Building and Development Control Committee

Phase 2 Land Use Plan Review

Natural Environment Strategy

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Ove Arup & Partners Ltd
13 Fitzroy Street
London
W1T 4BQ
United Kingdom
www.arup.com

ARUP

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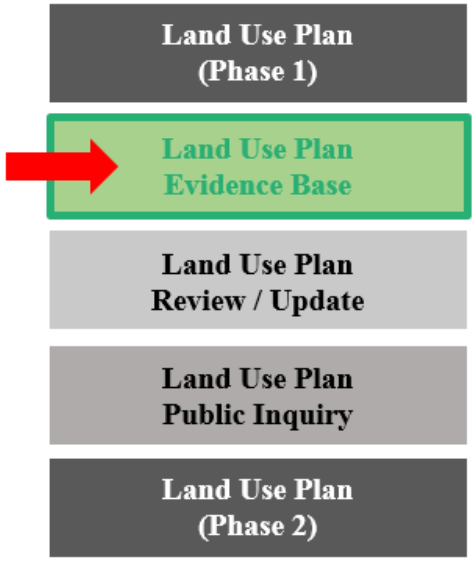
Within Alderney's planning system, land is allocated through the Land Use Plan (LUP).



The States of Alderney (SoA) is undertaking a review of the 2011 LUP in two phases. Phase 1 of the review established a vision for the Island and its approach to housing. It was subject to a LUP Public Inquiry in Spring 2016, and was subsequently approved by Full States in July 2016.

Phase 2 will complete the LUP review to take account of the following topics: the economy and infrastructure; heritage and the built environment; and the natural environment. A LUP Public Inquiry is scheduled for 2017.

The Natural Environment Strategy is one part of the 'evidence base' which will inform Phase 2 of the LUP review (see diagram).

Natural Environment Strategy

The purpose of the Natural Environment Strategy is to gather evidence on environmental issues which should be taken into account as part of the LUP.

This Strategy covers all topics which should be considered, including both assets to be protected (such as biodiversity and geodiversity) and impacts to be avoided or mitigated (such as climate change and pollution). The findings for each topic are summarised below. For each topic it presents recommendations which will be used to inform the review of the LUP. The Strategy also includes a number of recommendations which although are not directly linked to the LUP will aid its implementation. A full list of the recommendations is provided in Chapter 16 of the Strategy.

Sustainability (Chapter 3)

Sustainability refers to the access, use and management of resources, to ensure that both present and future generations are able to meet their basic needs. There are three equal 'pillars' or dimensions: economic, environmental and social.

Alderney is a small island with a finite land mass for development; the efficient and effective use of land and resources is therefore key.

Recommendations relating to sustainability include:

- **The LUP should seek to achieve sustainable development by promoting a balanced strategy, which takes account of the need to protect, conserve and enhance the Island's natural environment.**
- **Update or include a policy in the LUP which recognises the importance of the Island's natural environment, framed in the context of the LUP vision with regard to economic and social (demographic) growth.**
- **The LUP should encourage developments which show regard to maximising energy efficiency, reducing mains water and using sustainable materials.**

Climate Change (Chapter 4)

Given its size, Alderney has a comparatively minor (but nonetheless important) role in preventing or reducing climate change – given this, it should focus on defining and planning for mitigation and adaptation measures relevant to climate change. The LUP will have a role in understanding the nature of climate change as it impacts on planning policy and planning decision making, including: mitigation; ecological and other environmental impacts; flood risk; resources management and low carbon futures.

At present, no in-depth assessments of the likely impact of climate change on Alderney exist.

Recommendations relating to climate change include:

- **SoA should consider what information it should collect and what policies it may need to develop on climate change including mitigation, adaptation and long-term monitoring.**
- **The LUP should introduce policies to help reduce, mitigate and adapt to the impacts of climate change.**

Biodiversity (Chapter 5)

Despite being a small island, Alderney comprises of a variety of terrestrial and marine habitats and species. A number of the terrestrial and marine sites, habitats and species recorded on Alderney are of recognised conservation importance.

Given Alderney's geographical location, geology and climate the range of habitats and species found on the Island do not neatly align with the designations developed by other neighbouring countries including the UK and France. Whilst the existing designated sites provide some protection to wildlife, given the richness of the habitats and species present a bespoke approach to conservation designations is required.

An approach to conservation designations has been developed which seeks to identify priority habitats and species on Alderney. Such priorities can fall at the international, regional or local (i.e. island-wide) level depending upon which criteria a habitat or species is classified. In addition, it must be recognised that new species are being discovered all the time and that the planning process must be flexible enough to recognise and respond to such discoveries.

Recommendations relating to biodiversity include:

- **The Protected Area and associated policy within the LUP should be updated to reflect the hierarchy of designations and associated sites and habitats which has been developed.**
- **A rolling biodiversity audit of the Island should be undertaken to enhance the evidence base held on sites, habitats and species.**
- **Further consideration should be given to the need to introduce legislation to support the protection and enhancement of wildlife on the Island.**
- **Given the emerging evidence base, the LUP should consider adopting a precautionary approach to ecological protection.**
- **Consideration should be given to amending the extent of Alderney's planning powers so that they align with its territorial waters to enable marine sites, habitats and species and those present on Alderney's islets to be protected through the planning system.**

Geodiversity (Chapter 6)

Alderney comprises a diversity of geological formations. At present, there is limited technical guidance and information regarding geodiversity on Alderney, and there are no policies or designations which seek to conserve geological assets.

The geodiversity of the Island has provided opportunities for minerals extraction over time. There is potential for significant impacts on biodiversity resulting from extraction, e.g. by moving soils and other substrates and applying it to other areas of the Island, increasing the potential spread of invasive species.

Recommendations relating to geodiversity include:

- **SoA should produce guidance on the management of geodiversity on the Island.**
- **Given the emerging evidence base, the LUP should consider adopting a precautionary approach to protection of geodiversity.**
- **The LUP should introduce policies which define the types, and amounts of materials that can be extracted on the Island, extraction windows and restoration requirements.**

Flood Risk (Chapter 7)

Flood risk is a combination of the probability and the potential consequences of flooding from a variety of sources: streams, the sea, rainfall on the ground surface and rising groundwater, overwhelmed sewers and drainage systems, and from reservoirs.

Very limited information is held on potential sources of flooding on Alderney, along with the probability of flooding occurring and the potential consequences arising from such flooding. There is also a lack of detailed understanding of the likely impacts of climate change for flood risk on Alderney.

Recommendations relating to flood risk include:

- **SoA should consider undertaking further studies by appropriately qualified persons to better understand the likely sources, frequency and intensity of flooding on the Island, and how susceptibility might change with climate change.**
- **The LUP should promote development in areas which avoid the risk of all types of flooding. Based on the findings of the additional work identified above, the BDCC should consider the need to introduce a hierarchy of flood risk zones.**
- **Where developments are proposed in higher risk areas, flood risk assessments should be submitted in support of a planning application.**

Agriculture (Chapter 8)

Agriculture on the Island has historically adopted relatively low input, extensive management systems and thus has had a low environmental impact. An increase in intensive farming practices in the future might be expected to lead to an increase in associated risks, which may have a negative impact on the environment. Furthermore, the spread of intensive agricultural practices to areas of the Island which have not recently been actively farmed may threaten important habitats or species.

However, agriculture has environmental benefits which should be acknowledged; many habitats require a level of disturbance (e.g. grazing) to maintain their ecological function.

Recommendations relating to agriculture include:

- **The extent of the Agricultural Zone in the LUP should be reviewed to ensure that it reflects both current uses and the land that might be required for farming in the medium and long term, and the environmental impacts of agriculture.**
- **The LUP and legislation should better define the agricultural activities and works which may be undertaken within and outside the Agricultural Zone.**
- **SoA should consider producing a soil quality plan and locally-specific technical guidance on safeguarding biodiversity from agricultural practices.**

Aquaculture, Fisheries and the Marine Environment (Chapter 9)

This chapter considers aquaculture (the farming of fish and seafood), fisheries and marine development on Alderney within its internal waters. The Alderney Marine Forum has been established to develop a community-led Marine Management Plan of Alderney's waters by for marine related uses outside of Alderney's internal waters to the three nautical mile boundary.

Currently, limited marine development activities occur on Alderney or within its internal waters. However, potential future marine development activities may include marina development and sewage treatment re-development activities.

As identified previously, planning powers do not currently extend to the territorial waters limit; instead, they only apply to the Island and its internal waters. Given the limited aquaculture, fisheries and marine related activities undertaken on Alderney and its internal waters, it is not considered that any additional or specific policies are required within the LUP. Should planning powers extend to include Alderney's territorial waters and following the completion of the community-led Marine Management Plan, the implications for the LUP should be reviewed.

Air Quality (Chapter 10)

Air quality and sources of air pollution are not currently monitored on Alderney. In addition, no technical guidance, management strategy or planning guidance on air quality exists for the Island.

It is not considered that air quality constitutes a major issue on the Island. However, there is likely to be certain locations where air quality is lower than others – for example, at transport infrastructure (the airport and harbour) and locations of industrial activity (e.g. at La Corvée). There may also may be certain times of the year where air quality is reduced, either due to increased pollutants (e.g. more coal burned during the winter months) or still weather conditions.

Recommendations relating to air quality include:

- **SoA should consider establishing an air quality strategy, which sets out technical guidance and recommendations for monitoring and protecting air quality on the Island.**
- **The LUP should be reviewed to make it clearer that development proposals should take into account the impact upon air quality, air pollution and emissions.**
- **The LUP should consider whether certain types of high-emitting development should be encouraged or restricted from particular areas to manage air quality.**

Light Pollution (Chapter 11)

Sources of light pollution can affect human and wildlife wellbeing. An external lighting audit was completed by SoA in 2016, and found low levels of light pollution. Sources of light pollution from private properties were low, with emergency services (i.e. airport, hospital) and other government services predominately contributing to the levels of light pollution on the Island.

It is understood that the SoA is considering registering Alderney as a Dark Sky Community/Park/Reserve through the International Dark-Sky Association's certification programme. Such a certification establishes special protection areas for natural night skies and identifies a commitment to preservation of darkness.

Recommendations relating to light pollution include:

- **SoA to consider making an application to designate the Island as a Dark Sky Community/Park/Reserve.**
- **Policies should be introduced into the LUP which recognise the night sky as a resource and provide guidance on outdoor lighting e.g. luminance levels.**

Water Quality (Chapter 12)

Water quality on Alderney, in terms of raw and potable water, is managed and monitored by the Alderney Water Board, who monitor the chemical and bacteriological characteristics of the water to ensure water is suitable for human consumption and use. The Harbour Office undertakes long-term, annual sampling of seaweed, shellfish, sediment and seawater to monitors the effects of radioactive discharges.

Monitoring of bathing water quality is not currently undertaken on Alderney, and there is no technical guidance, management strategy or planning guidance on seawater/bathing water.

Recommendations relating to water quality include:

- **Updated records on water and wastewater systems should be collated by SoA.**
- **The LUP should be reviewed to make it clearer that the AWB or States Works Department should be a consultee on planning applications which may give rise to water quality issues. Further consideration should be given to the need for provision of more detailed technical guidance.**
- **The LUP should protect watercourses on Alderney.**

Noise and Vibration (Chapter 13)

Current sources of noise pollution on Alderney may include: air, sea, rail and road traffic noise; industrial, construction and demolition noise; and neighbourhood noise (such as evening restaurant noise). Based on these sources of noise, it is concluded that overall noise and vibration pollution is low. However, the Island contains some sensitive receptors (e.g. particular species).

The low baseline also means that any additional noise (for instance construction noise from a major project, or a change in the type or frequency of aircraft movements) could potentially have a large impact.

Recommendations relating to noise and vibration include:

- **SoA should consider establishing noise and vibration guidance or strategy, and a proportionate noise and vibration monitoring regime.**
- **The LUP should be reviewed to ensure that policies cover all sensitive receptors and the total life (construction, operation and decommissioning) of development proposals.**
- **The LUP should consider whether certain types of activities which emit high levels of noise/vibration should be encouraged or restricted from particular areas to manage impacts.**

Contaminated Land (Chapter 14)

Contaminated land can be defined as land which potentially contains *concentrations* of significantly harmful substances, both natural and man-made. These may be harmful to human health, wildlife and, the natural or the built environment. Potential sources of current and past contaminated land currently on Alderney include animal product works, landfill and waste sites, manufacturing and storage, electricity generation and fuel storage, sewage works, and waste from WWII occupation.

A simplified schedule and map of current and past contaminated land does not currently exist.

Recommendations relating to contaminated land include:

- **SoA should produce and maintain such a schedule and map of contaminated land to inform planning decisions.**
- **SoA should consider producing guidance relating to the treatment of contaminated land.**
- **The LUP should include policies which require development proposals to consider the risks relating to contamination land on health and safety and the environment.**

Approach to Environmental Impact Assessment (Chapter 15)

Environmental Impact Assessment (EIA) is a process to identify, predict and evaluate the environmental effects of development proposals. The BDCC can request an applicant to submit any information it considers necessary to determine an application, including an EIA. However, the law as it stands does not provide any detail on the types of projects for which EIA may be required or the process which the applicant must follow in undertaking the EIA.

The Strategy recommends the establishment of a proportionate EIA process on Alderney. Other recommendations relating to EIA cover:

- **The design of the process (a 'two-tiered' approach which recognises for larger, more complex projects a greater level of assessment is likely to be required).**
- **Types of projects to be included.**
- **Key stages of the process.**
- **Topics to be assessed.**
- **Content of the EIA report.**
- **Roles and responsibilities for the SoA, applicants, stakeholders and consultees, and wider community.**

1 Introduction

1.1 Purpose of the Natural Environment Strategy

Within Alderney's planning system, land is allocated for use or development through the Land Use Plan (LUP). The Building and Development Control (Alderney) Law, 2002 (as amended) states that the LUP must be reviewed at least every five years.

The States of Alderney is undertaking a review of the 2011 LUP in two phases. Phase 1 of the review established a vision for the island and its approach to housing. It was subject to a LUP Public Inquiry in Spring 2016, and was subsequently approved by Full States in July 2016.

Phase 2 will further update the 2016 LUP to take account of the natural environment, as well as the economic development and infrastructure and heritage and the built environment. A LUP Public Inquiry is scheduled for 2017.

To support the LUP review, a Natural Environment Strategy has been produced, which will form part of the LUP evidence base. This Strategy covers all topics which should be considered within the LUP, including both assets to be protected (such as biodiversity and geodiversity) and impacts to be avoided or mitigated (such as climate change and pollution).

The LUP includes a long term vision for the island. The aim of the vision is to align the States' overall strategic thinking with the spatial implications of the LUP. The vision is as follows:

Alderney – a welcoming, resilient and sustainable island with a buoyant economy and a happy and healthy community, which values and protects the island's unique cultural and natural environment.

A number of guiding principles have been developed to assist this vision and support the realisation of sustainable development and an expanding population which provides economic and social resilience for the future on Alderney. The guiding principles which are particularly pertinent to the Natural Environment Strategy are:

- **Valued Natural Environment:** A community which protects and sustainably manages its land and marine environments and maintains access to the Island's natural environment.
- **Diverse and Buoyant Economy:** A place which maximises opportunities to become a diverse and balanced economy, and which encourages innovation and investment in existing and new commercial sectors.
- **Efficient and Well Integrated Land Use:** An integrated and holistic approach to land use, which manages the competing demands for the limited available land in order to meet the Island's needs.

1.2 Implications of the Natural Environment Strategy for the Land Use Plan

The recommendations contained within the Natural Environment Strategy will be used to inform the review of the LUP. It also includes a number of recommendations which do not relate to the LUP review but should be considered by the Building and Development Control Committee (BDCC) and States of Alderney (SoA) to meet the current and future requirements for the Island.

In particular, the Natural Environment Strategy seeks to:

- Collate information held on different types of natural asset or environmental impact.
- Agree the level of protection afforded to these assets or impacts through the LUP.
- Identify the need for new or amended policies in the LUP on natural assets or environmental impacts.
- Consider how a requirement for Environmental Impact Assessment (EIA) might be incorporated into planning on the Island.
- Set out any other matters that should be taken into account in the LUP.

In short, the NES will be used as an evidence base to inform the LUP on environmental topics (set out below), to assist the long term vision for planning on the Island.

This draft Natural Environment Strategy will be subject to public consultation prior to it being finalised and the LUP updated to reflect its recommendations.

As part of the LUP review, the BDCC held a Call for Sites where individuals and organisations could identify changes they would like to see made to the current LUP for individual sites. The BDCC's assessment of these proposals will be published in the *Phase 2 Land Use Plan Call for Sites Assessment*. Findings from this assessment may result in amendments to this Strategy, and/or amendments to the LUP and its policies.

1.3 Approach

The Natural Environment Strategy has been produced on behalf of the BDCC by Alderney Wildlife Trust (AWT), with co-ordination by Arup. The Strategy comprises of several key environmental topics, including: Biodiversity; Geodiversity; Climate Change; Flood Risk; Agriculture; Marine; Air Quality; Light Quality; Water Quality; Noise and Vibration and Contaminated Land. Initial recommendations for a potential Environmental Impact Assessment (EIA) process for Alderney are also provided.

Information was taken from a variety of sources not least the professional experience of AWT. Evidence collation comprised of:

- reviewing relevant legislation and policies;

- data mining Alderney, Guernsey and UK databases, archives and information;
- online, web-based data and information searches;
- spatial mapping exercises; and
- informal interview or discussions with key stakeholders.

This included collating evidence for Alderney, and where appropriate the other Channel Islands, UK and beyond. For some of the topics included in the Strategy, only limited information is currently available. Some of the recommendations included in the Strategy relate to further information which should be collated in the future in order to strengthen the evidence base of future Land Use Plan reviews.

A Stakeholder Workshop was held on 6 December 2016 to explain progress made and test some of the emerging findings and recommendations. The findings from that workshop have been incorporated into the Strategy. A list of those invited is presented in Appendix A along with the results of the activity held at the workshop in Appendix B.

We are grateful for all those who have contributed to the development of the Natural Environment Strategy.

1.4 Structure of the Natural Environment Strategy

The NES comprises of several chapters, relevant to the environmental topics outlined above. The structure of each chapter is split into sections, and includes:

- *Context*: current information collated on the specific topic.
- *Matters to be taken account of as part of the Land Use Plan review:* issues on the topic that need to be taken into consideration for the future LUP. This section includes initial policy recommendations.

The Natural Environment Strategy is structured in the following way:

- **Chapter 2** provides an overview of the existing legislative framework and LUP policies.
- **Chapter 3 – 14** cover, in turn, different environment assets and impacts:
  - Sustainability (**Chapter 3**)
  - Climate change (**Chapter 4**)
  - Biodiversity (**Chapter 5**)
  - Geodiversity (**Chapter 6**)
  - Flood risk (**Chapter 7**)
  - Agriculture (**Chapter 8**)
  - Aquaculture, fisheries and the marine environment (**Chapter 9**)
  - Air quality (**Chapter 10**)
  - Light quality (**Chapter 11**)

  - Water quality (**Chapter 12**)
  - Noise and vibration (**Chapter 13**)
  - Contaminated land (**Chapter 14**)
- **Chapter 15** considers and sets out the proposed approach to EIA on Alderney.
- **Chapter 16** provides a consolidated list of the recommendations made in the Natural Environment Strategy.
- **Chapter 17** and **Chapter 18** provide a glossary and a bibliography respectively.
- Appendix A provides a list of those invited to Stakeholder Workshop.
- Appendix B contains the results of an activity seeking views on elements of the emerging strategy undertaken at the Stakeholder Workshop.
- Appendix C contains a schedule of important biodiversity sites, habitats and species of importance on Alderney.
- Appendix D contains further information relating to climate change.
- Appendix E contains further information on Alderney's geodiversity.
- Appendix F contains a collection of maps which support the Strategy.

2 Overview of Existing Legislation and Land Use Plan Policies

2.1 Overview of Legislation

The main legislation relating to the consideration of the natural environment within the planning system on the Island is the Building and Development Control (Alderney) Law, 2002 (as amended), as well two the Building and Development Control (Alderney) (Amendment) Ordinances approved 2016. One of the aims of this legislation is to assist development[1] proposals consider and reduce the loss of natural features (such as trees), conservation areas, biological diversity, and agricultural land on Alderney.

