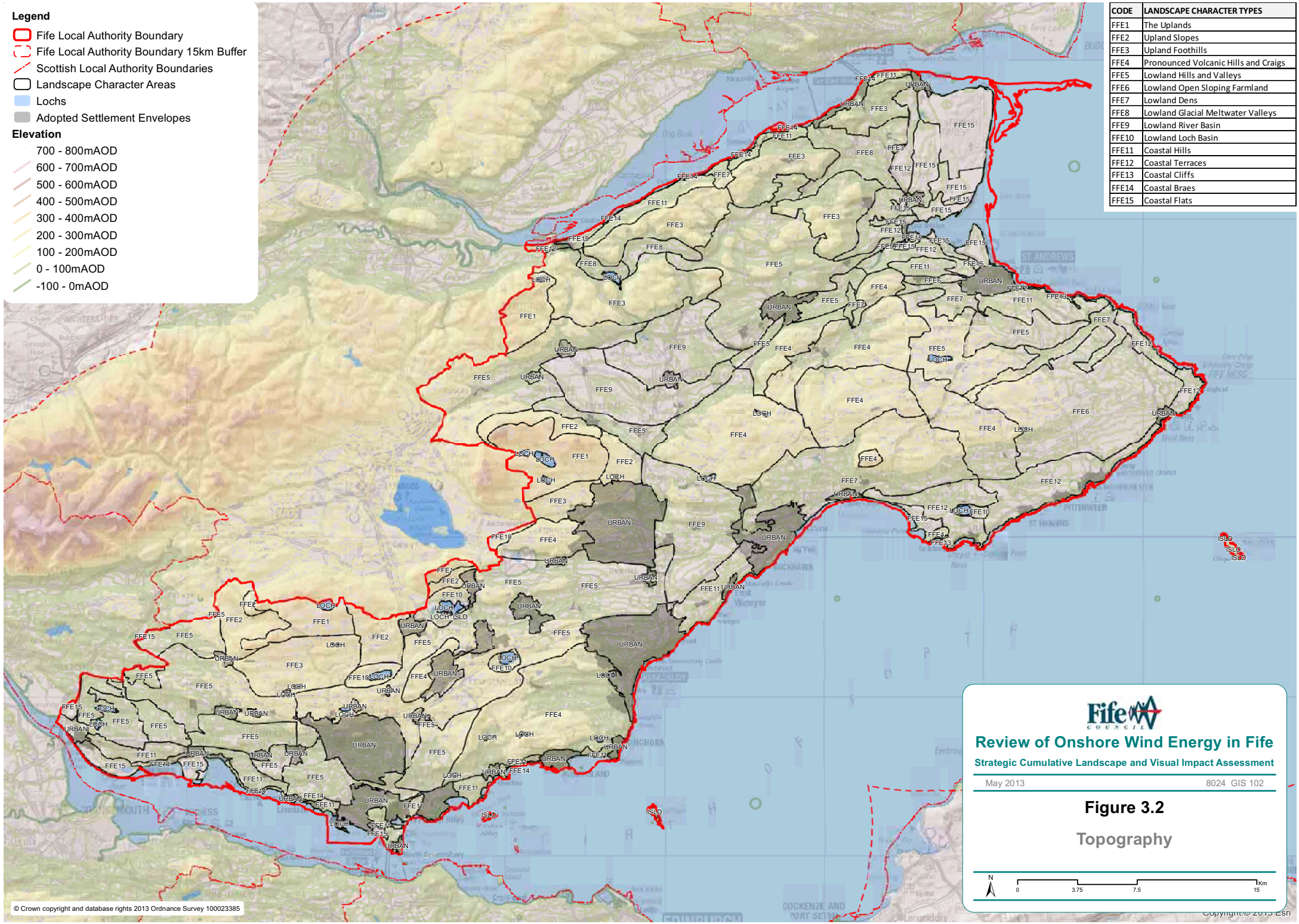
There are no areas of national landscape designation, i.e. National Scenic Areas and National Parks within Fife or the study area.

3.3.2 Local Landscape Designations

Local landscape designations are extensive in Fife Council and the study area. In 2007 Fife Council commissioned a review of local landscape designations (*Fife Local Landscape Designation Review*) to assist preparation of new local plans in line with SNH guidance.

The commissioned report provided recommendations for designating Local Landscape Areas (referred to as Local Landscape Areas). These are now incorporated into Fife's three Local Plans. The Local Landscape Areas (LLAs) replace the Areas of Great Landscape Value (AGLVs) designated in previous Local Plans.




Legend
Fife Local Authority Boundary
Fife Local Authority Boundary 15km Buffer
Scottish Local Authority Boundaries
Landscape Character Areas
Lochs
Adopted Settlement Envelopes
Elevation
700 - 800mAOD
600 - 700mAOD
500 - 600mAOD
400 - 500mAOD
300 - 400mAOD
200 - 300mAOD
100 - 200mAOD
0 - 100mAOD
-100 - 0mAOD
CODE | LANDSCAPE CHARACTER TYPES
FFE1 The Uplands
FFE2 Upland Slopes
FFE3 Upland Foothills
FFE4 Pronounced Volcanic Hills and Craigs
FFE5 Lowland Hills and Valleys
FFE6 Lowland Open Sloping Farmland
FFE7 Lowland Dens
FFE8 Lowland Glacial Meltwater Valleys
FFE9 Lowland River Basin
FFE10 Lowland Loch Basin
FFE11 Coastal Hills
FFE12 Coastal Terraces
FFE13 Coastal Cliffs
FFE14 Coastal Braes
FFE15 Coastal Flats
Fife Council
Review of Onshore Wind Energy in Fife
Strategic Cumulative Landscape and Visual Impact Assessment
May 2013
8024 GIS 102
Figure 3.2
Topography
N
0
3.75
7.5
15
Km
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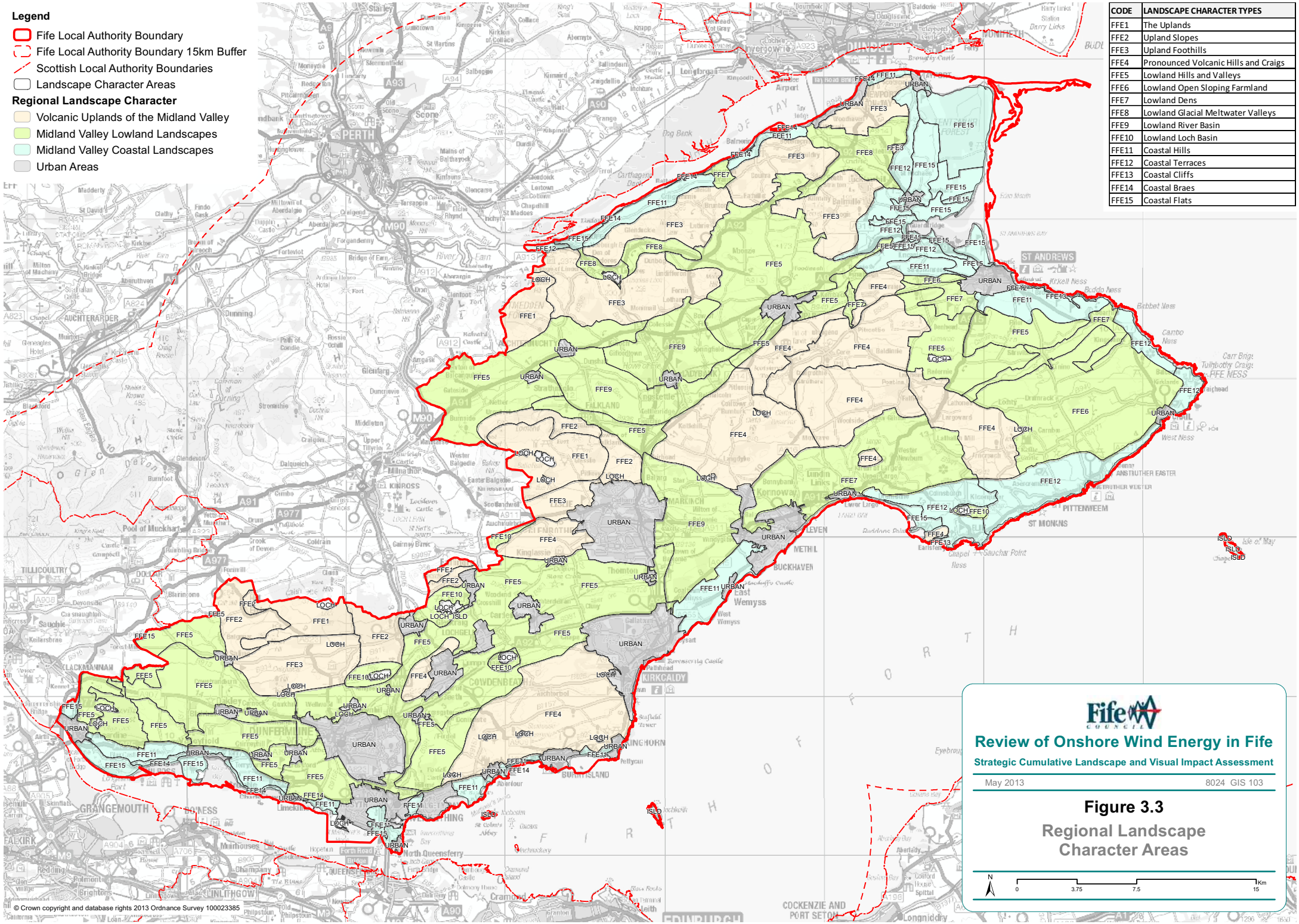
Legend
Fife Local Authority Boundary
Fife Local Authority Boundary 15km Buffer
Scottish Local Authority Boundaries
Landscape Character Areas
Regional Landscape Character
Volcanic Uplands of the Midland Valley
Midland Valley Lowland Landscapes
Midland Valley Coastal Landscapes
Urban Areas
CODE | LANDSCAPE CHARACTER TYPES
FFE1 The Uplands
FFE2 Upland Slopes
FFE3 Upland Foothills
FFE4 Pronounced Volcanic Hills and Craigs
FFE5 Lowland Hills and Valleys
FFE6 Lowland Open Sloping Farmland
FFE7 Lowland Dens
FFE8 Lowland Glacial Meltwater Valleys
FFE9 Lowland River Basin
FFE10 Lowland Loch Basin
FFE11 Coastal Hills