Section 7 of the Building and Development Control (Alderney) Law, 2002 (as amended) identifies those matters which the BDCC is required to take into account as part of its decision making. This includes the following matters which relate to the natural environment:

> *"(a) the effect of the development or other work on the natural beauty of the area and the desirability of keeping land adjacent to the foreshores and cliffs of the Island in its natural state;*
>
> *(b) the degree of suitability of the land to which the application relates for residential or industrial purposes;*
>
> …
>
> *(d) in the case of an application for permission to carry out any development of agricultural land – (i) the degree of suitability of the land as agricultural land, and (ii) the loss to the Island (if the application were to be granted) of agricultural land;*
>
> *(e) the extent to which the development or other work would detract from the character or the amenity of the locality concerned…"*

Section 4 of the Building and Development Control (Alderney) (Amendment) Ordinance (2016) expanded the matters to be taken into account to include:

> *"(ga) the effect of the development or other work on the biological diversity of the Island;*
>
> *(gb) the desirability of facilitating the sustainable development of land having regard to the competing demands of the community for its use…"*

[1] Reference to 'development' is in reference to the works listed in Section 4 of the Building and Development Control (Alderney) Law, 2002 (as amended).

It also added a statutory definition of biological diversity to mean *"the variety and variability of living organisms and the ecological complexes within which they occur"*.

The Protection of Wild Birds (Alderney) Ordinance, 2005 aims to protect wild birds, in terms of injury/distress, in particular resident breeding birds. It also includes the appointment of bird wardens, wild bird culls, possession of wild birds, offences and penalties.

Other legislation exists which links to the environmental topics, such as:

- **Fisheries:** The Fishing (Alderney) Ordinance (1967); The Alderney Control of Fishing etc. Ordinance (1957); The Alderney Fishing Ordinance, 1952.
- **Pollution:** The Alderney Health and Safety at Work (Alderney) Law, 1997.
- **Renewable energy:** The Renewable Energy (Alderney) Law, 2007.
- **Water and sewerage:** States of Alderney Water Supply Law. 1954; States Water Supply (Prevention of Pollution) (Alderney) Law, 1972; The Water (Control) (Alderney) Law, 1994.

Consultation with key stakeholders has revealed that the overall legislative framework for environmental protection on Alderney is not comprehensive, and in some instances is out-of-date.

Recommendation 1: The suite of environmental legislation should be reviewed to ensure it is comprehensive and fit-for-purpose.

2.2 Overview of Existing Land Use Plan Policies

The LUP 2016 makes a series of references to the natural environment. These include:

- Vision: Reference to a sustainable island and protection of the natural environment and a healthy community.
- Guiding principles: A community which protects and sustainably manages its land and marine environments and maintains access to the Island's natural environment.
- Policy GEN 1: In considering proposals for development, the Committee will take into account the need for the development to be beneficial to the community and sustainable in terms of its location, its design, its use of existing resources and its impact on the environment.
- Policy GEN 3: In considering proposals for development, existing features of significant landscape, ecological or wildlife value; and the provision of new or improved landscape, ecological or wildlife features will be taken into account by the Committee.
- Policy GEN 5: The quality of design and material used for development, and, the siting, layout and scale of development proposals in relation to their surroundings will be taken into account.

- Policy GEN 6: In considering proposals for development, locally distinctive features and characteristics of the environment will be taken into account.
- Policy GEN 7: In considering proposals for development, the adequacy of public utilities to cope with increased demand needs to be considered.
- Policy GEN 9: In considering proposals for development, the provision of open amenity space will be taken into account
- Policy GEN 10: In considering proposals for development with potential to cause, or to be affected by, significant risks to public health and safety and the environment, satisfactory measures to address the risks arising are required.
- Policy GEN 11: In considering proposals for development, the need to safeguard and create new opportunities for public enjoyment will be taken into account.
- Policy GEN 12: In considering proposals for development, the Committee will take into account any significant impact on the reasonable enjoyment of adjoining properties, including emissions, noise and disturbance.

The *Alderney Phase 1 Housing Land Use Plan 2016 map* identifies a number of zones relating to the environment, which are supported by policies in the *Land Use Plan Section 2: Sites*. These include:

- Designated Area – Agricultural Zone: includes policies on permanent and temporary agricultural buildings.
- Designated Area – Protected Zone: includes policies to preserve and protect natural and archaeological heritage.
- Building Area – Zone 3 (Area Adjacent to La Vallee, The Terrace and Valley Gardens): establishes the zone as 'green lungs' and restricts development to Agricultural Zone restrictions.
- Building Area – Zone 4 (Butes Field, York Hill): establishes the zone as 'green lungs' and restricts development to Recreational Zone restrictions.
- Building Area – Zone 5 (Cotil du Val, Valongis Above the 40M Contour): restricts zone to Protected Area restrictions.

The BDCC's Trees Policy requires anyone wanting to remove a living tree[2] to apply for permission to do so. Application are assessed based on the criteria set out in the Trees Policy: amenity value; condition, age and form; the suitability of the tree for its location; and historic or rarity value. The power to require permission is provided though Section 4 of the Building and Development Control (Alderney) Law, 2002 (as amended) which places restrictions on development.

[2] In the Trees Policy, a tree is defined as having a circumference over bark of which is 19 inches or more when measured at ground level. The Building and Development Control (Alderney) Law (as amended), 2002 does not define its use of tree.

2.3 Matters to be Taken into Account as Part of the Land Use Plan Review

Alderney has an incredibly diverse, yet fragile, natural environment. This environment has an intrinsic value which should be protected, conserved and – where possible – enhanced. The environment also plays an important part in the economic and social life of the Island. The LUP review process should ensure that it provides strong protection for Alderney's environment; subsequent chapters set out a number of recommendations to strengthen the LUP in this regard. To make sure the LUP meets the aspirations set out in the vision and guiding principles, the BDCC should also consider how outcomes can be subject to monitoring and evaluation.

Recommendation 2: The BDCC should design and implement a proportionate monitoring and evaluation strategy to make sure that progress is being made towards the objectives of the Land Use Plan in relation to the natural environment.

Recommendation 3: The BDCC and SoA should consider more proactively enforcing against those who cause deliberate harm to natural assets. This may require legislative updates to ensure there are sufficient powers to restrict certain activities, as well as restorative powers for the SoA or another nominated body to 'make good' and recover the costs thereof.

Recommendation 4: Further consideration should be given to formalising a role for the States of Guernsey and Alderney Wildlife Trust in the consultation of planning applications. This should include arrangements for sharing data, knowledge and expertise.

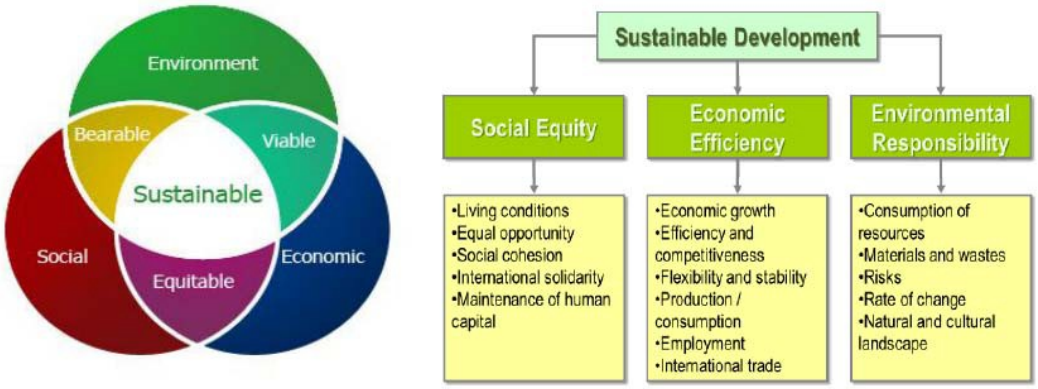
3 Sustainability

3.1 Introduction

Sustainability refers to the adequate access, use and management of resources, to ensure that both present and future generations are able to meet their basic needs on an uninterrupted basis. It implies an intergenerational pattern of behaviour that guarantees future generations the option to enjoy, at the very least, the same level of welfare enjoyed by the preceding generation.

The mechanism for ensuring sustainability is sustainable development, which means using natural resources in a way that avoids irreversible damage to ecosystem structure and function, the loss of irreplaceable features or a reduction in ecosystem resilience.

Whilst this issue is covered within this Natural Environment Strategy, modern policy-making considers sustainability to have three equal 'pillars' or dimensions: economic, environmental and social.



Source: researchgate.net (retrieved 12 January 2017)

Typically, development arises through social and/or economic need and the challenge therefore is to reconcile the resource implications against environmental interests. This is to prevent the irreplaceable loss of natural features, function or processes and to ensure a long-term and dependable flow of benefits from the exploitation of renewable resources. It is therefore an issue that is relevant across the LUP.

An overview of the context of sustainability is provided in Section 3.2, whilst the relevant matters which should be taken into account as part of the Phase 2 review of the LUP can be found in Section 3.3.

3.2 Context

Sustainability was formally 'coined' through the introduction of the 'Brundtland definition' from the United Nations Environment Commission in 1987:

> *"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."* (Brundtland Commission, 1987)

The Rio Earth Summit in 1992 further expanded the understanding to include the 'precautionary principle' whereby policy and decision-makers should err on the side of caution in decision making if there is doubt as to the irreversibility of an action, including use of the best prevailing knowledge (NBS, 2010).

The Rio Earth Summit also led to international agreement to implement 'Agenda 21', a commitment to sustainable development so-called as it provided a blueprint for sustainability in the 21st Century (Sustainable Environment, n/d). Local Agenda 21 provided a framework for all parties, but particularly government, to embed and action sustainability.

Case Study: One Wales: One Planet

The Welsh Government is one of the few administrations to have a distinct legal duty to promote sustainable development. Under the Government of Wales Act 2006, this is set out and monitored annually. "One Wales: One Planet" (2009) is the Welsh Government's Sustainable Development Scheme. The Scheme promotes sustainable: resource use, society, economy and environment, together combing to promote the wellbeing of Wales. Each theme has a vision, as well as a set of outcomes and a set of indicator sets. This is underpinned with measurement of the overall national 'ecological footprint'.

Ecological footprinting measures the impact of a person or community on the environment in terms of the amount of land required to sustain their use of natural resources. At the outset of Wales' process they estimated their ecological footprint, if scaled up to a global level, to equate to 2.5 'earths'.

In translating sustainability into planning, the Welsh Government has a dedicated sustainability section within their national planning policy, and has ancillary planning advice notes covering planning for sustainable rural communities, promoting 'One Planet Development' and use of a freely available personal ecological footprint calculator.

Sources: Welsh Government Planning Policy Wales (9th Ed., 2016), Welsh Government (2015) Ecological and Carbon Footprints of Wales Update to 2011, Welsh Government One Planet Development Technical Advice Note 6 (2010), Practice Guidance (2012) and Ecological Footprint Calculator (2012).

The European Union adopted the EU Sustainable Development Strategy in 2001, which promotes good governance practices across economic, environmental, social, institutional and global dimensions. It was refreshed in 2006, and is subject to annual monitoring. It may provide good practice advice that enables Alderney to improve its sustainability.

Sustainability remains an overarching policy objective, although it has since evolved into a number of interrelated specialised themes, including climate change, flood risk, sustainable production and consumption, social and intergenerational justice and overall ecosphere responsibility.

3.3 Matters to be Taken into Account as Part of the Land Use Plan Review

Alderney is a small island with a finite land mass for development. It may be therefore said that the efficient and effective use of land and resources, including a strong presumption against development outside the Central Building Area, is already a key part of LUP policy. Whilst it may not be appropriate, or in keeping with the Alderney vernacular or development pattern, to pursue 'one planet development' in the same way as the Welsh Government (where, at extremes, it has been used to promote earth dwellings in rural settings), there is a clear need to continue to promote sustainability and in particular to require development to be sustainable.

The LUP should therefore consider sustainability as a core issue which will underpin the plan itself. Whilst Policy GEN 1 begins to articulate what sustainable development means for Alderney, the LUP could be strengthened to encourage sustainable development including in terms of appropriate location of new developments and use of existing resources. In addition it should recognise the importance of the Island's natural environment.

Sustainable development on Alderney could follow 'One Planet Council' guidance and tools, which aim to help government bodies move towards a sustainable way of life, with measureable social, economic and environmental benefits (One Planet Council, 2016; Welsh Assembly Government, 2009).

Recommendation 5: The LUP should seek to achieve sustainable development by promoting a balanced strategy, which takes account of the need to protect, conserve and enhance the Island's natural environment in conjunction with the findings of the *Land Use Plan Review Economic Development Strategy* and *Land Use Plan Review Built Environment and Heritage Strategy*.

Recommendation 6: Update or include a policy in the LUP which recognises the importance of the Island's natural environment and sets out the BDCC's approach to protecting it. This should be framed in the context of the LUP vision with regard to economic and social (demographic) growth.

Recommendation 7: The LUP should encourage developments which show regard to maximising energy efficiency, reducing mains water and using sustainable materials in both construction and operation (this recommendation should be considered alongside recommendation 63 of the *Land Use Plan Review Economic Development Strategy*).

4 Climate Change

4.1 Introduction

This chapter addresses policy issues around climate change. Climate change is now generally accepted and can be defined as 'the long term shift/change in the planet's global and regional weather patterns and average temperatures' (MetOffice, 2016; IPCC, 2013; Brown, 2008). An overview of climate change in an international context as well as the implications for Alderney can be found in Section 4.2. A consideration of matters pertaining to climate change which should be taken into account as part of the Phase 2 review of the LUP can be found in Section 4.3.

4.2 Context

As referenced throughout this chapter, scientific evidence shows historical changes in the earth's atmosphere, land, oceans and cryosphere[3] over the last 100 years (IPCC, 2013). This includes changes and variability of mean surface temperatures, sea surface temperatures, sea levels, atmospheric concentrations of carbon dioxide (CO^2), methane (CH_4), nitrous oxide (N_2O) and fluorinated gases (F gases i.e. man-made gases, such as aerosols). It is widely accepted that these changes are primarily the result of human induced activities, in addition to naturally occurring events.

There are a number of different global and regional climate change predictions for the future. In general, however, predictions can be described as either slow onset changes or sudden extreme events (Brown, 2008) and it is possible for both type of events to occur in combination. Slow changes include: increases in surface and sea surface temperatures, sea level rise, less rainfall in summertime and more rainfall in autumn/winter. For example, climate change predictions describe 0.1–0.2°C increase in global surface temperatures per decade, and global sea levels set to rise by 0.18–0.59m by the end of the 21st Century (IPCC, 2013). Sudden extreme events can include more frequent extreme temperature events and intensity of rainfall or storm events. These may lead to other issues such as flooding or coastal erosion events, which in turn can impact the environment (i.e. changes in species community structures within susceptible marine environments (Doney *et al*., 2012)).

This evidence base and forecasting work has led to a number of international and national legislative and policy or programme changes to focus on climate change issues. Most notably this includes (list from UK Environmental Law Association, n/d):

- The Intergovernmental Panel on Climate Change (IPCC) is the international body for assessing the science related to climate change. It was set up in 1988 by the World Meteorological Organization (WMO) and United Nations Environment Programme (UNEP) to provide policymakers with regular

[3] The cryosphere comprises the frozen water part of the Earth system.

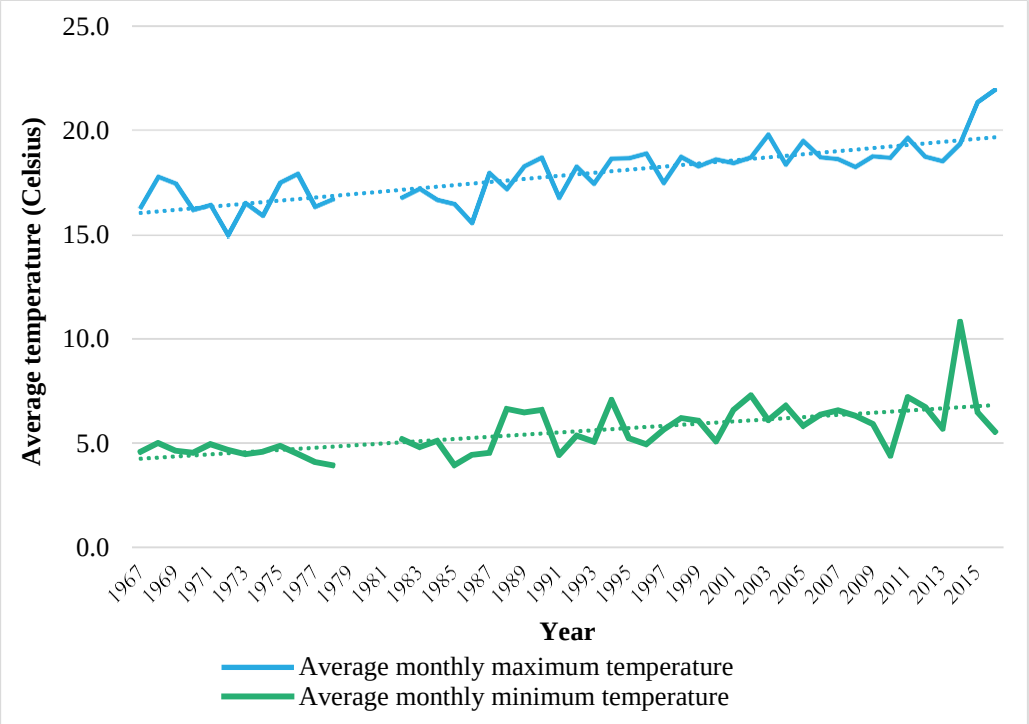
assessments of the scientific basis of climate change, its impacts and future risks, and options for adaptation and mitigation.

- United Nations Framework Convention on Climate Change (UNFCCC). Negotiated at the Rio Earth Summit in 1992, the UNFCCC sought to get countries to stabilise their greenhouse gas concentrations.
- The Kyoto Protocol 1997. Whilst the UNFCCC encouraged industrialised developed countries to take positive action on greenhouse emissions, the Kyoto Protocol requires them to do so. It sets legally binding obligations upon those signed up. The UK has been signed up to the Kyoto Protocol since 1995.
- The G8 Gleneagles Plan of Action 2005 & Programme. The Gleneagles Plan of Action covers energy efficiency improvement measures, work on cleaner fuels and renewable energies. It was developed by the Climate Change Roundtable of the G8 (the group of 8 leading advanced economies) to accelerate international measures aimed at reducing global carbon emissions. The International Energy Agency G8 Gleneagles Programme follows this up and encompasses new measures for greater energy security and climate protection.
- The UK 2008 Climate Change Act which '… *provides an economically credible emissions reduction path.*' Whereby the UK commits to reducing emissions by at least 80% by 2050 (from 1990 levels) and which sets carbon budgets into law and requires a National Adaptation Plan.
- Copenhagen Accord, December 2009. The Accord is a voluntary agreement; under the Accord countries have agreed to take action in order to stop the average global temperature rising by more than 2 degrees Celsius above 1990 levels.
- Paris Agreement, December 2015. Agreed at a UNFCCC conference, it commits 195 countries collectively to hold average global temperature increases to well below 2°C above pre-industrial levels and pursue efforts to limit the rise to 1.5°C above pre-industrial levels.

At present, no in-depth climate change assessments or specific legislation exists regarding Alderney, to assist the LUP. The closest 'local' evidence is a climate change assessment that was completed for Guernsey in 2007 (Casebow, 2007).

Historical surface weather records for Alderney do exist (see Figure 4.1), which could be used to assess local climate change predictions for the island. Other parameters to measure climate change, such as sea surface temperature and atmospheric concentrations have not been recorded on Alderney.

Figure 4.1 Historic minimum and maximum temperatures on Alderney



Source: Brian Bonnard

Sea level rise information for Alderney can, however, be determined from the general climate change predictions (see Appendix F, Map F.1). Linked to this, sea level rise and increased frequency and intensity of weather events is likely to increase levels of coastal erosion (Appendix F, Map F.2). Those locations known to be susceptible to coastal erosion (driven by weather events, such as wintering storms) are illustrated in Appendix D based on local press, site visits and local knowledge.

4.3 Matters to be Taken into Account as Part of the Land Use Plan Review

Climate change is a key issue for sustainability and sustainable development (see Chapter 3). It presents the framework against which proposals should be considered, in that the 'baseline' is a world which is experiencing climate change and which is expected to increase in severity over time.