FFE12 Coastal Terraces
FFE13 Coastal Cliffs
FFE14 Coastal Braes
FFE15 Coastal Flats
Review of Onshore Wind Energy in Fife
Strategic Cumulative Landscape and Visual Impact Assessment
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8024 GIS 103
Figure 3.3
Regional Landscape Character Areas
N
0
3.75
7.5
15
Km
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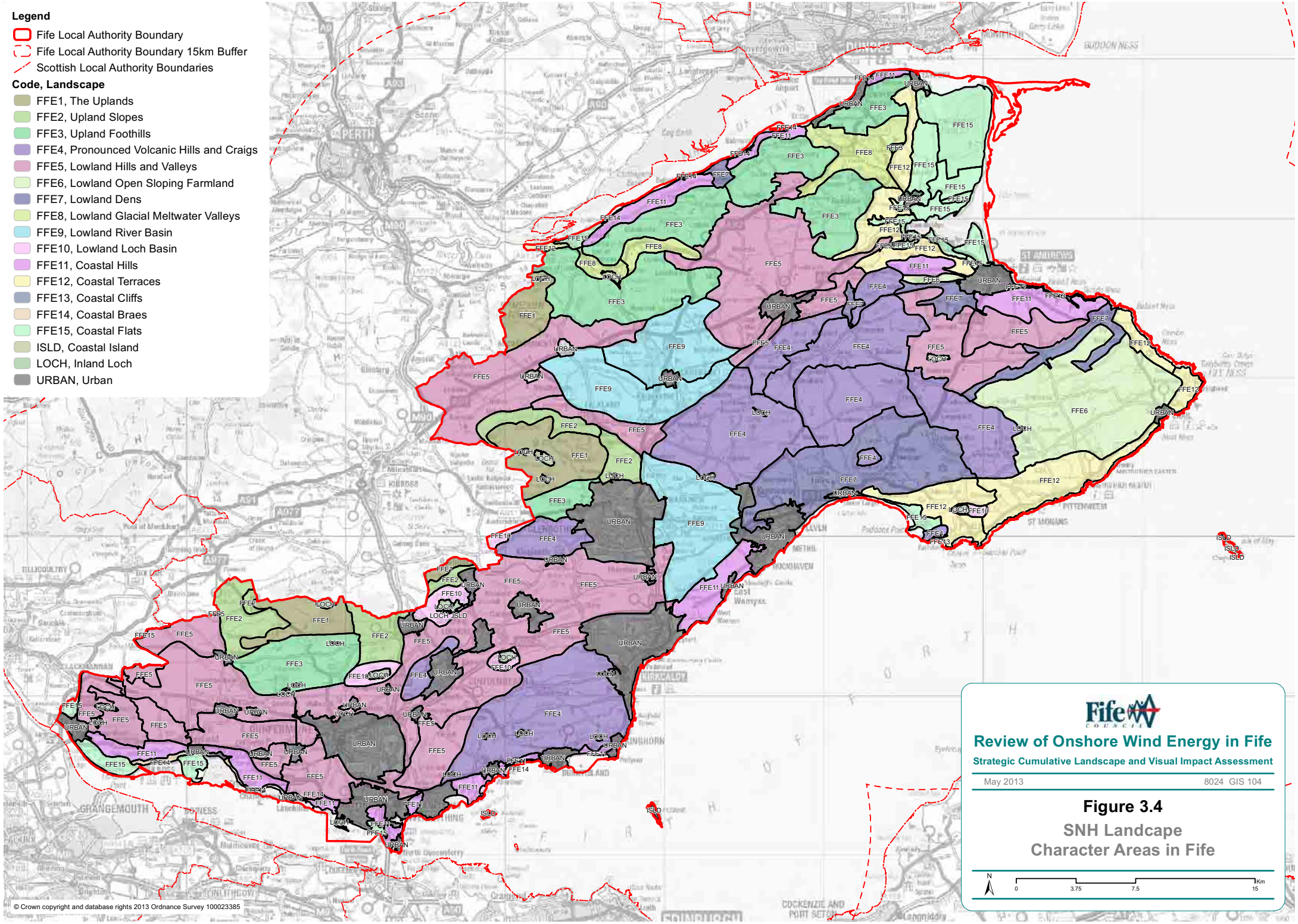
Legend
Fife Local Authority Boundary
Fife Local Authority Boundary 15km Buffer
Scottish Local Authority Boundaries
Code, Landscape
FFE1, The Uplands
FFE2, Upland Slopes
FFE3, Upland Foothills
FFE4, Pronounced Volcanic Hills and Craigs
FFE5, Lowland Hills and Valleys
FFE6, Lowland Open Sloping Farmland
FFE7, Lowland Dens
FFE8, Lowland Glacial Meltwater Valleys
FFE9, Lowland River Basin
FFE10, Lowland Loch Basin
FFE11, Coastal Hills
FFE12, Coastal Terraces
FFE13, Coastal Cliffs
FFE14, Coastal Braes
FFE15, Coastal Flats
ISLD, Coastal Island
LOCH, Inland Loch
URBAN, Urban
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Figure 3.4
SNH Landcape Character Areas in Fife
N
0
3.75
7.5
15
Km