Accepting that Alderney has a comparatively minor (but nonetheless existing) role in preventing or reducing climate change, it should (like legislation, policy and programmes elsewhere) focus on defining and planning for mitigation and adaptation measures relevant to climate change. Given the limited extent of current evidence of climate change factors in Alderney (such as carbon/ecological footprint, emissions and the other factors described in the previous section), this strategy does not include recommendations around legislative changes or limits

such as those set out in the Paris Agreement and others, although this strategy could be used to inform decisions around such actions.

Recommendation 8: SoA should consider what information it should collect to inform future on-going climate change monitoring. This should include the best means of collection, agencies, expertise and resources required. Linked to this, further consideration should be given to the need to develop associated policies (which sit beyond the LUP) on how the States proposes to adapt to and mitigate against climate change.

The LUP does have a role in understanding the nature of climate change as it impacts on planning policy and planning decision making, including:

- Planning for climate change mitigation and adaptation.
- Understanding biodiversity planning and ecological networks.
- Implementing measures to protect and enhance the natural environment.
- Understanding carbon neutral and reduction technologies/low carbon futures.
- Implementing flood risk management measures.
- Using spatial planning as a tool in resource management.

These issues are both explicitly and implicitly addressed through the Natural Environment Strategy and the other LUP evidence base documents, and importantly, are applied in the Alderney context. For example, Longis Bay and Braye Bay might be considered susceptible marine environments and so relevant for sea-level rise whilst the energy needs of an Island make moving away from fossil fuel energy challenging, this would encourage consideration of renewable sources of energy.

Currently the LUP does not explicitly address climate change. This should be addressed with the thrust of LUP policy to help reduce, mitigate and adapt to the impacts of climate change upon the island.

Recommendation 9: The LUP introduce policies to help reduce, mitigate and adapt to the impacts of climate change. In doing so, regard should be had to recommendations in the *Land Use Plan Review Economic Development Strategy* which seek to limit resource consumption.

5 Biodiversity

5.1 Introduction

This chapter considers terrestrial and intertidal biodiversity on Alderney. Biodiversity is defined as 'the variability among living organisms from all sources inter-alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems' (United Nations, 1992). An overview of biodiversity can be found in Section 5.2. A consideration of matters pertaining to biodiversity, which should be taken into account as part of the Phase 2 review of the LUP can be found in Section 5.3.

5.2 Context

Most countries aim to protect, conserve and enhance biodiversity from natural (i.e. climate change and hydrological changes) and human (i.e. changes in agricultural practices, mining, pollution, urbanisation and enhance the spread of invasive species) induced impacts (Hayhow *et al*., 2016). This is generally implemented through international, regional and local designations linked to relevant legislation or conventions, to protect ecological features such as sites, habitats and species[4]. The wide range of designations for different ecological features is due to the worldwide decline of biodiversity. For example, the Living Planet Index highlights that on average, monitored species populations declined by 58%, from 1970 – 2012 (WWF, 2016).

Despite being a small island, current and past evidence (from qualitative and quantitative sources[5]) shows that Alderney comprises of a variety of terrestrial and marine habitats and species. Terrestrial habitats on Alderney support a range of plant and fungi communities, invertebrates, birds, and mammal species. Marine habitats (within both intertidal and sub-tidal environments) on Alderney sustain seaweed, barnacle or infauna (sand) communities, supporting invertebrates, wetland and seabirds, fish and mammal species.

A number of the terrestrial and intertidal sites and habitats recorded on Alderney are of recognised conservation importance. There are three sites of international importance comprising Ramsar (Alderney West Coast and the Burhou Islands) or important bird and biodiversity areas (Gannetries at Les Etacs and Ortac). The LUP (2016) also provides local level protection for seven sites on Alderney which comprise Parkland and Open Space and are protected through the Designated Area – Recreation Zone or through zones in the Building Area which apply the same provisions as the Designated Area – Recreation Zone in the LUP (2016). The LUP (2016) also identifies a number of habitats which are protected through

[4] Definitions of protected areas, habitats and species are provided in the Glossary (Chapter 16).
[5] Please refer to the bibliography in Chapter 18, in particular AWTE, 2014;AWTE, 2013a; AWTE, 2013b; AWTE, 2013c; AWTE, 201 d; AWTE, 2013e; AWTE, 2013 f; AWTE, 2012a; AWTE 2012b; AWTE, 2011; Birdlife International, 2001; Cefas, 2016; JNCC, 2008; Ralphs, 2010 and Rossiter, 2010)

the Designated Area – Protected Zone. The spatial extent of the designated sites is shown in Map F.3 in Appendix F.

Alderney is also a full or partial signatory to several conservation Conventions, which are identified in Table 5.1. These conventions are voluntary in nature and were initiated through Alderney (with the exception of Ramsar, which was initiated through the Bailiwick of Guernsey).

Table 5.1 Conservation conventions relevant to Alderney

Convention	Relevance to Alderney
ASCOBANS - Agreement on the conservation of small cetaceans of the Baltic and North Sea	UN Agreement 60 Guernsey code C.33. Extended to Alderney 1999
Bonn Convention	Guernsey code A.8 Extended to Alderney 1979
Bonn Convention Agreement on Conservation of Bats in Europe	
CITES	Extended to Alderney 1997[6]
Conservation of Afro-Eurasian Migratory water birds (part of Bonn)	EC/GEN 1993/10. Alderney amended law 1995
Conservation of European wildlife	Agreed 20.04.93
Environmental Impact Assessment in Transboundary Context	UN convention Extended to Alderney 2004

5.3 Matters to be Taken into Account as Part of the Land Use Plan Review

Given Alderney's geographical location, geology and climate the range of habitats and species found on the Island do not in all cases neatly align with the designations developed by other neighbouring countries including the UK and France. Whilst the existing designated sites provide some protection to wildlife on the Island, given the richness of the habitats and species present a bespoke approach to conservation designations is required, which better reflects the significance of different habitats and species found in the terrestrial and marine environments of Alderney.

A bespoke approach to conservation designations has been developed which seeks to identify priority habitats and species using criteria informed by a number of sources including international conventions, global and regional conservation status, trends in populations, species distributions and the impact of specific threats. Such priorities can fall at the international, regional or local (i.e. island-wide) level depending upon which criteria a habitat or species is classified. The

[6] It is understood that this convention requires legislation and so Alderney is currently in breach of its commitment.

criteria[7] identified in Table 5.2 have been used to identify and attribute habitats and species on Alderney to the most appropriate conservation level.

Table 5.2 Hierarchy of international, regional and local designations for sites, habitats and species on Alderney

	Sites	Habitats	Species
International	Ramsar Important Bird and Biodiversity Areas Natura 2000	EC Habitats Directive Ospar	IUCN Red List of Threatened Species EC Birds Directive Species protected under Habitats Directive Ospar
Regional (Channel Islands, France and UK)	Marine Protected Areas Sites protected under UK law (for example, SSSIs) Guernsey/Jersey Sites	Protected under UK law (for example, the Wildlife and Countryside Act) UK Biodiversity Action Plan – priority habitats Guernsey & Jersey Habitats	Protected under UK law (for example, the Wildlife and Countryside Act) UK Biodiversity Action Plan – priority species British and French Red Data Lists Guernsey & Jersey Red Data Lists
Local (Island-wide)	Local Nature Reserves Parkland and Open Space	Habitats reflected in any internationally designated sites but which lie outside those defined areas Habitats which support the life stages of any priority species identified Habitats endemic to Alderney and/or the Channel Islands Habitats undergoing a decline across the island DAFOR scale of habitats across Alderney*	Species endemic to Alderney and/or the Channel Islands Species undergoing a population decline across the island

*The DAFOR scale works on % cover: Dominant = > 75%; Abundant = 75% - 51%; Frequent = 50% - 26%; Occasional = 25% - 11%; Rare = 10% - 1%.

Table C.1 in Appendix C sets out those sites currently protected which fall within the international and local tiers of the hierarchy. Subject to further detailed

[7] The criteria have been developed based on general best practice guidance and review of existing Alderney specific data including ACRE Consultancy Reports; AWT Ramsar Reports; MSc dissertation, Tom Rossiter; and Phase 1 Habitat Survey (Ralphs, 2010).

assessment it is considered that additional sites may be capable of designation as internationally, regionally or locally important[8].

Table C.2 in Appendix C lists the habitats currently identified on Alderney and potentially important habitats that have been identified subject to further assessment. The spatial extent of the identified habitats, which have been mapped[9] are shown in Map F.4, Map F.5 and Map F.6 in Appendix F.

It should be noted that some designations could not be applied including for the following reasons:

- There is insufficient information of sites, habitats or species on Alderney. For example, in-depth information (presence, location and population status) for a large number of species on Alderney is limited. This equally applies to habitats and species located within Alderney's territorial waters (up to 3NM).
- Due to the vast number of species recorded on Alderney it has not been possible to incorporate all known species within Appendix C.
- Habitats are only included in Table C.2 of Appendix C which comprise rare habitats under the DAFOR scale.

In addition, it must be recognised that new species are being discovered all the time, including two new resident species of bat in 2016 alone, and that the planning process must be flexible enough to recognise and respond to such discoveries.

Recommendation 10: The Protected Area and associated policy within the LUP should be updated to reflect the hierarchy of designations and associated sites and habitats identified in Tables C.1 and C.2 of Appendix C. Given the gaps identified in Appendix C further consideration should be given to the need to retain elements of the Protected Area Zone to provide some protection to sites, habitats and species likely to be present in advance of their formal designation. Consideration should also be given on how newly discovered species which meet the definitions in the hierarchy can be given protection within the five year LUP period.

Recommendation 11: In order to enhance the evidence base held on sites, habitats and species present on Alderney, its intertidal and sub-tidal areas and enable the conservation status to be established a rolling biodiversity audit of the Island should be undertaken. The aim should be for a more complete evidence base to be collected in time for the next LUP review. The audit should first focus on defining/gathering evidence for priority sites, habitats and species which comply with the criteria for the higher tiers of the framework. Such an audit should be undertaken using industry standard data recording/collation methods.

[8] Some of the sites identified for designation at the local level will be subject to assessment through the Call for Sites process.
[9] The collation of GIS data for the identified habitats is on-going. If new data is received during the preparation of the LUP, the relevant map(s) will be updated.

Recommendation 12: Further consideration should be given to the need to introduce legislation to support the hierarchy of designations and provide additional tools to support the protection and enhancement of wildlife on the Island (e.g. enforcement powers where deliberate harm or destruction is caused to an ecological receptor). This also supports Recommendation 3.

Recommendation 13: Given the emerging evidence base, the LUP should consider adopting a precautionary approach to ecological protection. This may mean that planning applications may need to demonstrate that they are not likely to have significant adverse effects on ecological receptors or that for developments over a certain size environmental information must accompany the planning application. The latter requirement should be aligned with the agreed approach to EIA.

Recommendation 14: Consideration should be given to providing further guidance on development in and around designated sites, habitats and species (this could form supplementary planning guidance for example). The guidance should:

- provide more detail on the types of development likely to be acceptable for sites, habitats and species protected through the different tiers of designation;
- prescribe the information that should be submitted in support of any planning application where the development may have an impact on wildlife of conservation importance (such requirements should complement the approach to EIA;
- set out when the BDCC will require developers to fund relevant surveys and/or levy a fee to enable it to monitor construction work and ensure adequate restoration of development sites; and
- identify that the Alderney Wildlife Trust should be consulted on planning applications which may have an ecological impact.

Planning powers do not currently extend to the territorial waters limit of three nautical miles (NM), instead only to the Island and its internal waters. This means that currently the powers the BDCC has to protect sites, habitats and species on Alderney and its intertidal areas do not apply to sub-tidal marine sites, habitats and species and nor are they considered when development proposals within the marine environment come forward. The same is also understood to be the case for the islets around Alderney. This could result in harm or loss of such sites, habitats and/or species.

Recommendation 15: Consideration should be given to amending the extent of Alderney's planning powers so that they align with its territorial waters to enable marine sites, habitats and species and those present on Alderney's islets to be protected through the planning system.

Following World War II the Island has very few trees remaining and many that do remain make a contribution to the biodiversity of the Island, its townscape and

landscape and to visual amenity. Sections 4(h) and (i) of the Building and Development Control (Alderney) Law, 2002 (as amended) set out the protection afforded to trees and the requirement to secure permission for the removal of or significant works to a tree[10]:

> *"Subject to the provisions of any Ordinance made under subsection (2), a person shall not, except under the authority of and in accordance with the conditions of the permission in writing in that behalf of the Committee - …*
>
> *(h) cut down, destroy or [...] attempt to destroy any living tree; and in this paragraph "destroy" includes any action that –*
>
> *(i) may lead to the death of the tree, or*
>
> *(ii) may endanger its health or stability, whether by excessive pruning or otherwise,*
>
> *(i) cause or permit the cutting down or destruction of any living tree; and in this paragraph "destruction" shall be construed in accordance with paragraph (h)."*

The BDCC's Tree policy provides further guidance on those considerations the BDCC will take into account when determining tree applications.

Recommendation 16: The LUP should introduce a policy (as opposed to guidance) which provides clarity on the level of protection afforded to trees, when an application for works to a tree is required and those considerations which the BDCC will take into account when determining applications for trees.

Nature, green environments and water features are commonly identified as 'special' qualities of an area and can serve a range of functions including flood risk management, improved health and wellbeing, safety, recreation opportunities, environmental resilience, sustainable resource management and biodiversity. The LUP (2016) protects the following areas because they represent green lungs within the Central Building Area, are important wildlife habitats and should be protected from incursion from development:

- Zone 3 – Area adjacent to La Vallee, the Terrace and Valley Gardens
- Zone 4 – Butes Field, York Hill
- Zone 5 – Cotil du Val, Valongis above the 40m contour
- Zone 13 – Ladysmith, North of Petit Val

[10] For the purposes of this Law, "tree" means: "*a tree the circumference over bark of which is 19 inches or more when measured at ground level (which means, in the case of sloping ground, the uphill side of the tree).*"

Whilst these sites are important individually, in combination with other trees and open spaces within the Central Building Area the sites make up a network of green infrastructure which links to and connects with the generally undeveloped Designated Area. These linkages and connections provide important habitat corridors for fauna to move across the Island.

Recommendation 17: Existing policies within the LUP should be reviewed and updated to provide greater protection to urban green spaces, encourage retention and where possible enhancement of green infrastructure and improved connectivity between elements of the green infrastructure network. This recommendation should be considered alongside those contained in the *Land Use Plan Review Economic Development Strategy* which relate to open space provision.

As with other jurisdictions Alderney is home to non-native species. In most cases non-native species will not harm the ecosystem within which they live. However it is recognised that some non-native species comprise invasive species whose introduction causes or is likely to cause economic harm, environmental harm, or harm to human health. Such species grow and reproduce rapidly, causing major disturbance to the areas in which they are present. Given the rich biodiversity on the Island it is important that Alderney controls invasive species in order to protect the wildlife that is present.

Whilst not the whole solution, the planning system can play a role in combatting the spread and presence of invasive species through the determination of planning applications. This can include requiring applicants to identify the presence of invasive species within development sites and setting out proposals for their removal and disposal. Whilst other neighbouring jurisdictions including the UK for example, have identified invasive species, such an assessment has yet to be carried out for Alderney.

Recommendation 18: The LUP should include policy on invasive species. This could include requiring a developer to safely remove and dispose of defined invasive species where they are present on a development site.

Recommendation 19: Further work should be undertaken to define what constitutes an invasive species on Alderney. Such a list could be included in supplementary planning guidance and should be updated as and when new invasive species are identified.

Recommendation 20: The disposal of invasive species should be considered as part of any waste strategy developed by the States (refer to recommendation 57 of the *Land Use Plan Review Economic Development Strategy*).

6 Geodiversity

6.1 Introduction

This chapter considers geodiversity on Alderney. Geodiversity is defined as the variety of rocks, minerals, fossils, natural processes, landforms and soils, which underlie and determine the character of the landscape and environment (UKGAP, 2016). An overview of geodiversity can be found in Section 6.2, followed by a consideration of matters relating to geodiversity which should be taken into account as part of the LUP review in Section 6.3.

6.2 Context

Alderney comprises of a diversity of geological formations, with the rocks belonging to the Armorican Province of northwest France. The hard rocks are divided into three major units, primarily Western Granodiorite, Central Diorite Complex and Alderney Sandstone (Davenport, 2016, refer to Appendix E). Several key geological features are found on Alderney, including a number of dykes, Orbicular Diorite, Tourgis Aplite, and several contacts and unconformities. However, few fossils are found on Alderney (Davenport, pers. comm., 2016).

The geodiversity of the Island has provided opportunities for minerals extraction over time. Today, extraction of minerals on Alderney is predominantly undertaken by a local building merchant, licenced by the States of Alderney. The extracted mineral consists of ungraded intertidal beach material, sourced primarily from Platte Saline Bay, which is a natural building beach. From 2015-2016, approximately 45 tonnes of the ungraded beach material was extracted per month (Blanchard Building Supplies Ltd, pers. comm., 2016). Overall, this ungraded beach material accounts to 24% of the total demand of minerals sourced on Alderney (imported graded sand or shingle material accounts to 76% of the island's demand). Historic aggregate extraction locations include Braye Common, Platte Saline Common and the Banquage area. Stored geological material is usually located at Mannez Quarry and used occasionally. (Extraction of material from an economic perspective is considered in the *Land Use Plan Review Economic Development Strategy*.)

At present, limited technical guidance and information regarding geodiversity on Alderney exists, and there are no policies or designations which seek to conserve geological assets. Other Channel Islands and the UK acknowledge geodiversity and implement appropriate geological conservation designations. For example, a number of Natural Sites of Special Interest are designated on Jersey, with Geological Conservation Review Sites, Sites of Special Scientific Interest, Geoparks and Regionally Important Geological Sites designated in the UK (JNCC, 2016; States of Jersey, 2016a).

6.3 Matters to be Taken into Account as Part of the Land Use Plan Review

Alderney's geodiversity should be appropriately protected, including through the policies included in the LUP. Currently there is limited technical guidance available, including no full geological asset assessment or action plan relating to conservation and ongoing management. The SoA should consider how to produce such guidance and how it should be reflected in its existing procedures (such as minerals extraction licencing).

There is potential for significant impacts on biodiversity resulting from moving soils and other substrates and applying it to other areas of the Island (for example through increasing the potential spread of invasive species). Appropriate protection, regulation and guidance in relation to extraction locations (both existing and potential future locations) should be provided. This should be developed with material extractors as well as the input of local stakeholders such as Alderney Electricity Limited, Alderney Water Board, States Works Department and other users of materials such as local farmers. To support this, the LUP should include policies which provide more guidance on the types and levels of materials that can take place, and the restoration that is expected. (Refer also to the recommendations relating to minerals extraction in the *Land Use Plan Review Economic Development Strategy*.)

Recommendation 21: SoA should produce guidance on the management of geodiversity on the Island.

Recommendation 22: Given the emerging evidence base, the LUP should consider adopting a precautionary approach to protection of geodiversity. This may mean that certain types or sizes of planning applications may need to demonstrate that they are not likely to have significant adverse effects on geodiversity.

Recommendation 23: The LUP should introduce policies which define the types, and amounts of materials that can be extracted on the Island, extraction windows and restoration requirements following extraction.

Recommendation 24: The policies included in the LUP should be reviewed to make it clearer that development proposals should:

- take into account existing landscape features and locally distinctive features of the environment; and
- where appropriate, safeguard and create new opportunities for public enjoyment of geodiversity and landscape features.

7 Flood Risk

7.1 Introduction

This chapter considers flood risk on Alderney. Flood risk is a combination of the probability and the potential consequences of flooding from all sources – including from streams (fluvial) and the sea, directly from rainfall on the ground surface and rising groundwater (pluvial), overwhelmed sewers and drainage systems, and from reservoirs. An overview of flood risk can be found in Section 7.2. A consideration of matters pertaining to flood risk, which should be taken into account as part of the Phase 2 review of the LUP can be found in Section 6.3.

7.2 Context

Very limited information is held on potential sources of flooding, along with the probability of flooding occurring and the potential consequences arising from such flooding. Based on discussions with stakeholders it is understood that the following sources of potential flooding exist on Alderney:

- Streams: the following streams are located on Alderney: Bonne Terre, Water Lane Springs, Ladysmith, Les Trois Vaux, Valley Stream and Essex Well (there are also bore holes at La Haize). Historically, flooding was recorded at Water Lane (the junction of Fontaine David with Newtown) but drainage improvements have addressed this issue. There are no other known incidents of flooding from these streams.
- Sea: as identified in Chapter 4 the sea level around Alderney is likely to rise over the next 100 years as a result of climate change. The coastal areas to the north and east of the Island appear to be particularly susceptible to increased flooding. Currently, limited incidents of flooding from the sea have been recorded, particularly the inner harbour, Braye Road and Fort Clonque areas.
- Rainfall/rising ground water: The following locations have been identified as being subject to frequent flooding at periods of heavy rainfall and when the groundwater table is high. This currently tends to be within the winter months. Common locations are Saye campsite, Mannez and Longis Common. Surface water flooding is also observed after heavy rainfall at Barrack Masters Lane, Le Grand Val and Platte Saline.
- Overwhelmed sewers and drainage systems: The following locations have been identified as being prone to occasional flooding from overwhelmed sewers and drainage systems: La Marette, Marais Square, Valley Gardens, Platte Saline and at the airport.
- Reservoirs: there are reservoirs at Battery Quarry and Corblets Quarry, as well as standing water at Mannez Ponds, La Mare du Roe on Longis Common and the cooling ponds at the power station.

As identified in Chapter 4, the lack of detailed understanding of the likely impacts of climate change on Alderney means that aside from the predicted sea level rise,

the frequency and intensity of flooding arising from streams, groundwater and rainfall is unknown.

7.3 Matters to be Taken into Account as Part of the Land Use Plan Review

Although the frequency and intensity of flooding events on the Island is currently understood to be low and generally located in parts of the Island with low/no population, there is limited understanding of flood risk and particularly how susceptibility to flood risk could increase in the future including as a result of climate change.

Recommendation 25: SoA should consider undertaking further studies by appropriately qualified persons to better understand the likely sources of flooding on the Island, the associated frequency and intensity of such flooding and how the Island's susceptibility to flooding is likely to change as a result of climate change. This should include identifying specific adaptation or mitigation measures which the SoA should seek to implement to reduce flood risk. In developing these, regard should be had to the impact of 'hard' engineering structures on the Island's natural environment particularly in intertidal locations. Following the completion of this work, the implication for the LUP policies and associated hydrological map should be considered and any updates or revisions made accordingly.

Avoiding development in areas at risk of all types of flooding is the most effective way to minimise flood risk; it reduces the risk of damage to property arising from flooding or in extreme situations the risk of loss of life.

As indicated in the *Land Use Plan Review Housing Strategy* and *Land Use Plan Review Economic Development Strategy*, it is the BDCC's aspiration to focus new development within the Central Building Area. Based on the limited information available, Crabby, Braye and Le Banquage may be subject to increased susceptibility to flood risk in the future – particularly in those locations closest to the coast.

In addition, any new development will reduce the area of permeable ground on the Island potentially leading to increased levels of surface water run-off. The proposed solutions for minimising run-off from buildings and reducing demand on the Island's drainage systems should be taken into account when determining planning applications.

Recommendation 26: The LUP should promote development in areas which avoid the risk of all types of flooding. Based on the findings of the addition work identified above, the BDCC should consider the need to introduce a hierarchy of flood risk zones to help direct future development to the most suitable locations.

Where developments are proposed in higher risk areas, flood risk assessments should be submitted in support of a planning application. The requirement to

consult the States Works Department on planning applications which are proposed in areas of higher flood risk should also be introduced. As an intermediate or transitional measure, development proposals should demonstrate that they will both manage flood risk associated with the development, and also ensure that they do not exacerbate or negatively influence flood risk issues for other areas. The LUP should consider providing high level guidance on preferred mitigation measures.

Recommendation 27: Recommendations 44 and 63 of the *Land Use Plan Review Economic Development Strategy* recommends the introduction of sustainable construction standards and techniques in the design and construction of new, redeveloped or refurbished buildings. In bringing forward such standards, the use of techniques to reduce surface water run-off should be included including rainwater harvesting, soakaways and reduced hardened surfaces etc.

8 Agriculture

8.1 Introduction

This chapter covers the environmental impacts of agriculture on Alderney. An overview of agricultural activity can be found in Section 8.2. A consideration of matters pertaining to agriculture which should be taken into account as part of the Phase 2 review of the LUP can be found in Section 8.3. The role of agriculture on the island as an economic activity is considered in the *Land Use Plan Review Economic Development Strategy*.

Agriculture is defined as the practice of growing crops or raising animals. Within the Alderney Land Use Plan Section 2: Sites, this term is clarified as "*the cultivation or production of crops, or the production, rearing or maintenance of cattle, sheep, pigs, goats, poultry, fish and crustacean and molluscs, all on a commercial basis*". For the purposes of this chapter, the production or rearing of fish and crustaceans and molluscs is not considered (see Chapter 9). The definition for the purpose of this chapter is also expanded to include the above description for non-commercial agriculture.

8.2 Context

The LUP zones land for agriculture within the Designated Area (refer to Map F.7 in Appendix F). However, not all of the Agriculture Zone is currently used for agricultural purposes – agricultural land as zoned in the LUP includes most land no included in other designations, and as such encompasses areas not likely to be viable for agricultural use. It is also not clear how much of the zoned land is expected to be required in the future. Conversely, there are some agricultural activities currently taking place in areas which are not zoned for agriculture (Protected Zone). Map F.8 in Appendix F illustrates the current extent of agriculture on the island[11].

Agriculture in Alderney is currently concerned with rearing of cattle for dairy and beef, rearing pigs for pork and smaller scale non-commercial activities such as rearing goats and cultivating allotments. There is also limited potatoes and cereals cultivation.

The environmental implications of agriculture are heavily dependent on the type, intensity and individual management practices undertaken by the land managers and farmers.

The risks associated with agricultural practices are; soil degradation, water and air pollution and loss of biodiversity following the use of herbicides, pesticides, anthelmintics (antiparasitic drugs) and fertilisers, and the promotion of rodents (e.g. through the practice of leaving potatoes in the ground). Practices such as

[11] Map data on extent on agriculture has been produced using existing LUP designations and 2016 Digimap aerial photography. A further 'ground truthing' exercise may be beneficial to validate the information displayed in the mapping.

ploughing, overgrazing, fodder production and land clearance may also be detrimental to the environment.

The risks associated with allotments are generally restricted to applications of pesticides or land clearance. Given the low-intensity nature of allotments, they can often provide valuable habitats for ephemeral species.

Agriculture on the Island has historically adopted relatively low input, extensive management systems and thus has had a low environmental impact. An increase in intensive farming practices in the future might be expected to lead to an increase in associated risks which may have a negative impact on the environment. The spread of intensive agricultural practices to areas of the Island which have not recently been actively farmed may threaten important habitats or species. Many habitats in Alderney require a level of disturbance to maintain their ecological function. Without native large grazers, extensive grazing by domestic animals may replace this function and be a benefit to the Island's ecology. There therefore may be opportunities to extend agricultural activities to sites where grazing would be environmentally beneficial. In these instances, inputs of herbicides, pesticides, fertilisers and long-living antihelmenthics should be prohibited, as should damaging management practices often associated with intensive farming.

More generally, agriculture on the Island should be generally encouraged and supported as a provision of locally sourced produce offering food security and food with a low 'global footprint'. Local agricultural practices also have social and cultural significance.

Dairy farmers in Guernsey and Alderney may receive a subsidy (paid per litre of milk sold) by conforming to a Dairy Farm Management Plan which aims to reduce their environmental impacts. Regulations within the plan include restrictions on slurry applications, maximum stocking rates and habitat specific guidelines.

There is limited technical guidance and legislation regarding agriculture; the guidance which does exist is largely focussed on safeguarding agricultural land from developmental pressures. For example, there is no soil quality assessment or soil quality plan for the Island, nor information on nitrate vulnerable zones to advise fertiliser applications. In Guernsey, applications of chemicals are regulated under the Poisonous Substances (Guernsey) Law, 1994 – however, this legislation does not extend to Alderney. There therefore appears to be a need to better define the agricultural practices and works which can be undertaken within different areas, and which activities and works may require planning permission.

8.3 Matters to be Taken into Account as Part of the Land Use Plan Review

The environmental impacts of agriculture are closely related to other topics covered within this Strategy, particularly air quality, water quality and contaminated land issues (see Chapters 10, 12 and 14). In considering the matters that should be taken into account as part of the Land Use Plan review, these interrelationships should be borne in mind.

It is clear that the agriculture has several environmental benefits which should be acknowledged alongside its wider economic and social role. There are also potential adverse environmental impacts if inappropriate agricultural practices are used, or if farming is directed into sensitive locations. The LUP should therefore play a greater role in managing agriculture's impact on the environment by being more explicit on where agriculture is appropriate (and where it is not), and what practices require further consideration before they can be undertaken.

Recommendation 28: The LUP should continue to support agricultural enterprise on the Island, recognising the positive role it can play in supporting biodiversity and providing locally sourced produce.

Recommendation 29: The extent of the Agricultural Zone in the LUP should be reviewed to ensure that it reflects both current uses and the land that might be required for farming in the medium and long term, and the environmental impacts of agriculture.

Recommendation 30: The existing agricultural policy in the LUP should be reviewed, in particular its compliance with Section 12 of the Building and Development Control Law, 2002 (as amended) and the need to provide more guidance on types and intensity of agricultural uses and ancillary buildings which are likely to be permissible as well as any non-agricultural uses which may be permissible in the Agricultural Zone.

Recommendation 31: The LUP and legislation should define the agricultural activities and works which may be undertaken within the Agricultural Zone without the need for planning permission. This might include changes between different types of agricultural use, e.g. from pastoral to arable cultivation or from dairy to pig rearing.

Recommendation 32: The LUP and legislation should define the agricultural activities and works which may be undertaken outside the Agricultural Zone (particularly in relation to the Protected Zone) and how best to regulate them. Consideration should be given to requiring planning permission or other consenting / licencing for activities such as the erection of fences, applications of pesticides etc. The LUP should make it clear that agricultural practices within the Protected Area are only acceptable where they will enhance and support the ecology of the area.

Recommendation 33: The policies included in the LUP should be reviewed to make it clearer that development proposals relating to agriculture should:

- encourage sustainable agricultural practices and grazing management techniques;
- consider the potential for intensive agricultural techniques to cause risk to the environment; and
- consider the impact of agricultural techniques on the character and amenity of the Island.

Over the longer term, there are opportunities to better understand the opportunities and impacts of farming on Alderney through further investigation. Further work to understand the current extent of agriculture on the Island – including 'ground truthing' the mapping information provided in this Strategy – should be undertaken. A soil quality plan would be beneficial in understanding the management required to ensure that Alderney is able to continue to support agriculture and that environmental impacts (such as nitrate leaching, soil erosion or overgrazing) can be managed. A soil quality plan might include nitrate vulnerable zones designations and include technical guidance on applications of herbicides, pesticides and fertilisers. Technical guidance on safeguarding biodiversity would also be beneficial.

Recommendation 34: SoA should consider producing a soil quality plan to advise the boundaries of the Agricultural Zone in further versions of the LUP, as well as guiding agricultural practices.

Recommendation 35: Locally-specific technical guidance on safeguarding biodiversity from agricultural practices should be considered, in partnership with the AWT.

9 Aquaculture, Fisheries and Marine Development

9.1 Introduction

This chapter considers aquaculture, fisheries and marine development on Alderney within its internal waters. The Alderney Marine Forum has been established to develop a community-led Marine Management Plan of Alderney's waters by the end of 2017 for marine related uses outside of Alderney's internal waters to the 3NM boundary.

An overview of aquaculture, fisheries and marine development within Alderney's internal waters can be found in Section 9.2. A consideration of matters pertaining to aquaculture, fisheries and marine development, which should be taken into account as part of the Phase 2 review of the LUP can be found in Section 9.3.

9.2 Context

Aquaculture is defined as the farming of fish and other seafood. Currently no registered aquaculture activities or sites occur on Alderney, within the Island's internal waters (ACRE, 2014). Similarly, limited commercial fisheries occur within the internal waters. Recreational fisheries within Alderney's internal waters include: inshore angling, shore gathering and bait digging (ACRE, 2014). The majority of commercial and recreational fishing activities occur primarily within the Island's 0-3NM territorial waters.

Currently, limited marine development activities occur on Alderney or within its internal waters. Regular maintenance is undertaken on the Island's breakwater and redevelopment of areas susceptible to coastal erosion (Chapter 4), such as road re-development. However, potential future marine development activities may include marina development and sewage treatment re-development activities (these are discussed further in the *Land Use Plan Review Economic Development Strategy*).

Other marine based activities, which occur within Alderney's internal waters include intertidal substrate aggregate extraction (Chapter 4), tourism and adjacent to it such as: commercial shipping, recreational sailing, tourism etc. In addition, the marine area of Alderney's internal waters comprises several ecologically important features, such as the Island's Ramsar Site and various marine habitats and species (Chapter 5). As such, the marine environment within and adjacent to the Island can be considered an important environment within Alderney.

The frequency and intensity of marine related activities within Alderney's internal waters or adjacent to it may change across the year.

Existing legislation for Alderney relates to aquaculture, fisheries and marine development including various ordinances[12], which prevent certain shore

[12] The Fishing (Alderney) Ordinance, 1967; The Alderney Control of Fishing etc. Ordinance, 1957; The Alderney Fishing Ordinance, 1952

gathering activities, such as gathering Green Ormers (*Haliotis tuberculata*) during their breeding season, the use of nets or using scuba dive equipment to collect shellfish and Section 7(1)(a) of the Building and Development Control (Alderney) Law, 2002 (as amended), which identifies "…*the desirability of keeping land adjacent to the foreshores and cliffs of the Island in its natural state*".

9.3 Matters to be Taken into Account as Part of the Land Use Plan Review

As identified in Chapter 5, planning powers do not currently extend to the territorial waters limit of 3NM, instead only to the Island and its internal waters.

Recommendation 36: Consideration should be given to amending the extent of Alderney's planning powers so that they align with its territorial waters to enable marine sites, habitats and species to be protected through the planning system. In doing so, clarity should be provided on the relationship between Alderney's planning powers and the requirements under the Food and Environment Protection Act 1985 (Guernsey) Order 1987 to secure a FEPA licence for relevant works.

Given the limited aquaculture, fisheries and marine related activities undertaken on Alderney and its internal waters and the scope of other recommendations within this strategy, it is not considered that any additional or specific policies are required within the LUP. Should planning powers extend to include Alderney's territorial waters and following the completion of the community-led Marine Management Plan, the implications for the LUP should be reviewed.

Recommendation 37: Should planning powers extend to include Alderney's territorial waters and following the completion of the community-led Marine Management Plan, the implications for the LUP should be reviewed. This includes the need for additional policies or supplementary planning guidance to appropriately protect and manage the marine environment and more detailed guidance on information requirements/considerations to be taken into account when determining planning applications for marine related development.

10 Air Quality

10.1 Introduction

This chapter considers air quality on Alderney. Section 10.2 provides an overview of air quality. A consideration of matters relating to air quality – which should be taken into account as part of the Phase 2 review of the LUP – can be found in Section 10.3.

10.2 Context

The quality of air can have serious effects upon human health and wellbeing and, the environment (see Climate Change in Chapter 4; Defra, 2007). Air pollution is defined as a mixture of gases and particles which have been emitted by man-made processes such as construction, operation and decommissioning of industrial activities, motorised transport, electricity and heat generation, and so on. Pollutant gases and particles include: ammonia (NH_3); benzene (C_6H_6); carbon monoxide (CO); lead (Pb); oxides of nitrogen (NO_x); ozone (O_3); particulate matter (PM-PM_{10} and $PM_{2.5}$); polycyclic aromatic hydrocarbons (PAHs); sulphur dioxide (SO_2); and 1,3-butadiene (Defra, 2007). Air pollution can also include dust, smoke and odours.

Air quality and sources of air pollution are not currently monitored on Alderney. In addition, no technical guidance, management strategy or planning guidance on air quality exists for the island. For example, there is no guidance relating to personal or organised bonfires (i.e. bonfires associated Alderney Week and Bonfire night with tourist events). Air quality monitoring and technical guidance is provided within other Channel Islands and the UK (Moorcroft and Barrowcliffe, *et al.* 2015; States of Guernsey, 2015a; States of Jersey, 2013).

A number of policies and legislation for Alderney do, however, acknowledge air quality/pollution, in some capacity. For example policy GEN 12 states that when considering proposals, 'the Committee will take into account any significant impact on the reasonable enjoyment of adjoining properties, particularly in relation to overshadowing, overlooking, emissions, noise and disturbance'. The Alderney Health and Safety at Work (Alderney) Law, 1997 also states '1(d) for controlling the emission into the atmosphere of noxious or offensive substances from any premises'.

Whilst air quality is not monitored, it is not considered that it constitutes a major issue on the Island. However, there is likely to be certain locations where air quality is lower than others – for example, at transport infrastructure (the airport and harbour) and locations of industrial activity (e.g. at La Corvée). There may also may be certain times of the year where air quality is reduced, either due to increased pollutants (e.g. more coal burned during the winter months) or still weather conditions.

10.3 Matters to be Taken into Account as Part of the Land Use Plan Review

Air quality is strongly linked with other topics covered in this Strategy, particularly climate change (Chapter 4) and biodiversity (Chapter 5). It is also related to many of the topics covered in the *Land Use Plan Review Economic Development Strategy*, both in terms of emitters (e.g. industrial activity, transport and utilities) and receptors (e.g. tourism, which benefits from a more pristine environment).

A strategy for air quality should be produced to provide technical guidance and recommendations for air quality monitoring, linked to appropriate policy and legislation. There may be opportunities to link with strategies or regimes used on other Channel Islands to ensure the strategy is joined up, proportionate and based on good practice used elsewhere.

As part of the strategy, the States of Alderney should establish a proportionate air quality monitoring regime. Monitoring could focus on a small number of gases or particulates at particular locations of interest (either at key emitting locations such as the airport or harbour or sensitive receptors).

Recommendation 38: SoA should consider establishing an air quality strategy, which sets out technical guidance and recommendations for monitoring and protecting air quality on the island. The strategy should identify sources of air pollution and key receptors.

Whilst air quality as an issue is wider than planning, it clearly relates to development management decisions. There is an opportunity to strengthen the LUP policies relating to air quality, particularly around what should be considered as part of a planning application. Where proposals might be expected to give rise to air quality impacts, the States of Guernsey Office of Environmental Health and Pollution Regulation should be consulted, in order to access any specialist expertise or advice which might be required in determining the application.

Recommendation 39: The policies included in the LUP should be reviewed to make it clearer that development proposals should:

- take into account the impact upon air quality, air pollution and emissions (for both construction and operation phases), including impact on adjoining properties and the local and wider environment;
- put in place satisfactory measures to address risk upon public health and safety and the environment from air pollution; and
- ensure that the quality of design and material used for development do not adversely impact air quality (for example, restricting the use of low efficiency coal or wood-burning fires which can lead to local smogs).

Recommendation 40: The LUP should consider whether certain types of high-emitting development should be encouraged or restricted from particular areas to manage impact on air quality.

Recommendation 41: The States of Guernsey Office of Environmental Health and Pollution Regulation should be consulted on any planning application which may give rise to air quality-related environmental health issues.

11 Light Pollution

11.1 Introduction

This chapter considers light pollution on Alderney. An overview of light pollution can be found in Section 11.2. A consideration of matters pertaining to light pollution, which should be taken into account as part of the Phase 2 review of the LUP can be found in Section 11.3.

11.2 Context

Light pollution can be defined as 'the excessive and inappropriate use of artificial light' (Dark Skies Association (DSA), 2016). Light pollution can occur in four different forms:

- Urban sky flow (brightening night sky from urbanisation);
- Light trespass (light falling where it is not intended);
- Glare (excessive brightness); and
- Clutter (excessive groupings of light sources).

Sources of light pollution can affect human health (changes in immune system and behaviour) and wildlife (behavioural changes in animal and insect populations) (DSA, 2016).

In 2016, an external lighting audit was completed on Alderney by SoA. This survey identified Alderney has low light pollution (Birmingham, 2016). Sources of light pollution from private properties were low, with emergency services (i.e. airport, hospital) and other government services (e.g. Jubilee residential home, harbour, power station and street lights from 4.00/5.00pm to 12.00am) predominately contributed to the recorded levels of light pollution on the Island.