The nineteen areas comprise:

1) Benarty and Loch Ore LLA;
2) Craigtoun LLA;
3) Cleish Hills LLA
4) Cullaloe Hills and Coast LLA
5) Dura Den LLA
6) East Neuk LLA
7) Ferry Hills LLA
8) Upper Forth LLA
9) Forth Islands LLA
10) Largo Law LLA
11) Letham Hill LLA
12) Lomond Hills LLA
13) South West Dunfermline LLA
14) St. Andrews to Fife Ness LLA
15) St. Andrews Links LLA
16) Tarvit and Ceres LLA
17) Tay Coast LLA
18) Tentsmuir Coast LLA
19) Wemyss Coast LLA

There are a number of local landscape designations within the surrounding areas which are contiguous with Fife LLAs, including in Perth and Kinross the AGLV at Lomond Hills which extends down to the shore of Loch Leven; The Cleish Hills AGLV which extends from Blairadam to Wether Hill and Bernaty Hill AGLV incorporating Vane Hill down to the shores of Loch Leven. In Clackmannanshire the only AGLV lies close to the boundary at Devilla Forest.

There are 32 Historic Gardens and Designed Landscapes (HGDLs) within Fife and more within the study area. Whilst this is not a statutory designation it is a landscape factor that contributes to the assessment of landscape character and value. These are taken into account in the assessment. There is also a Regional Park in Fife (Lomond Hills Regional Park) and a Country Park at Lochore Meadows.

3.4 Other Designations

There are a number of designations that, whilst not solely landscape related, clearly indicate landscape value and inform the assessment process. These are shown in Figures 3.5a & b.

3.4.1 Green Belts

Green belt designations are not primarily based on the landscape quality or character of the land they cover. They are designated to accomplish a number of functions including preventing coalescence between settlements and protecting the settings of settlements.

Green Belts are a Stage 1 constraint for spatial frameworks, indicating that there are likely to be significant constraints on siting significant wind energy developments in these areas, although current guidance does not elaborate. In Fife there are two green belt areas:

- Surrounding St Andrews; and
- To the west and south of Dunfermiline.

In the case of St Andrews the designation primarily protects the setting of the historic town. In the case of Dunfermiline the green belt both protects the setting of the historic western edge and centre of the town but also prevents coalescence with neighbouring settlements including Rosyth and Crossford.

3.4.2 Regional Park

The Regional Park designation is partly related to scenic quality and partly to recreation. There are 3 such areas in Scotland. In Fife the Regional Park is centred on the two upland areas of Lomond Hills and Benarty Hill but also includes foothills and Loch Ore. Both areas are contiguous with the edges of the nearest urban areas: Glenrothes to the south of the Lomonds and Lochgelly/ Cowdenbeath to the south of Benarty Hill/ Loch Ore.

3.4.3 Historic and Cultural Designations

Scheduled Ancient Monuments (SAMs) are primarily a historic or archaeological designation. However they can be of landscape significance in their own right and contribute to the character and value of a landscape. Furthermore, effects on their setting can be a consideration for neighbouring development proposals.

Conservation Areas are primarily an urban designation. Nevertheless the appearance of a settlement can be a key feature contributing to the surrounding rural landscape and equally the setting of a Conservation Area can be affected by developments in the surrounding countryside.