11.3 Matters to be Taken into Account as Part of the Land Use Plan Review

At present, no specific legislation or policies exist with regard to light pollution on Alderney. Draft guidance regarding light pollution is, however, provided within the External Lighting Audit (2016).

It is understood that the SoA is considering registering Alderney as a Dark Sky Community/Park/Reserve through the International Dark-Sky Association's certification programme. Such a certification establishes special protection areas for natural night skies and identifies a commitment to preservation of darkness. The DSA (2016) sets out some of the requirements for certification:

- *"A comprehensive outdoor lighting guideline that dictates night sky friendly fixtures, maximum illumination, and warranting.*
- *Declaration of the night sky as a resource and integration into existing management documents.*

- *67% of existing lights conform to guideline, and commitment to bring 100% of lights into conformance.*
- *An active educational or "interpretive" public program that shares the night with visitors.*
- *Leadership in light pollution prevention by conducting one of a number of various outreach options."*

Given the stringent requirements and limited resources of the SoA it may be possible to make a commitment to supporting a dark skies policy without formally meeting the requirements of the DSA. This could include marketing Alderney for its dark skies and promoting tourism activities which capitalise on this asset.

Recommendation 42: SoA to consider making an application to designate the Island as a Dark Sky Community/Park/Reserve.

Recommendation 43: Notwithstanding, certification as a Dark Sky Community/Park/Reserve, policies could be introduced to the LUP to recognise the night sky as a resource and provide more detailed guidance on outdoor lighting including associated fixtures, luminance levels etc. and information requirements for planning applications which include proposals for outdoor lighting. This could include the role of the States of Guernsey as consultee on planning applications, which may give rise to environmental health issues. In preparing this guidance regard should be had to the proposals contained within the External Lighting Audit.

Recommendation 44: The SoA should undertake regular monitoring to understand emitters of light pollution and associated light levels.

12 Water Quality

12.1 Introduction

This chapter considers water quality on Alderney. An overview of water quality can be found in Section 12.2. A consideration of matters pertaining to water quality, which should be taken into account as part of the Phase 2 review of the LUP can be found in Section 12.3.

12.2 Context

Water quality can be defined as the suitability of water to sustain various human uses or processes. Any particular use will have certain requirements for the biological, chemical, physical and radiological characteristics of water (Bartram and Ballance, 1996a; Bartram and Ballance, 1996b). Poor quality of water/ water pollution can have serious, deleterious effects upon human health and the environment (Lyons, 2014; Bartram and Ballance, 1996a; Bartram and Ballance, 1996b).

Water quality on Alderney, in terms of raw and potable water, is managed and monitored by the Alderney Water Board (AWB). Water sources are found from a number streams and boreholes on island to supply potable water. Further details are provided in Section 10.2 of the *Land Use Plan Review Economic Development Strategy*. The AWB monitor the chemical (i.e. colour, PH, turbidity, iron etc.) and bacteriological (i.e. coliforms, ecoli etc.) characteristics of the water weekly, to ensure water is suitable for human consumption and commercial use. There are therefore no water quality issues currently identified by AWB. Relevant legislation exists to enable the AWB to manage, protect and enhance water sources on Alderney. This includes: States of Alderney Water Supply Law, 1954; States Water Supply (Prevention of Pollution) (Alderney) Law, 1972 and The Water (Control) (Alderney) Law, 1994.

It should also be noted that several ponds also occur round the island. These ponds are not formally monitored and so there is no information available on their quality.

Monitoring of bathing water quality (i.e. similar to States of Guernsey bathing seawater sampling of *Escherichia coli* and *Intestinal enterococci*) is not currently undertaken on Alderney (States of Guernsey, 2015b). In addition, no technical guidance, management strategy or planning guidance on seawater/bathing water exists for the Island. Seawater/bathing water monitoring and technical guidance has been produced for other Channel Islands and the UK (European Commission, 2016; States of Guernsey, 2016; States of Jersey, 2016c; DEFRA, 2014; European Union, 2006).

The Harbour Office undertakes long-term, annual sampling of seaweed, shellfish, sediment and seawater. This programme monitors the effects of radioactive discharges from the French reprocessing plant at La Hague and the power station at Flamanville (Cefas, 2016). It also monitors any effects of historical disposals of radioactive waste in the Hurd Deep, a natural trough in the western English

Channel. Fish and shellfish are monitored to determine exposure from the internal radiation pathway; sediment is analysed for external exposures. Seawater and seaweeds are sampled as environmental indicator materials and, in the latter case, because of their use as fertilisers[13]. The island's sewage is managed by States Works Department (SWD) via the outfall pipe at Crabby/Platte Saline Bay (40-45 % households) and sewage treatment works at Longis Bay (20% households) (Aaron Bray pers. comm., 2016). Currently, raw sewage flows from the Crabby/Platte Saline outfall into the Island's territorial waters, although future upgrades are planned (either extending the outfall pipe at Crabby/Platte Saline, or to install a new sewage treatment plant at Platte Saline to treat the water before it reaches the outfall pipe). The Longis Bay sewage treatment works is an old treatment works, producing final water but can also be screened by UV when it is in high demand.

A number of properties on the Island use cesspits, for example, Alles es Fees pipe infrastructure is not connected to wider system. There have been instances where private drainage systems with self-emptying septic tanks have failed. There is currently no requirement to connect to the existing centralised sewage system or where septic tanks are required for these to be installed to a specified standard.

12.3 Matters to be Taken into Account as Part of the Land Use Plan Review

Limited GIS data is held on the water and wastewater systems. This includes the locations of boreholes, drains and water catchments. Without this information protection of such assets from pollutants is more difficult.

Recommendation 45: Updated records on water and wastewater systems should be collated by SoA, so that such information is available to inform the next LUP review. Data collected to support (major) planning applications should be used to inform the updated records where appropriate.

The LUP makes some provision for protection of water quality through:

- Policy GEN 10, which requires developments which are potentially hazardous to demonstrate that satisfactory measures have been introduced to address any risks to public health and safety and the environment; and
- Policy GEN 7, which requires the BDCC to take into consideration the adequacy of roads and public utilities to cope with the increased demand.

Watercourses are currently protected on Alderney under the States Water Supply (Prevention of Pollution) (Alderney) Law, 1972, and the States Water Supply (Prevention of Pollution) (Alderney) Ordinance, 1973. These provide protection

[13] From the 2015 results, there was evidence of routine releases from the nuclear industry in some samples (cobalt-60, technetium-99 and iodine-129). However, concentrations in fish and shellfish were low, as was the fish/shellfish consumption test of a representative person. These low levels are comparable to previous years. No evidence for significant releases of activity from the Hurd Deep site was found. The concentrations of artificial radionuclides discharged from local sources continued to be of negligible radiological significance.

and relevant notice and offence provisions in relation to water pollution, in particular for water within the water catchment area. However, the legislation is not comprehensive and is rather out-of-date, which presents risks of water quality issues.

Upgrades are required to the wastewater system in part to reduce environmental impacts. Further details on the proposed upgrades and associated recommendations are provided in the *Land Use Plan Review Economic Development Strategy*.

Recommendation 46: The LUP should retain the principle of policy GEN 10. The policy should be reviewed to make it clearer that:

- the requirements of the policy should relate to discharges which may adversely affect water quality on the Island; and
- Alderney Water Board/States Works Department should be a consultee on planning applications, which may give rise to water quality issues.

Further consideration should be given to the need for provision of more detailed technical guidance including on:

- water quality (e.g. on water quality monitoring for ponds and bathing seawater, such as testing for Escherichia coli and Intestinal enteroccoi); and
- when connection to the main wastewater network is expected as opposed to the use of septic tanks; regard should be had to recommendation 47 of the *Land Use Plan Review Economic Development Strategy* when implementing this recommendation.

Recommendation 47: Policy GEN 7 should be strengthened to include the requirement for on-site and connecting infrastructure (water and wastewater) to be delivered by the applicant/developer to be provided to adoptable standards to minimise potential impacts on water quality.

Recommendation 48: The LUP should protect watercourses on Alderney. Further consideration should also be given to the need to legally protect watercourses in order to provide additional enforcement powers for breaches of water quality.

The *Land Use Plan Review Economic Development Strategy* identifies the importance of the tourism sector to Alderney's continuing economic prosperity. Whilst the SoA's Tourism Strategy is focussing on niche tourism (in recognising that Alderney is no longer a bucket and spade destination), the beaches and use of seawater remain a key part of Alderney's offering. Whilst there is no evidence (anecdotal or otherwise) to suggest that Alderney currently suffers from poor seawater/bathing water quality it will be important to ensure that this remains the case in the future.

Recommendation 49: Consideration should be given to establishing a seawater/bathing water quality strategy, which sets out technical guidance and recommendations for annual monitoring of seawater (beyond the radioactive

sampling undertaken by the Harbour Office). The benefits of aligning the approach with that adopted by the States of Guernsey and Jersey should be considered.

13 Noise and Vibration

13.1 Introduction

This chapter considers noise and vibration on Alderney. Section 13.2 provides an overview of the topic, followed by a consideration of matters relating to noise and vibration – which should be taken into account as part of the LUP review – in Section 13.3.

13.2 Context

The definition of noise and vibration is taken here as 'unwanted noise and vibration', from anthropogenic sources (Radford et al., 2007). It is considered a pollutant, with varying degrees of impact depending on noise levels (measured in decibels), frequency (Hertz) and pitch, length of time, time of day/night, reoccurrence, and so on. Effects are mainly found on upon human health (e.g. heart conditions, ear damage, disturbance and stress (Stanfeld and Matheson, 2003)) and biodiversity (e.g. displacement and behavioural changes in feeding/breeding (Francis and Barber, 2013). However it must be noted that noise and vibration, and the term 'unwanted noise', is dependent upon the perception of each individual (or species) and other factors listed above, and therefore can be highly subjective.

The most commonly recognised sources of noise and vibration pollution include: air traffic; boat traffic; industrial activities (including construction / demolition building activities); neighbourhood noise; rail traffic and road traffic (Radford et al., 2007). Based on this, sources of current noise pollution on Alderney may include:

- Air traffic noise, from Alderney Airport, primarily during airport opening times: (Winter months: Mon-Sat 0740-1830, Sun 0855-1830; Summer months: Mon-Thu 0640-1730; Fri-Sun 0640-1830 (Civil Aviation Authority, 2016)).
- Boat noise, particularly at the harbour and Braye Bay.
- Industrial noise at locations such as the Glacis, La Corvée, Berry Quarry, the power station and the Impot.
- Construction and demolition development activities across the Island, largely concentrated within the Central Building Area.
- Neighbourhood noise (such as evening restaurant noise), primarily within the centre of St Anne and at Braye.
- Rail traffic from the Alderney railway (primarily during railway opening/running times).
- Road traffic noise from all roads on Alderney.

Based on the sources of noise described above, it can be concluded that overall noise and vibration pollution is low. However, the Island contains some sensitive

receptors (e.g. particular species). The low baseline also means that any additional noise (for instance construction noise from a major project, or a change in the type or frequency of aircraft movements) could potentially have a large impact.

Noise and vibration and sources of noise pollution are not currently monitored on Alderney, and there is no technical guidance or planning guidance on noise which exists for the Island. Technical guidance for noise is given within other Channel Islands and the UK (States of Guernsey, 2016; States of Jersey, 2016d; UK Government, 2016; IPPC, 2002; British Standard, 2008; British Standard, 1997; British Standard, 1990). This includes providing information on screening, conditions, hours of working, movements and limits on construction practices. It should be noted that certain bodies on the Island (for example Alderney Airport and the power station) follow internal and/or external guidance regarding noise pollution (A. Graca pers. comm., 2016; P. Bunn pers. comm., 2016).

13.3 Matters to be Taken into Account as Part of the Land Use Plan Review

Given the gap in specific guidance relating to noise and vibration, the States of Alderney should consider producing locally-specific guidance or strategy relating to preventing unacceptable noise and vibration pollution. This should include susceptible receptors to noise pollution and acceptable levels of noise and vibration, which would assist with producing and considering EIAs. The strategy should be developed with regional experts (such as States of Guernsey Office of Environmental Health and Pollution Regulation) and technical guidance information (such as States of Guernsey, 2016; States of Jersey, 2016c; British Standard, 2008; British Standard, 1997; British Standard, 1990), where appropriate.

As part of the strategy, the States of Alderney should establish a proportionate noise and vibration monitoring regime, focused at particular locations of interest (either at key emitting locations such as the airport or harbour, or sensitive receptors such as key habitats).

In the current LUP, only Policy GEN 12 recognises noise when stating that planning decisions will ‘take into account any significant impact on the reasonable enjoyment of adjoining properties, particularly in relation to overshadowing, overlooking, emissions, noise and disturbance.’ The review of the LUP should therefore expand this to ensure it is able to consider all sensitive receptors, including ecological or wildlife value. The total life cycle of the development proposal should also be considered – that is, noise from construction, operation and decommissioning.

Recommendation 50: SoA should consider establishing noise and vibration guidance or strategy, and establish a proportionate noise and vibration monitoring regime.

Recommendation 51: The LUP should be reviewed to ensure that policies cover all sensitive receptors and the total life (construction, operation and decommissioning) of development proposals.

Recommendation 52: The LUP should consider whether certain types of activities which emit high levels of noise/vibration should be encouraged or restricted from particular areas to manage noise and vibration impacts.

Recommendation 53: The States of Guernsey Office of Environmental Health and Pollution Regulation should be consulted on any planning application which may give rise to noise and vibration-related environmental health issues.

14 Contaminated Land

14.1 Introduction

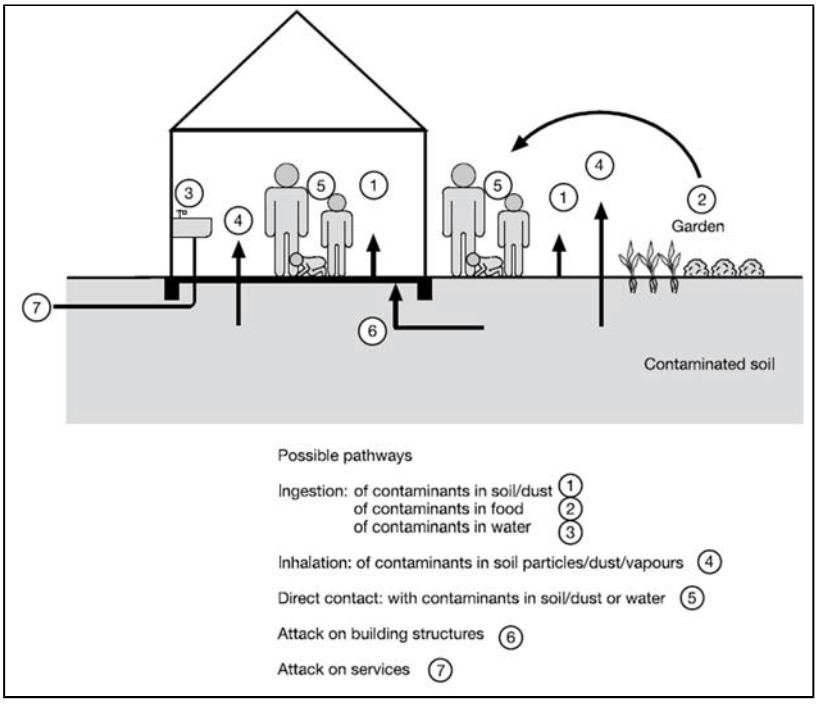
This chapter considers contaminated land; that is, land which contains concentrations of significantly harmful substances. Section 14.2 provides an overview of land contamination on Alderney. A consideration of matters relating to air contamination – which should be taken into account as part of the Phase 2 review of the LUP – can be found in Section 14.3.

14.2 Context

Contaminated land can be defined as land which potentially contains concentrations of significantly harmful substances, both natural and man-made. These may be harmful to human health, wildlife and, the natural or built environment (including utilities and infrastructure) (States of Jersey, 2016b; States of Guernsey, 2012a; States of Guernsey, 2012b; States of Jersey, 2005). It can include corrosive, explosive, flammable, radioactive or toxic substances, in gaseous, liquid or solid form (States of Guernsey, 2012a; States of Guernsey, 2012b). Examples of pollutants which cause contaminated land include: heavy metals; oils and tars; chemical substances; gases; asbestos; and radioactive products (UK Government, 2016; DEFRA, 2012).

Potentially contaminated land is generally assessed by the concept of 'source – pathway- receptor', through risk assessments (Figure 14.1).

Figure 14.1 Schematic of 'source-pathway-receptor' concept



Source: States of Guernsey, 2012b

The most commonly recognised sources of potential contaminated land include: animal product works; burial grounds; dockyards; industrial / treatment / manufacturing works; landfill; petrol stations and fuel storage; railway land; reclaimed land; and scrap-yards (States of Jersey, 2016b; States of Guernsey, 2012a; States of Guernsey, 2012b; States of Jersey, 2005). Based on this, potential sources of current and past contaminated land currently on Alderney include:

- Animal product works
- Burial grounds
- Dockyards
- Garages
- Heated vinery sites
- Landfill (including domestic waste, hazardous waste, incinerator ash and green waste) and recycling
- Scrapyard and material storage
- Manufacturing works
- Petrol stations and fuel storage
- Electricity generation
- Railway land
- Sewage works
- Unexploded ordinances
- Waste from WWII occupation (this includes bunkers with heating systems or pot boiling which may contain asbestos)

This list does not include activities undertaken by persons on private land which may cause contaminated land (i.e. pet cemeteries, personal burial or waste disposal i.e. domestic coal ash).

There are a number of pieces of legislation which prevent sources of pollution on Alderney, which in some cases relate to land contamination. This includes water pollution (see States Alderney Water Supply Law, 1954; States Water Supply (Prevention of Pollution) (Alderney) Law, 1972 and, The Water (Control) (Alderney) Law, 1994) and human health (see Alderney Health and Safety at Work (Alderney) Law, 1997). However, limited available information exists in terms of technical guidance regarding contaminated land, its treatment (including details of responsible/assisting parties) and the process for developing on contaminated land. Technical guidance exists for other Channel Islands and the UK (States of Jersey, 2016b; UK Government, 2016a; States of Guernsey, 2012a; States of Guernsey, 2012b; States of Jersey, 2005; DEFRA, 2012; Environment Agency, 2005). Some bodies on the Island (i.e. Alderney Airport and the electricity power station) follow internal or external guidance regarding the prevention of land contamination.

14.3 Matters to be taken into account as part of the Land Use Plan review

A simplified schedule and map of current and past contaminated land does not currently exist. The States of Alderney should produce and maintain such a schedule and map, to inform planning decisions. However, given that this information is sensitive in nature, it is not recommended that it is made publically available.

Given the gap in specific guidance relating to contaminated land, the States of Alderney should consider producing locally-specific technical guidance relating to potentially contaminated land, covering definition, sources of past, current and potential contaminated land, risk assessment, processes for dealing with or remediating contaminated land. In particular, such guidance should provide information on the responsible parties which deal with certain types of contaminated land .The guidance should follow relevant pollution legislation for Alderney where it is applicable, and might also follow regional technical guidance information such as States of Guernsey Office of Environmental Health and Pollution Regulation and UK Government (2016a) and Environment Agency (2005) guidance. This should also engage with other regional experts, such as States of Guernsey (i.e. for advice on future activities on contaminated land).

Where proposals are made on potentially contaminated land, or might be expected to give rise to contamination, the States of Guernsey Office of Environmental Health and Pollution Regulation should be consulted, in order to access any specialist expertise or advice which might be required in determining the application.

Recommendation 54: SoA should produce and maintain such a schedule and map of contaminated land to inform planning decisions.

Recommendation 55: SoA should consider producing guidance relating to the treatment of contaminated land.

Recommendation 56: The LUP should include policies which should require development proposals to: consider the risks relating to contamination land on public health and safety and the environment; and put in place satisfactory measures to address these risks.

Recommendation 57: The States of Guernsey Office of Environmental Health and Pollution Regulation should be consulted on any planning application potentially contaminated land or which may give rise to contamination.

Contaminated land is strongly linked with other topics covered in this Strategy, particularly flood risk (Chapter 7) and water quality (Chapter 12).

15 Approach to Environmental Impact Assessment

15.1 Introduction

This chapter sets out the proposed approach to Environmental Impact Assessment (EIA) on Alderney. EIA can be defined as 'a systematic process, to identify predict and evaluate the environmental effects of proposed actions and projects' (Sadler *et al*., 2002).

The chapter introduces the context for EIA on Alderney including EIA legislation; the history of EIA on Alderney; current requirements for EIA as set out in the LUP 2016; and other matters which should be taken into account in developing an EIA process for Alderney. It then goes on to describe the components of the proposed framework for EIA on Alderney.

15.2 Context for EIA on Alderney

In Alderney an EIA can be requested due to general provisions of the Building and Development Control (Alderney) Law, 2002 (as amended). Specifically, Section 5(1)(a) enables the BDCC to request the applicant to submit any information it considers necessary to determine an application. The Building and Development Control (Alderney) (Amendment No. 2 and Fees) Ordinance, 2016 introduced an amendment to Section 5(1)(a) to clarify that for the avoidance of doubt assessments of environmental impacts and other effects fall within this section of the Building and Development Control (Alderney) Law, 2002 (as amended).

Whilst such provisions enable the BDCC to require the provision of an EIA, neither the Building and Development Control (Alderney) Law, 2002 (as amended) nor the LUP provide any detail on the types of projects for which EIA may be required or the process which the applicant must follow in undertaking the EIA. The absence of such guidance could lead to inconsistencies in the way in which the requirement for EIA is applied and the way in which EIA is carried out.

Recommendation 58: Consideration should be given to introducing legislation in relation to EIA. Routes to be explored should include through Ordinance subject to Section 5(1)(a) of the Building and Development Control (Alderney) Law, 2002 (as amended) or through either revised/new legislation. Notwithstanding the legal mechanism adopted, the legislation should describe EIA including its purpose, processes, option to include of define thresholds and related powers.

Recommendation 59: The LUP should set out the approach to EIA to be followed on Alderney. It is recognised that such amendments to the existing legislative framework may take time and therefore in the interim the LUP should introduce policies with associated supplementary planning guidance to

set out the purpose, thresholds and processes to be followed for EIA on Alderney.

15.3 History of EIA on Alderney

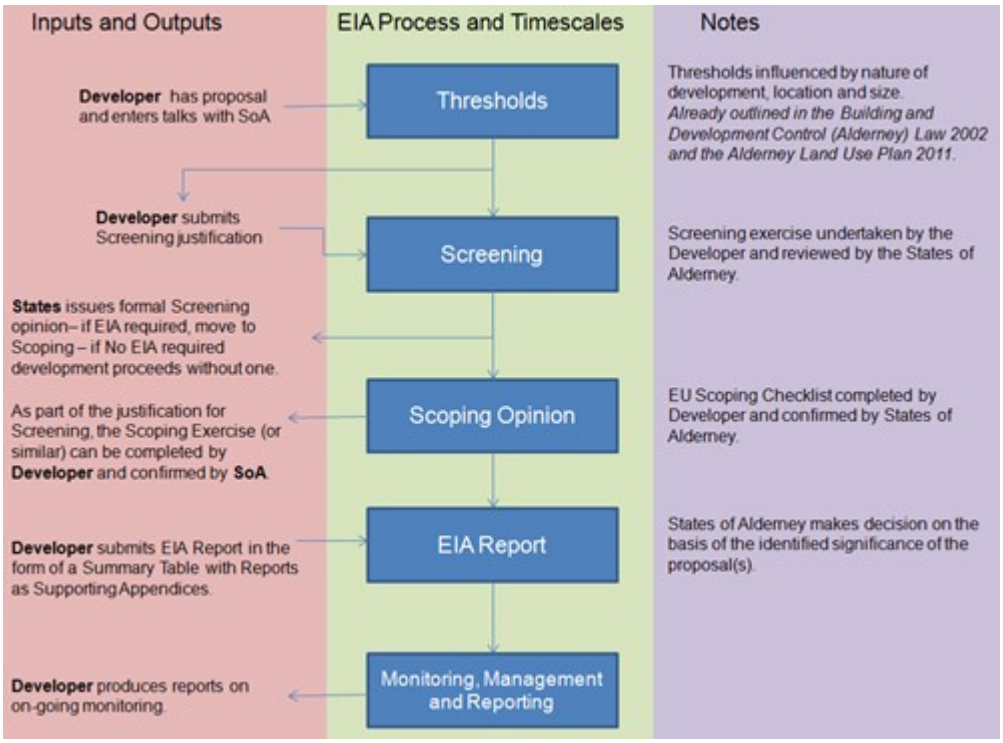
The 2001 LUP for the Designated Area (LUPDA) was the first document to incorporate the use of the term EIA on Alderney. At this time, the use of this term was not supported by either a definition or a process for implementation. This resulted in several different iterations of an EIA being undertaken including an Environmental and Heritage Assessment for Fort Tourgis, commissioned by the States of Alderney, EIAs under the Renewable Energy (Alderney) Law 2007 and small scale assessments for specific development projects by the States Engineer and subsequently the Planning Officer. During 2001, after the implementation of the LUPDA, an attempt to create an EIA framework was made by the then Planning Officer. However, there is little evidence of its subsequent use as part of the LUP process.

In 2012 the consultancy Sustainable Direction Limited (SDL) was commissioned by Alderney Wildlife Trust to prepare a White Paper on behalf of the BDCC on EIA. The White Paper recommended a tiered, developer-led, system for EIA and was adopted into interim use by the BDCC from 2012-14.

The White Paper created an outline EIA framework, which established a systematic approach based on European Guidelines and practice whilst attempting to tackle the issues of scale and proportionality on an island of Alderney's size, with limited resources but with a very rich natural and built environmental. Key elements of the White Paper approach include the following (as illustrated in Figure 15.1):

- Establish the need for the developer to lead the process and take the burden of the costs associated with undertaking EIA.
- Enable the developer to screen, scope and prepare environmental reports with proportionate technical expertise.
- The need to separate large scale projects with an island wide scope or significant potential impacts, from smaller scale projects where the need for EIA was triggered more by their location in relation to key receptors identified through the LUP such as Protected or Agricultural Zones.
- The potential benefits of aligning any process adopted as part of the LUP with the licence approval process used by the Alderney Commission for Renewable Energy (ACRE). Specific reference was made to the then current consents guidelines, which have since been supplemented by the work carried out by ACRE in 2014 and 2015. ACRE's Regional Environmental Assessment (REA), published in 2014, also contains important baseline and contextual information which should be recognised in any future EIA process.

Figure 15.1 Proposed framework for future EIA



Source: Extract from White Paper on Environmental Impact Assessment for Alderney, July 2012, SDL Ltd.

ACRE and SDL both considered other 'regional' EIA legislation and associated processes when developing the proposed framework. Reference points include the States of Guernsey, States of Jersey and the UK. It is important to recognise that, whilst an EIA process developed for Alderney would have to stand independent of other planning regimes, especially in the case of major development projects which have an international component, any process adopted should have a degree of compatibility with other jurisdictions and may benefit from collaboration and even direct guidance and/or support.

15.4 Current EIA Requirements in the LUP

The LUP 2016 includes a number of references to EIA as detailed below. In general these tend to relate to large scale developments (e.g. marina or forts development) or development in the Designated Area/more sensitive locations (e.g. Zone 4) where smaller scale development has the potential for significant adverse environmental impacts.

- Supporting text to Policy GEN 7 (roads and infrastructure) – *In the case of large projects the developer may be required to carry out an Environmental Impact Assessment (EIA), and undertake improvement to the network.*
- Supporting text to Policy GEN 10 (hazardous development) – *In dealing with hazardous development the Committee will expect development proposals to include an Environmental Impact Assessment (EIA) and risk assessment.*

- Agricultural Zone
    - *An extension of an existing agricultural building to increase its floor area by more than 10% will be subject to an Environmental Impact Assessment.*
    - *A new agricultural building will be subject to an Environmental Impact Assessment.*
- Commercial/Industrial Zone – *Minor change of use within any single category class within the definition of commerce without a change in total floor area of the building will be permitted provided there is no harmful environmental effect. This is to be demonstrated using an Environmental Impact Assessment.*
- Protected Zone – *Any development considered by the Committee will be subject to an Environmental Impact Assessment.*
- Public Utility Zone
    - *Any new building, enlargement or increase in height will be subject to an Environmental Impact Assessment.*
    - *The television and satellite masts recognised within the Properties Index may be increased in height after an Environmental Impact Assessment, but only where approval for such an increase has been sought and gained from the Airport Authorities.*
- Recreation Zone
    - *No new recreational building will be allowed within Recreational Zones, unless the Committee deems it necessary for the essential pursuit of the Zone's stated recreational purpose, when it will be subject to an EIA*
    - *An existing recreational building within a Recreational Zone may not increase its total floor area or increase its height unless the Committee deems it necessary for the essential pursuit of the Zone's stated recreational purpose, when it will be subject to an Environmental Impact Assessment.*
- Residential Zone – T*he extension or reconstruction (if approved by the Committee) of any dwelling already existing in the Residential Zone must follow the criteria cited below: (a) Any development must be the subject of an Environmental Impact Assessment.*
- Zone 4 Butes Field, York Hill – *No development, except as allowed under designated area (recreational zone) restrictions – excepting recreation facilities including (but not limited to) a swimming pool and sports centre with ancillary services. A separate Environmental Impact Assessment is to be carried out for any proposal on the site.*
- Zone 7 Harbour & Braye Bay Comprehensive Development Zone – *An Environmental Impact Assessment will be undertaken for any proposed development.*
- Zone 8 Forts Zone – *Any proposed development will be subject to an Environmental Impact Assessment and full public consultation.*

- Zone 17 Airport Zone – *Any commercial development within areas lying within the Airport Zone or Airport expansion areas will be subject to an EIA.*
- Zone 18 La Corvée Industrial/Commercial Area – *Any new building, enlargement or increase in height will be subject to an Environmental Impact Assessment.*
- Zone 19 Berry's Quarry – *Any new building, enlargement or increase in height will require an Environmental Impact Assessment.*
- Zone 20 Whitegates (South Side) – *The development will be subject to an Environmental Impact Assessment.*

15.5 Other Matters to be Taken into Account When Developing EIA on Alderney

Crucially important to the development of a local EIA process is the involvement of stakeholders which depending on the scale of the project and sensitivity of the receptor could include local, regional and international stakeholders. This is an aspect of the EIA that the 2012 White Paper did not cover and needs careful consideration (and is discussed briefly at Section 15.9). Matters to be taken into account include the need to:

- ensure robust and meaningful, yet proportionate stakeholder engagement and consultation. This is particularly relevant for smaller scale developments where lots of consultation is likely to be disproportionate to the resources of local stakeholders;
- establish the basis on which stakeholders are identified and their role as a consultees i.e. should they be prescribed in any legislation, decided upon on the basis of criteria defined in the LUP or decided on a case by case basis; and
- recognise that within a community the size of Alderney local stakeholders can often find themselves conflicted. There is a need to create mechanisms, which whilst recognising such conflict enable key stakeholders to retain the ability to engage in the EIA process.

15.6 EIA Requirements on Alderney

Given the need for greater clarity on what EIA comprises and the process that should be followed, there is a need to formally establish a process for all relevant applications.

Recommendation 60: The EIA process developed for Alderney should be 'relevant' and 'useable' in the Alderney context. In particular the process should establish:

- Purpose and role of EIA within the Alderney context, including the implications for planning, including the LUP and decision-making. This should include clear aims and objectives of EIA.

- The process that will be followed; in developing the process consideration should be given to the following matters:
  - appropriateness of a tiered EIA process to reflect the scale, complexity and sensitivity of projects on the Island;
  - need for screening and scoping stages and whether the approach to such stages should vary depending on the scale of the project; and
  - requirement for formal stages of consultation.
- How the EIA and planning systems on Alderney will interact.
- Roles and responsibilities of promoters/applicants, SoA (including the BDCC, other Committees, Planning Office and other civil servants), other stakeholders (off- or on-Island) and the community.
- The types (scale, complexity, sensitivity) of projects to be subject to EIA.
- The topics which may need to be assessed as part of the EIA.

In developing the EIA process, the following principles should be taken into account.

Recommendation 61: The process should:

- Be transparent and proportionate for parties to use and engage with including the promoter/applicant, stakeholders, community and States of Alderney.
- Provide opportunities for appropriate engagement between parties.
- Identify stakeholders/consultees to be involved in the process, including any public consultation.
- Be mindful of the resource implications of the proposed approach.
- Follow established best practice as recognised by EU and UK guidance and as set out in the White Paper.

15.7 A Tiered vs Flat Hierarchy for EIA Projects

As indicated by the current references in the LUP to EIA, the need for EIA covers a range of projects in their size and complexity with examples including major projects such as a new marina or airport expansion at the upper end, towards a 50% extension to an existing single dwelling located in the Residential Zone within the Designated Area at the lower end. The challenge is therefore how a system can be designed which accommodates both ‘ends’ of this spectrum (and indeed the potential development proposals or uses which might fall in between) whilst being proportionate to the development proposal or use in question.

Consideration has been given to the possible approaches to EIA that could be adopted in Alderney. Table 15.1 provides a summary of the pros and cons of a tiered versus single approach to EIA taking into account the implications for applicants, the public, consultees and SoA.

Table 15.1 Summary of pros and cons of tiered versus single level of EIA

	Pros	Cons
Single EIA process for all applications	• Simplifies the process by setting out one approach which all EIA developments would need to follow. • Would promote consistency and legibility. • Would be quicker to implement and for some users to get to grips with. • Promotes a sense of equality – every applicant would be required to undertake the same process.	• The scale and scope of an EU-compliant EIA process would most likely stymie minor development since the level of effort required by the applicant, SoA and third parties would be disproportionate to the development proposal. • The thresholds associated with a single process might exclude smaller proposals from consideration, where it might be beneficial to have some level of assessment. • Could result in an approach which, whilst seeking to strike the balance between the different scales of development proposals, means that the process does not function optimally at any scale, resulting in over- or under- assessment.
Tiered EIA process	• Enables flexible processes to be developed which better reflect the different scales of development proposals and the level of assessment required. • Potential to promote proportionality within the EIA process • More user friendly for stakeholders, including members of the public. • Supports development – contributes towards maintaining viability at the pre-planning stage.	• Requires a clear screening process to be established to enable applicants to determine which process they need to follow. • Potential for confusion (if not clearly communicated and understood) with the public or consultees on why schemes are subject to different processes. • Potential misuse if large developments try to submit using a lower tier assessment. Risk of 'salami slicing' to again try and get submissions into a lower tier of assessment.

Considering the needs of Alderney, the potential range of development which should be subject to some form of environmental assessment, and the potential pros and cons of the options, a tiered approach is favoured. Further, a two-tiered approach is proposed which enables different scales of projects to be proportionately assessed, balancing flexibility, legibility and simplicity. An overview of the different tiers is set out in the following sub-sections.

Recommendation 62: A two-tiered approach to EIA should be adopted.

A ‘two-tiered’ approach would involve two tiers of EIA; namely a ‘larger’ scale of EIA and a ‘smaller scale’ of EIA. Some development proposals or uses would sit outside both tiers, as ‘non EIA’.

In recommending a two-tiered approach, consideration is given below to the shape that each tier might take. This has been done to both define and test the recommended approach.

Full EIA Projects

For full EIA projects, it will be expected that international best practice is adopted to a standard of a recognised authority. This might involve (a) the ‘adoption’ of the full EIA system of another country in order to utilise a ‘tired and tested’ national EIA planning framework, or (b) Alderney developing its own bespoke system drawing on different components from a range of national frameworks and/or utilising locally-specific standards. Using EU-level best practice has been discounted and it is considered to be too impractical or substantive given Alderney’s size.

All assessment work undertaken by promoters/applicants from screening to reporting, should be by an accredited, independent EIA practitioner including, for example, the Institute of Environmental Management and Assessment (IEMA), the Chartered Institute of Ecological and Environmental Management (CIEEM) or some other form of demonstrable experience and competency. The practitioner would be required to work to the adopted national standard/Alderney bespoke standard.

Projects falling within the scope of a full EIA could include marina development, major airport extensions, major infrastructure projects and large scale building projects (which could include refurbishment of some of the larger forts on the Island).

Light EIA Projects

For light EIA projects, a localised EIA system would be developed and used, which would draw predominantly on the approach set out in the White Paper.

In most other jurisdictions, light EIA projects would fall below the threshold for EIA (although may be caught by non-statutory environmental assessment). In the case of Alderney, a formalised process for assessing such development proposals is needed because of: the scale of the island; the sensitivity of receptors; and/or the sensitivity of the LUP zone the development proposals fall within.

Projects falling within the scope of a light EIA could include replacement or extended buildings within the Designated Area or development proposals within other parts of the Designated Area.

Non-EIA Projects

Non-EIA projects would not likely require any environmental assessment to be undertaken in support of a planning application. Such projects are likely to include small scale development within the Central Building Area.

Recommendation 63: In developing the supplementary planning guidance on EIA, the scope of the different tiers should continue to be refined to ensure that there is clarity on the purpose of each one, and the requirements and differences therein.

15.8 Key Stages of the EIA Process

The White Paper identifies the following EIA stages, which all tiers of EIA projects should incorporate although their method of implementation is likely to vary:

- **Screening**: This stages determines whether EIA is required based on the scale, size and characteristics of the development proposal.
- **Scoping**: This is the stage after screening where the key impacts arising from the development are identified, with an agreement on how they are to be assessed made between the developer, the Planning Office, and interested parties including the public.
- **Baseline**: In order to understand how impacts may affect the receiving environment, a comprehensive environmental baseline should be provided that indicates what environmental features / receptors are located within the study area and what the sensitivity of these features are.
- **Assessment**: This stage seeks to predict the effects of the proposed development on sensitive receptors as a result of identified impacts. The assessment of effects is based on a deviation from the current conditions in the area (baseline). The degree of change from the baseline situation to that with the proposed development in place is the magnitude of effect, whereas the value associated with the affected receptor establishes the sensitivity of the effect. These aspects combine to arrive at the significance of effect and is typically a measure of the scale of an impact (e.g. negligible, minor, moderate, major beneficial or adverse impact).The assessment should consider effects that are: beneficial and adverse; direct and indirect; short, medium and long term; temporary and permanent; cumulative effects due to the interaction of the development with other development projects; and in-combination effects associated with the effects of all topic assessments associated with a development on each receptor or groups of receptors.
- **Alternatives**: As part of the assessment process, it is important to demonstrate that alternatives have been explored to explain why other sites, or other types of development are not being promoted. These alternatives have to be reasonable, so for some projects they may be limited.

- **Mitigation and enhancement**: Mitigation measures adhere to a hierarchy of avoiding, reducing and offsetting significant adverse impacts. Avoiding issues through design (development location and characteristics) should be the primary method of mitigation where possible. Where significant effects are avoidable, these should be reduced by way of external mechanisms, such as planning condition or underpinning a legal agreement. Where it is not possible to avoid or reduce effects, offsetting should take place, such as compensation for habitat replacement or replacement community facilities.
- **Residual Assessment**: Following the application of mitigation measures any residual impacts are identified.
- **Environmental Impact Assessment Report**: This is the culmination of the EIA process and where all work undertaken as part of the EIA is documented. This document is made publicly available and is submitted to the Planning Office in support of a planning application.
- **Review of Environmental Impact Assessment Report**: The information provided within the Environmental Impact Assessment Report is analysed to see whether it is adequate for decision-making purposes, and whether the Competent Authorities agree with its conclusions on significance of effects and proposed mitigation methods.
- **Further Information**: Should the Competent Authority decide that additional environmental information is required to determine an application, this should be formally requested.
- **Decision making**: Once the comments from competent authorities are received by the Planning Office it makes a decision based on the evidence available to them on whether the residual impacts are acceptable. If an application is approved, conditions could be attached to the permission to ensure the acceptability of the development proposals.
- **Follow up**: This comprises the monitoring of impacts and the effectiveness of mitigation measures stated in the Environmental Impact Assessment Report.

Recommendation 64: Supplementary planning guidance should be developed which sets out how each stage of the EIA process will be implemented for each of the tiers. For full EIA projects, further consideration should be given to how the EIA process can align with the EIA process adopted by ACRE and proposals set out in recommendation 80 of the *Land Use Plan Review Economic Development Strategy* in relation to the process for determining major infrastructure projects.

15.9 Developing Project Thresholds

Section 15.4 establishes the principle of different tiers of EIA on Alderney. In order to support this approach, further guidance needs to be developed on the types of projects which are likely to be subject to each tier.