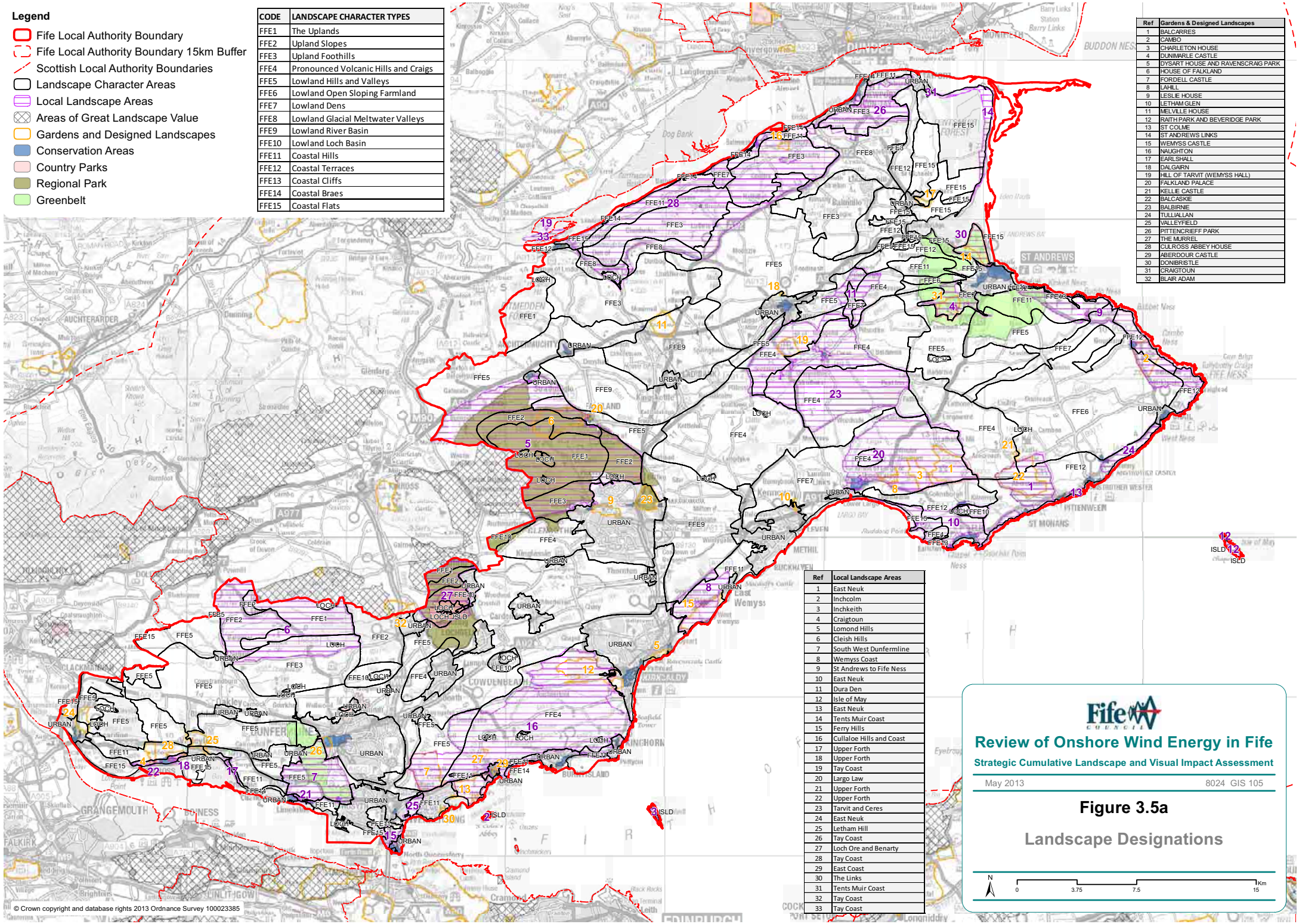
There are a total of 48 conservation areas within Fife (more than any other local authority in Scotland). The largest are within St Andrews and Dunfermline and the protection of both is reflected by the adjacent green belts. Other areas of note include most of the historic coastal villages and towns from Culross and Limekilns to Kirkcaldy the East Neuk on the south coast and Newport and Newburgh on the north. Inland the historic village of Falkland and the centre of Cupar are considerations.