For certain types of development it may be that the nature of the project means that EIA is required regardless of the detail of the proposal; such an approach

would accord with that adopted by the EU with Schedule 1 (if project meets the threshold EIA required and there is no need to screen) and Schedule 2 (if project meets the threshold, applicant should seek a screening opinion from the Planning Office to determine whether an EIA is required).

In developing the thresholds for full EIA projects and light EIA projects the following aspects of a development should be taken into account:

- Type of development (including intensity, frequency, use-specific characteristics and life cycle i.e. construction, commissioning, operation, decommissioning and residual effects).
- Size and scale of development including whether the potential impacts of the development proposal might have trans-boundary effects.
- The type of effects likely to occur, i.e. hazardous effects, extremes of effects.

Recommendation 65: Supplementary planning guidance should be developed which sets out the thresholds for projects being subject to different tiers of EIA. In developing the thresholds, regard should be had to the thresholds developed by the EU, UK, France, Jersey and Guernsey.

15.10 EIA Topics

In identifying the topics for consideration, regard has been given to:

- Existing Alderney legislation which identifies sensitive receptors. This includes: ecological conventions, water quality related legislation, marine based activities and health and safety requirements.
- EU legislation on assessment topics.

Table 15.2 sets out the suggested topics which should be considered for full and light EIA projects. Full EIA projects should be required to consider the following general topics and submit a scoping opinion to the Planning Office to agree the topics to be subject to EIA. For light EIA projects a Scoping Checklist should be used, which includes those identified topics and enables the developer and Planning Office to rapidly identify the scope of the assessment.

Table 15.2 Suggested topics to be assessed as part of full and light EIA projects

EIA Topic	Full EIA Projects	Light EIA Projects
Agriculture	✓	✓
Air quality	✓	✓
Archaeology and cultural heritage	✓	✓
Ecology	✓	✓
Noise and vibration	✓	✓
Townscape and visual amenity	✓	✓

EIA Topic	Full EIA Projects	Light EIA Projects
Water resources and flood risk	✓	✓
Climate change	✓	
Existing infrastructure capacity	✓	
Ground conditions (including contamination)	✓	
Human health	✓	
Shipping and navigation (both commercial and recreational)	✓	
Socio-economics (including culture)	✓	
Tourism and recreation	✓	
Transport	✓	
Vulnerability and accidents and disasters	✓	
Waste	✓	

In addition, an assessment of in-combination, cumulative and trans-boundary effects must be undertaken as appropriate, which is likely to be agreed at the scoping stage. It is likely that these non-topic effects would be undertaken as follows:

Table 14.3 Inclusion of non-topic effects in EIA.

Type of non-topic effect	Full EIA Projects	Light EIA Projects
In-Combination	✓	✓
Cumulative	✓	
Trans-boundary	✓	

Recommendation 66: Supplementary planning guidance should be developed which sets out the topics which full and light EIA projects should be scoped against.

The development of the *Land Use Plan Review Natural Environment Strategy* and *Land Use Plan Review Built Environment and Heritage Strategy* have begun the process of bringing together information from a range of different sources. It will be important for such data and any further data collected (in support of future LUP reviews, or applications or otherwise[14]) to be stored in a format that can be easily accessed by promoters, stakeholders and the Planning Office.

[14] For example the Alderney Society and Alderney Wildlife Trust archives, or the Guernsey Record Centre.

Recommendation 67: Further consideration should be given to the need to establish a limited number of accredited databases which are available for promoters, stakeholders and the Planning Office and how new data acquired through can be incorporated.

15.11 Content of the Environmental Impact Assessment Report

The content of the Environmental Impact Assessment Report would vary, with full EIA projects adopting the selected jurisdiction's reporting requirements. Notwithstanding, the content of the Environmental Impact Assessment Report would likely include:

- A non-technical summary.
- An overview of relevant legislation and EIA process for Alderney (for context).
- A description of the project, which includes information on size, location, design, life cycle activities (construction, commissioning, operation and decommissioning, where applicable) and assumptions made as part of the EIA assessment.
- An outline of the EIA methodology including the outcome of scoping, collation of baseline information, assessment process and mitigation framework.
- Identification and assessment of reasonable alternatives considered in the development of the project.
- Feedback from consultees, including the public.
- Quantitative information to identify the key receptors and associated sensitivity.
- Assessment of effects on each environmental receptor.
- Identification of cumulative, in-combination and trans-boundary effects.
- A description of measures to avoid, reduce and remedy significantly adverse impacts including any residual effects.

For light EIA projects, a standardised template could be used for the Environmental Impact Assessment Report to reduce the burden on applicants. The template would enable reporting to be provided on specific key aspects of the project where the scoping assessment has identified that a significant impact is likely.

15.12 Roles and Responsibilities

In order for the EIA process to effectively operate it will be crucial to define the roles and responsibilities of different parties. The White Paper identifies the light EIA project process as one that should be almost wholly developer-led, largely to

reduce the burden on the Planning Office, but also to enable developers of light EIA projects to carry out much of the assessment themselves. Such a process would require the Planning Office to have the resources to assess and potentially challenge a developer's self-assessment.

For full EIA projects the expectation remains that the developer leads on significant elements of the process. This includes preparation of screening and scoping opinions, undertaking the necessary impact assessment, preparing the Environmental Impact Assessment Report and responding to queries from the Planning Office following submission of the Environmental Impact Assessment Report. The Planning Office would respond to any screening and scoping opinions as well as assessing the submitted Environmental Impact Assessment Report.

Given the suggested role of the Planning Office there will need to be sufficient funding to ensure that the Planning Office can participate effectively. On 14 December 2016 The Building and Development Control (Alderney) (Amendment No. 2 and Fees) Ordinance, 2016 introduced an amendment to the Building and Development Control (Alderney) Law, 2002 (as amended), which gives the BDCC the powers to engage the services of an expert (not employed by SoA) to review and evaluate the assessment of the environmental impacts and require the applicant to pay any reasonable fees and charges for such services. This amendment to the law provides the BDCC with the necessary tools to secure funding for full EIA projects. For light EIA projects it is anticipated that a modest additional fee might be required beyond the planning application fee.

Recommendation 68: Supplementary planning guidance should be developed which clarifies the roles and responsibilities of the promoter and Planning Office in the EIA process.

Stakeholders/Consultees

In addition to the expertise of the Planning Office, the expertise of other third parties is likely to be required in preparing the scoping opinion and reviewing the Environmental Impact Assessment Report. Such stakeholders could include: Alderney Electricity Limited, the Alderney Society, Alderney Water Board, Alderney Wildlife Trust, Harbour Master/Fisheries Officer, States Works Department, States of Guernsey Office of Environmental Health and Pollution Regulation, and States of Guernsey Office of Culture and Heritage.

Depending on the topics subject EIA, the list of stakeholders is likely to vary. Therefore, for each organisation their role should be confirmed including the types of applications for which they should be consulted.

Recommendation 69: Supplementary planning guidance should be developed which identifies stakeholders/consultees in the EIA process and clarifies their role in the EIA process.

Community

At key points in the process members of the community should be provided with the opportunity to be involved in the EIA process including pre-application consultation led by the developer on the project including likely significant environmental effects followed by consultation of the Environmental Impact Assessment Report once submitted in support of a planning application.

For full EIA projects, consideration should be given to how the Planning Office will publically track and make available any project-specific EIA documents.

Recommendation 70: Supplementary planning guidance should be developed which clarifies the role of the community in the EIA process.

16 List of Recommendations

16.1 Overarching Recommendations

Recommendation 1: The suite of environmental legislation should be reviewed to ensure it is comprehensive and fit-for-purpose.

Recommendation 2: The BDCC should design and implement a proportionate monitoring and evaluation strategy to make sure that progress is being made towards the objectives of the Land Use Plan in relation to the natural environment.

Recommendation 3: The BDCC and SoA should consider more proactively enforcing against those who cause deliberate harm to natural assets. This may require legislative updates to ensure there are sufficient powers to restrict certain activities, as well as restorative powers for the SoA or another nominated body to 'make good' and recover the costs thereof.

Recommendation 4: Further consideration should be given to formalising a role for the States of Guernsey and Alderney Wildlife Trust in the consultation of planning applications. This should include arrangements for sharing data, knowledge and expertise.

16.2 Sustainability

Recommendation 5: The LUP should seek to achieve sustainable development by promoting a balanced strategy, which takes account of the need to protect, conserve and enhance the Island's natural environment in conjunction with the findings of the *Land Use Plan Review Economic Development Strategy* and *Land Use Plan Review Built Environment and Heritage Strategy*.

Recommendation 6: Update or include a policy in the LUP which recognises the importance of the Island's natural environment and sets out the BDCC's approach to protecting it. This should be framed in the context of the LUP vision with regard to economic and social (demographic) growth.

Recommendation 7: The LUP should encourage developments which show regard to maximising energy efficiency, reducing mains water and using sustainable materials in both construction and operation (this recommendation should be considered alongside recommendation 63 of the *Land Use Plan Review Economic Development Strategy*).

16.3 Climate Change

Recommendation 8: SoA should consider what information it should collect to inform future on-going climate change monitoring. This should include the best means of collection, agencies, expertise and resources required. Linked to

this, further consideration should be given to the need to develop associated policies (which sit beyond the LUP) on how the States proposes to adapt to and mitigate against climate change.

Recommendation 9: The LUP introduce policies to help reduce, mitigate and adapt to the impacts of climate change. In doing so, regard should be had to recommendations in the *Land Use Plan Review Economic Development Strategy* which seek to limit resource consumption.

16.4 Biodiversity

Recommendation 10: The Protected Area and associated policy within the LUP should be updated to reflect the hierarchy of designations and associated sites and habitats identified in Tables C.1 and C.2 of Appendix C. Given the gaps identified in Appendix C further consideration should be given to the need to retain elements of the Protected Area Zone to provide some protection to sites, habitats and species likely to be present in advance of their formal designation. Consideration should also be given on how newly discovered species which meet the definitions in the hierarchy can be given protection within the five year LUP period.

Recommendation 11: In order to enhance the evidence base held on sites, habitats and species present on Alderney, its intertidal and sub-tidal areas and enable the conservation status to be established a rolling biodiversity audit of the Island should be undertaken. The aim should be for a more complete evidence base to be collected in time for the next LUP review. The audit should first focus on defining/gathering evidence for priority sites, habitats and species which comply with the criteria for the higher tiers of the framework. Such an audit should be undertaken using industry standard data recording/collation methods.

Recommendation 12: Further consideration should be given to the need to introduce legislation to support the hierarchy of designations and provide additional tools to support the protection and enhancement of wildlife on the Island (e.g. enforcement powers where deliberate harm or destruction is caused to an ecological receptor). This also supports Recommendation 3.

Recommendation 13: Given the emerging evidence base, the LUP should consider adopting a precautionary approach to ecological protection. This may mean that planning applications may need to demonstrate that they are not likely to have significant adverse effects on ecological receptors or that for developments over a certain size environmental information must accompany the planning application. The latter requirement should be aligned with the agreed approach to EIA.

Recommendation 14: Consideration should be given to providing further guidance on development in and around designated sites, habitats and species (this could form supplementary planning guidance for example). The guidance should:

- provide more detail on the types of development likely to be acceptable for sites, habitats and species protected through the different tiers of designation;
- prescribe the information that should be submitted in support of any planning application where the development may have an impact on wildlife of conservation importance (such requirements should complement the approach to EIA;
- set out when the BDCC will require developers to fund relevant surveys and/or levy a fee to enable it to monitor construction work and ensure adequate restoration of development sites; and
- identify that the Alderney Wildlife Trust should be consulted on planning applications which may have an ecological impact.

Recommendation 15: Consideration should be given to amending the extent of Alderney's planning powers so that they align with its territorial waters to enable marine sites, habitats and species and those present on Alderney's islets to be protected through the planning system.

Recommendation 16: The LUP should introduce a policy (as opposed to guidance) which provides clarity on the level of protection afforded to trees, when an application for works to a tree is required and those considerations which the BDCC will take into account when determining applications for trees.

Recommendation 17: Existing policies within the LUP should be reviewed and updated to provide greater protection to urban green spaces, encourage retention and where possible enhancement of green infrastructure and improved connectivity between elements of the green infrastructure network. This recommendation should be considered alongside those contained in the *Land Use Plan Review Economic Development Strategy* which relate to open space provision.

Recommendation 18: The LUP should include policy on invasive species. This could include requiring a developer to safely remove and dispose of defined invasive species where they are present on a development site.

Recommendation 19: Further work should be undertaken to define what constitutes an invasive species on Alderney. Such a list could be included in supplementary planning guidance and should be updated as and when new invasive species are identified.

Recommendation 20: The disposal of invasive species should be considered as part of any waste strategy developed by the States (refer to recommendation 57 of the *Land Use Plan Review Economic Development Strategy*).

16.5 Geodiversity

Recommendation 21: SoA should produce guidance on the management of geodiversity on the Island.

Recommendation 22: Given the emerging evidence base, the LUP should consider adopting a precautionary approach to protection of geodiversity. This may mean that certain types or sizes of planning applications may need to demonstrate that they are not likely to have significant adverse effects on geodiversity.

Recommendation 23: The LUP should introduce policies which define the types, and amounts of materials that can be extracted on the Island, extraction windows and restoration requirements following extraction.

Recommendation 24: The policies included in the LUP should be reviewed to make it clearer that development proposals should:

- take into account existing landscape features and locally distinctive features of the environment; and
- where appropriate, safeguard and create new opportunities for public enjoyment of geodiversity and landscape features.

16.6 Flood Risk

Recommendation 25: SoA should consider undertaking further studies by appropriately qualified persons to better understand the likely sources of flooding on the Island, the associated frequency and intensity of such flooding and how the Island's susceptibility to flooding is likely to change as a result of climate change. This should include identifying specific adaptation or mitigation measures which the SoA should seek to implement to reduce flood risk. In developing these, regard should be had to the impact of 'hard' engineering structures on the Island's natural environment particularly in intertidal locations. Following the completion of this work, the implication for the LUP policies and associated hydrological map should be considered and any updates or revisions made accordingly.

Recommendation 26: The LUP should promote development in areas which avoid the risk of all types of flooding. Based on the findings of the addition work identified above, the BDCC should consider the need to introduce a hierarchy of flood risk zones to help direct future development to the most suitable locations.

Where developments are proposed in higher risk areas, flood risk assessments should be submitted in support of a planning application. The requirement to consult the States Works Department on planning applications which are proposed in areas of higher flood risk should also be introduced. As an intermediate or transitional measure, development proposals should demonstrate that they will both manage flood risk associated with the

development, and also ensure that they do not exacerbate or negatively influence flood risk issues for other areas. The LUP should consider providing high level guidance on preferred mitigation measures.

Recommendation 27: Recommendations 44 and 63 of the *Land Use Plan Review Economic Development Strategy* recommends the introduction of sustainable construction standards and techniques in the design and construction of new, redeveloped or refurbished buildings. In bringing forward such standards, the use of techniques to reduce surface water run-off should be included including rainwater harvesting, soakaways and reduced hardened surfaces etc.

16.7 Agriculture

Recommendation 28: The LUP should continue to support agricultural enterprise on the Island, recognising the positive role it can play in supporting biodiversity and providing locally sourced produce.

Recommendation 29: The extent of the Agricultural Zone in the LUP should be reviewed to ensure that it reflects both current uses and the land that might be required for farming in the medium and long term, and the environmental impacts of agriculture.

Recommendation 30: The existing agricultural policy in the LUP should be reviewed, in particular its compliance with Section 12 of the Building and Development Control Law, 2002 (as amended) and the need to provide more guidance on types and intensity of agricultural uses and ancillary buildings which are likely to be permissible as well as any non-agricultural uses which may be permissible in the Agricultural Zone.

Recommendation 31: The LUP and legislation should define the agricultural activities and works which may be undertaken within the Agricultural Zone without the need for planning permission. This might include changes between different types of agricultural use, e.g. from pastoral to arable cultivation or from dairy to pig rearing,

Recommendation 32: The LUP and legislation should define the agricultural activities and works which may be undertaken outside the Agricultural Zone (particularly in relation to the Protected Zone) and how best to regulate them. Consideration should be given to requiring planning permission or other consenting / licencing for activities such as the erection of fences, applications of pesticides etc. The LUP should make it clear that agricultural practices within the Protected Area are only acceptable where they will enhance and support the ecology of the area.

Recommendation 33: The policies included in the LUP should be reviewed to make it clearer that development proposals relating to agriculture should:

- encourage sustainable agricultural practices and grazing management techniques;

- consider the potential for intensive agricultural techniques to cause risk to the environment; and
- consider the impact of agricultural techniques on the character and amenity of the Island.

Recommendation 34: SoA should consider producing a soil quality plan to advise the boundaries of the Agricultural Zone in further versions of the LUP, as well as guiding agricultural practices.

Recommendation 35: Locally-specific technical guidance on safeguarding biodiversity from agricultural practices should be considered, in partnership with the AWT.

16.8 Aquaculture, Fisheries and Marine Development

Recommendation 36: Consideration should be given to amending the extent of Alderney's planning powers so that they align with its territorial waters to enable marine sites, habitats and species to be protected through the planning system. In doing so, clarity should be provided on the relationship between Alderney's planning powers and the requirements under the Food and Environment Protection Act 1985 (Guernsey) Order 1987 to secure a FEPA licence for relevant works.

Recommendation 37: Should planning powers extend to include Alderney's territorial waters and following the completion of the community-led Marine Management Plan, the implications for the LUP should be reviewed. This includes the need for additional policies or supplementary planning guidance to appropriately protect and manage the marine environment and more detailed guidance on information requirements/considerations to be taken into account when determining planning applications for marine related development.

16.9 Air Quality

Recommendation 38: SoA should consider establishing an air quality strategy, which sets out technical guidance and recommendations for monitoring and protecting air quality on the island. The strategy should identify sources of air pollution and key receptors.

Recommendation 39: The policies included in the LUP should be reviewed to make it clearer that development proposals should:

- take into account the impact upon air quality, air pollution and emissions (for both construction and operation phases), including impact on adjoining properties and the local and wider environment;
- put in place satisfactory measures to address risk upon public health and safety and the environment from air pollution; and

- ensure that the quality of design and material used for development do not adversely impact air quality (for example, restricting the use of low efficiency coal or wood-burning fires which can lead to local smogs).

Recommendation 40: The LUP should consider whether certain types of high-emitting development should be encouraged or restricted from particular areas to manage impact on air quality.

Recommendation 41: The States of Guernsey Office of Environmental Health and Pollution Regulation should be consulted on any planning application which may give rise to air quality-related environmental health issues.

16.10 Light Pollution

Recommendation 42: SoA to consider making an application to designate the Island as a Dark Sky Community/Park/Reserve.

Recommendation 43: Notwithstanding, certification as a Dark Sky Community/Park/Reserve, policies could be introduced to the LUP to recognise the night sky as a resource and provide more detailed guidance on outdoor lighting including associated fixtures, luminance levels etc. and information requirements for planning applications which include proposals for outdoor lighting. This could include the role of the States of Guernsey as consultee on planning applications, which may give rise to environmental health issues. In preparing this guidance regard should be had to the proposals contained within the External Lighting Audit.

Recommendation 44: The SoA should undertake regular monitoring to understand emitters of light pollution and associated light levels.

16.11 Water Quality

Recommendation 45: Updated records on water and wastewater systems should be collated by SoA, so that such information is available to inform the next LUP review. Data collected to support (major) planning applications should be used to inform the updated records where appropriate.

Recommendation 46: The LUP should retain the principle of policy GEN 10. The policy should be reviewed to make it clearer that:

- the requirements of the policy should relate to discharges which may adversely affect water quality on the Island; and
- Alderney Water Board/States Works Department should be a consultee on planning applications, which may give rise to water quality issues.
- Further consideration should be given to the need for provision of more detailed technical guidance including on:

- water quality (e.g. on water quality monitoring for ponds and bathing seawater, such as testing for Escherichia coli and Intestinal enteroccoi); and
- when connection to the main wastewater network is expected as opposed to the use of septic tanks; regard should be had to recommendation 47 of the *Land Use Plan Review Economic Development Strategy* when implementing this recommendation.

Recommendation 47: Policy GEN 7 should be strengthened to include the requirement for on-site and connecting infrastructure (water and wastewater) to be delivered by the applicant/developer to be provided to adoptable standards to minimise potential impacts on water quality.

Recommendation 48: The LUP should protect watercourses on Alderney. Further consideration should also be given to the need to legally protect watercourses in order to provide additional enforcement powers for breaches of water quality.