Listed Buildings feature throughout the urban and rural areas. The greatest concentrations are located in the older settlements, particularly St Andrews, Kirkcaldy and Dunfermline, but also in the smaller historic settlements and throughout most of the lowland and upland fringe areas. Listed buildings contribute to landscape character and value and their setting is a consideration for neighbouring development proposals.

3.4.4 Nature Conservation Designations

Areas designated for their nature conservation interest and importance include SPAs SACs, Ramsar Sites, SSSIs and National Nature Reserves (NNRs). All are national or international designations and subject to the highest level of constraint in spatial frameworks. Whilst these constraints are primarily related to nature conservation interests, the designated area often contributes to the character and value of a landscape through its relatively undisturbed natural features and potential visitor interest.

In Fife the most extensive areas are Ramsar/SSSI sites located along the coast: including much of the tidal coastline between Longannet and the Forth Bridge; Edenmouth at St Andrews and most of the Firth of Tay. The northeast corner at Tentsmuir is also a NNR.



CODE	LANDSCAPE CHARACTER TYPES
FFE1	The Uplands
FFE2	Upland Slopes
FFE3	Upland Foothills
FFE4	Pronounced Volcanic Hills and Craigs
FFE5	Lowland Hills and Valleys
FFE6	Lowland Open Sloping Farmland
FFE7	Lowland Dens
FFE8	Lowland Glacial Meltwater Valleys
FFE9	Lowland River Basin
FFE10	Lowland Loch Basin
FFE11	Coastal Hills
FFE12	Coastal Terraces
FFE13	Coastal Cliffs
FFE14	Coastal Braes
FFE15	Coastal Flats

Ref	Gardens & Designed Landscapes
1	BALCARRES
2	CAMBO
3	CHARLETON HOUSE
4	DUNIMARLE CASTLE
5	DYSART HOUSE AND RAVENSCRAIG PARK
6	HOUSE OF FALKLAND
7	FORDELL CASTLE
8	LAHILL
9	LESLIE HOUSE
10	LETHAM GLEN
11	MELVILLE HOUSE
12	RAITH PARK AND BEVERIDGE PARK
13	ST COLME
14	ST ANDREWS LINKS
15	WEMYSS CASTLE
16	NAUGHTON
17	EARLSHALL
18	DALGAIRN
19	HILL OF TARVIT (WEMYSS HALL)
20	FALKLAND PALACE
21	KELLIE CASTLE
22	BALCASKIE
23	BALBIRNIE
24	TULLIALLAN
25	VALLEYFIELD
26	PITTENCRIEFF PARK
27	THE MURREL
28	CULROSS ABBEY HOUSE
29	ABERDOUR CASTLE
30	DONIBRISTLE
31	CRAIGTOUN
32	BLAIR ADAM

Ref	Local Landscape Areas
1	East Neuk
2	Inchcolm
3	Inchkeith
4	Craigtoun
5	Lomond Hills
6	Cleish Hills
7	South West Dunfermline
8	Wemyss Coast
9	St Andrews to Fife Ness
10	East Neuk
11	Dura Den
12	Isle of May
13	East Neuk
14	Tents Muir Coast
15	Ferry Hills
16	Cullaloe Hills and Coast
17	Upper Forth
18	Upper Forth
19	Tay Coast
20	Largo Law
21	Upper Forth
22	Upper Forth
23	Tarvit and Ceres
24	East Neuk
25	Letham Hill
26	Tay Coast
27	Loch Ore and Benarty
28	Tay Coast
29	East Coast
30	The Links
31	Tents Muir Coast
32	Tay Coast
33	Tay Coast

Fife Council

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Strategic Cumulative Landscape and Visual Impact Assessment

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Figure 3.5a

Landscape Designations

N 0 3.75 7.5 15 Km