Recommendation 49: Consideration should be given to establishing a seawater/bathing water quality strategy, which sets out technical guidance and recommendations for annual monitoring of seawater (beyond the radioactive sampling undertaken by the Harbour Office). The benefits of aligning the approach with that adopted by the States of Guernsey and Jersey should be considered.

16.12 Noise and Vibration

Recommendation 50: SoA should consider establishing noise and vibration guidance or strategy, and establish a proportionate noise and vibration monitoring regime.

Recommendation 51: The LUP should be reviewed to ensure that policies cover all sensitive receptors and the total life (construction, operation and decommissioning) of development proposals.

Recommendation 52: The LUP should consider whether certain types of activities which emit high levels of noise/vibration should be encouraged or restricted from particular areas to manage noise and vibration impacts.

Recommendation 53: The States of Guernsey Office of Environmental Health and Pollution Regulation should be consulted on any planning application which may give rise to noise and vibration-related environmental health issues.

16.13 Contaminated Land

Recommendation 54: SoA should produce and maintain such a schedule and map of contaminated land to inform planning decisions.

Recommendation 55: SoA should consider producing guidance relating to the treatment of contaminated land.

Recommendation 56: The LUP should include policies which should require development proposals to: consider the risks relating to contamination land on public health and safety and the environment; and put in place satisfactory measures to address these risks.

Recommendation 57: The States of Guernsey Office of Environmental Health and Pollution Regulation should be consulted on any planning application potentially contaminated land or which may give rise to contamination.

16.14 Approach to Environmental Impact Assessment

Recommendation 58: Consideration should be given to introducing legislation in relation to EIA. Routes to be explored should include through Ordinance subject to Section 5(1)(a) of the Building and Development Control (Alderney) Law, 2002 (as amended) or through either revised/new legislation. Notwithstanding the legal mechanism adopted, the legislation should describe EIA including its purpose, processes, option to include of define thresholds and related powers.

Recommendation 59: The LUP should set out the approach to EIA to be followed on Alderney. It is recognised that such amendments to the existing legislative framework may take time and therefore in the interim the LUP should introduce policies with associated supplementary planning guidance to set out the purpose, thresholds and processes to be followed for EIA on Alderney.

Recommendation 60: The EIA process developed for Alderney should be 'relevant' and 'useable' in the Alderney context. In particular the process should establish:

- Purpose and role of EIA within the Alderney context, including the implications for planning, including the LUP and decision-making. This should include clear aims and objectives of EIA.
- The process that will be followed; in developing the process consideration should be given to the following matters:
  - appropriateness of a tiered EIA process to reflect the scale, complexity and sensitivity of projects on the Island;
  - need for screening and scoping stages and whether the approach to such stages should vary depending on the scale of the project; and
  - requirement for formal stages of consultation.
- How the EIA and planning systems on Alderney will interact.

- Roles and responsibilities of promoters/applicants, SoA (including the BDCC, other Committees, Planning Office and other civil servants), other stakeholders (off- or on-Island) and the community.
- The types (scale, complexity, sensitivity) of projects to be subject to EIA.
- The topics which may need to be assessed as part of the EIA.

Recommendation 61: The process should:

- Be transparent and proportionate for parties to use and engage with including the promoter/applicant, stakeholders, community and States of Alderney.
- Provide opportunities for appropriate engagement between parties.
- Identify stakeholders/consultees to be involved in the process, including any public consultation.
- Be mindful of the resource implications of the proposed approach.
- Follow established best practice as recognised by EU and UK guidance and as set out in the White Paper

Recommendation 62: A two-tiered approach to EIA should be adopted.

Recommendation 63: In developing the supplementary planning guidance on EIA, the scope of the different tiers should continue to be refined to ensure that there is clarity on the purpose of each one, and the requirements and differences therein.

Recommendation 64: Supplementary planning guidance should be developed which sets out how each stage of the EIA process will be implemented for each of the tiers. For full EIA projects, further consideration should be given to how the EIA process can align with the EIA process adopted by ACRE and proposals set out in recommendation 81 of the *Land Use Plan Review Economic Development Strategy* in relation to the process for determining major infrastructure projects.

Recommendation 65: Supplementary planning guidance should be developed which sets out the thresholds for projects being subject to different tiers of EIA. In developing the thresholds, regard should be had to the thresholds developed by the EU, UK, France, Jersey and Guernsey.

Recommendation 66: Supplementary planning guidance should be developed which sets out the topics which full and light EIA projects should be scoped against.

Recommendation 67: Further consideration should be given to the need to establish a limited number of accredited databases which are available for promoters, stakeholders and the Planning Office and how new data acquired through can be incorporated.

Recommendation 68: Supplementary planning guidance should be developed which clarifies the roles and responsibilities of the promoter and Planning Office in the EIA process.

Recommendation 69: Supplementary planning guidance should be developed which identifies stakeholders/consultees in the EIA process and clarifies their role in the EIA process.

Recommendation 70: Supplementary planning guidance should be developed which clarifies the role of the community in the EIA process.

17 Glossary

Definitions are taken from the IUCN, and other sources where stated.

Adaption: Considers actions to minimise the risk of climate change. This could include putting measures in place to deal with climate change, such as developing appropriate sea defences, design and construction of roads to reduce the risk of flooding events, avoid the consent to build on low lying areas and locations susceptible to flooding and coastal erosion. For example, future flooding may frequently occur within the inner harbour from sea level rise, and therefore may require further development.

Aquaculture: Several management procedures, designed to increase the production of live aquatic organisms, to levels above those normally obtained from natural captures.

> ***Exposed Aquaculture:*** Aquaculture is usually defined as exposed aquaculture when cage aquaculture is developed in marine areas not protected by the coastline from adverse marine conditions.
>
> ***Integrated Aquaculture:*** According to the UN Food and Agriculture Organisation (FAO), integrated aquaculture is an aquaculture system sharing resources such as water, feeds and management with other activities; commonly agricultural, agro-industrial, infrastructural (wastewaters, power stations, etc.). The raising of several organisms in the same aquaculture facility, where the volume of residues of one species is used as food by another species, is accepted in aquaculture. This system reduces the total volume of residues of the aquaculture facility, increasing the total biomass production.
>
> ***Sheltered Aquaculture:*** Aquaculture is usually defined as sheltered aquaculture when cage aquaculture is developing in marine areas protected by the coastline from adverse marine conditions.

Biodiversity: The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems (Convention on Biological Diversity).

Conservation: The protection, care, management and maintenance of ecosystems, habitats, wildlife species and populations, within or outside of their natural environments, in order to safeguard the natural conditions for their long-term permanence.

Environment: All living and non-living components and all factors, like the climate, that surround an organism.

Environmental impact: The measurable effect of human action over a certain ecosystem. Environmental impact assessments (EIA) are often used to reveal the significant and potential environmental impact generated by an activity or work, as well as how it could be avoided or mitigated in the case of a negative impact.

Habitat: The locality or environment in which an animal lives.

Habitat degradation: A decline in habitat quality for a species, e.g. related to changes in food availability, cover or climate.

Habitat fragmentation: The process and result of breaking an area of contiguous habitat into distinct patches.

Habitat loss: An area that has become totally unsuitable for a species.

Habitat management: Management activities involving vegetation, soil and other physiographic elements or characteristics in specific areas, with specific conservation, maintenance, improvement or restoration goals.

Habitat specialist: A species that tends to show relatively narrow habitat preferences and therefore is susceptible to habitat change.

Impact mitigation: Measures and actions taken to avoid, minimise, reduce, remedy and / or compensate for the adverse impacts of development. In general, a hierarchy of 'avoid – reduce – remedy – compensate' is used to establish an order of preference for mitigation measures.

Mitigation: Considers stemming climate change impacts, such as using policy to reduce greenhouse gases for the long term and supporting sustainable building practices. For example, climate change mitigation could be used to identify potential infrastructure transformation on Alderney, i.e. assessing the roles of the power station and renewable energy for the long term benefit of the island. In addition, mitigation may include re-evaluating the island's current waste management and recommend enhancing current recycling efforts.

Population: Set of individuals from the same wild species that share the same habitat. It is considered as the basic management unit of wild species living in freedom.

Precautionary principle: A principle which states that lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental damage to habitats or species when there is a threat of serious or irreversible environmental degradation.

Protected Area: An area of land and/or sea especially dedicated to the protection of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.

Species: A group of interbreeding individuals with common characteristics that produce fertile (capable of reproducing) offspring and which are not able to interbreed with other such groups, that is, a population that is reproductively isolated from others; related species are grouped into genera.

Acclimatised species (naturalised species): An alien species that has been introduced and maintained within an ecosystem for so long that it is deemed to be a part of that ecosystem and in law and practice is given parity with native species.

Alien species: A species that is not native to the ecosystem in which it is introduced.

Casual alien species: Alien species that may flourish and even reproduce occasionally in an area, but which do not form self-replacing populations, and which rely on repeated introductions for their persistence (Richardson et al., 2000).

Endangered species: Any species which is in danger of extinction throughout all or a significant portion of its range.

Endemic species: Population of a species that is native to the region, and which area of distribution is restricted to a small place.

Exotic species: An introduced species not native or endemic to the area in question.

Indicator species: Indicates certain environmental conditions or suitable habitats for other species.

Indigenous species (native species): A species that is assumed be intrinsically part of the ecosystem, owing to having developed there, having arrived in the area long before record of such matters was kept, or having arrived by natural means (unaided by human action) etc.

Invasive species: This refers to a subset of introduced species or non-native species that are rapidly expanding outside of their native range. Invasive species can alter ecological relationships among native species and can affect ecosystem function and human health.

Non-native species: A species, subspecies or lower taxon introduced outside its normal past or present distribution; includes any parts, gametes, seeds, eggs or propagules of such species that might survive and subsequently reproduce.

Opportunistic species: Species that grow and multiply fast when conditions are favourable (also called r-strategist).

Pioneering species: Species that establishes itself in a barren environment.

Rare species: Worldwide populations of small species, that are not currently endangered or are not vulnerable, but that may face such risks in the future. These species are located in geographically restricted areas or specific habitats, or are scantily scattered on a large scale.

Species redundancy: The presence of multiple species that play similar roles in ecosystem dynamics, thus enhancing ecosystem resilience (SER, 2004).

Species richness: The number of species in a given site.

Subspecies: A morphologically, behaviourally, ecologically and geographically distinct variety within a species. Individuals of different subspecies are able to produce fertile young.

Threatened species: Any species which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

Undescribed species: An organism not yet formally described by science and so does not yet a have a formal binomial scientific name. Usually assigned a letter or number designation after the generic name, for example, Squatina sp. A is an undescribed species of angel shark belonging to the genus Squatina.

Vulnerable species: Living beings classified as threatened in the near future if causal factors persist. Among these are included the species which majority or entire population is diminishing due to overexploitation, vast destruction of the habitat, or other environmental disturbances. Also considered are the populations that have been significantly decreased and which safety has not been attained, and the distribution of populations are still abundant but being affected by adverse factors.

Sustainability: Refers to the adequate access, use and management of the natural resources, to ensure that the men and women of present and future generations are able to meet their basic needs on an uninterrupted basis. Pattern of behaviour that guarantees for each of the future generations, the option to enjoy, at the very least, the same level of welfare enjoyed by the preceding generation. Emphasis is placed on the intergenerational equity of development.

Sustainable development: Means using natural resources in a way that avoids irreversible damage to ecosystem structure and function, the loss of irreplaceable features or a reduction in ecosystem resilience. Environmental interests must be considered alongside social and economic interests, so as to prevent the irreplaceable loss of natural features, function or processes and to ensure a long-term and dependable flow of benefits from the exploitation of renewable resources. Delivering such sustainable development will involve significant measures to recover ecosystem structure and function, where the flow of benefits is already reduced or impaired, or where ecosystem resilience is at risk.

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Appendix A

Invitees to Stakeholder Workshop

A1 Invitees to Stakeholder Workshop

Table A.1 contains a list of those invited to attend the Natural Environment Strategy Stakeholder Workshop on 6 December 2016. Those who attended are shown in bold. (Please note, the workshop also included a session on the built environment and heritage.)

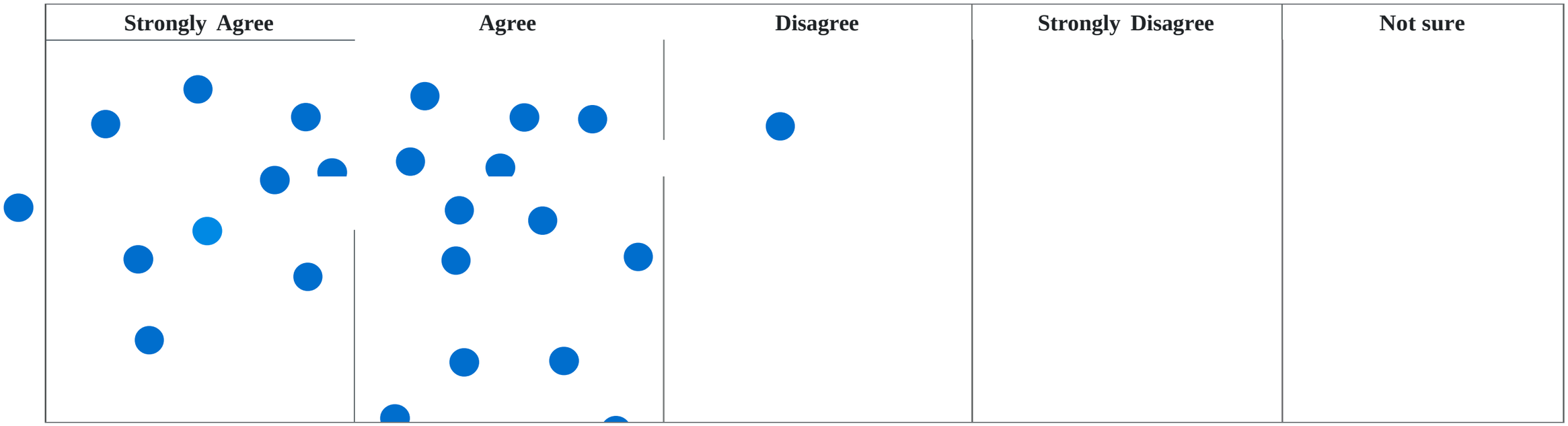
Name		Organisation
Phillippa	Arditti	Albert House and St Catherines House
Keith	Baker	Independent
Tony	**Barnes**	**States of Alderney**
Matthew	**Birmingham**	**States Member**
Aaron	Bray	States of Alderney
Melanie	**Broadhurst**	**Alderney Wildlife Trust**
Chris	Brown	Wings Ltd.
Trevor	**Davenport**	**Alderney Society**
Mike	**Dean**	**States Member**
John	**Donaldson**	**Wings Ltd.**
Nigel	**Dupont**	**Tickled Pink**
Dan	**Evans**	**Arup**
Lee	**Flewitt**	**Tickled Pink**
Mark	**Gaudion**	**States of Alderney**
Roland	**Gauvain**	**Alderney Wildlife Trust**
Dave	**Gillingham Sr.**	**Alderney Fishermans' Association**
Rosemary	**Hanbury**	**Independent**
Neil	Harvey	States Member
Giulia	**Hempel**	**Independent**
Julia	**Henney**	**Alderney Wildlife Trust**
Christopher	**Hughes**	**Guernsey Museums and Galleries**
Donald	**Hughes**	**Alderney Housing Association/Independent**
Kieron	**Hyams**	**Arup**
Louis	Jean	States Member
Caroline	Kay-Mouat	Alderney Performing Arts Festival
Robert	McDowell	States Member
Mark	**McFadden**	**Arup**
Graham	**McKinley**	**States Member**
Sam	**Osborne**	**States of Alderney**
Norma	**Paris**	**States Member**
Tissie	**Roberts**	**Independent**

Name		Organisation
Paul	Rose	States of Alderney
Chris	Rowley	States Member
Chloe	**Salisbury**	**Arup**
Francis	Simonet	States Member
Alex	**Snowdon**	**States Member**
David	**Thornburrow**	**Alderney Society**
Ian	Tugby	States Member
Helene	**Turner**	**States of Alderney**
Paul	**Veron**	**States of Alderney**
Tanya	**Walls**	**Guernsey Museums**
Geraldine	Whittaker	Independent
John	**Young**	**States of Alderney**

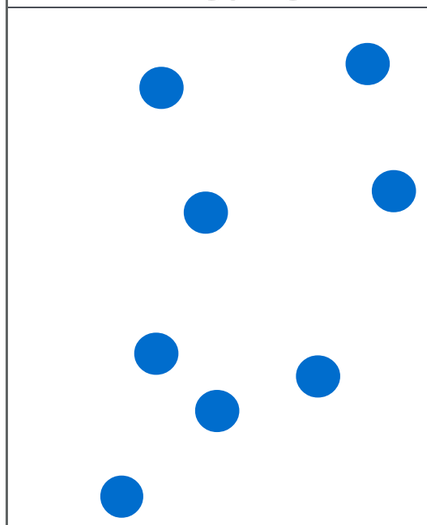
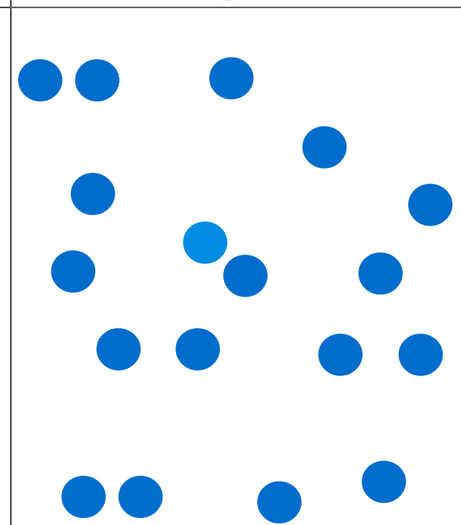
Appendix B

Results of Workshop Activity

Where a planning permission says so, developers should be required to fund ecological surveys prior to the commencement of construction works.

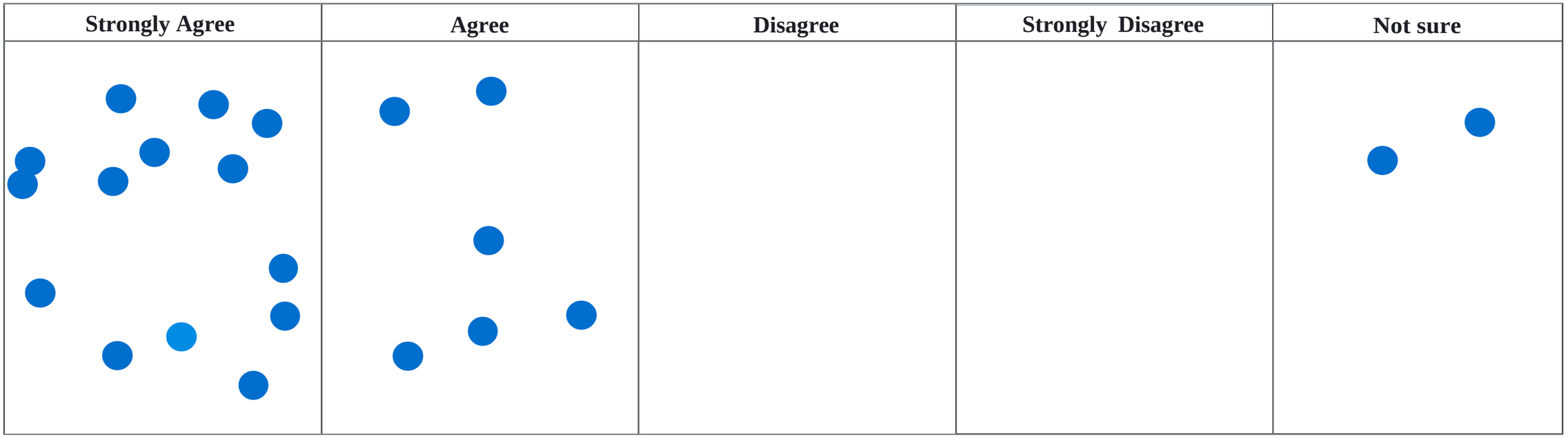


In preference to a 'flat' single list, Alderney should use a 'tiered' approach to protecting biodiversity taking account of different scales of importance (International, Regional and Local) and to differentiate between Sites, Habitats and Species.

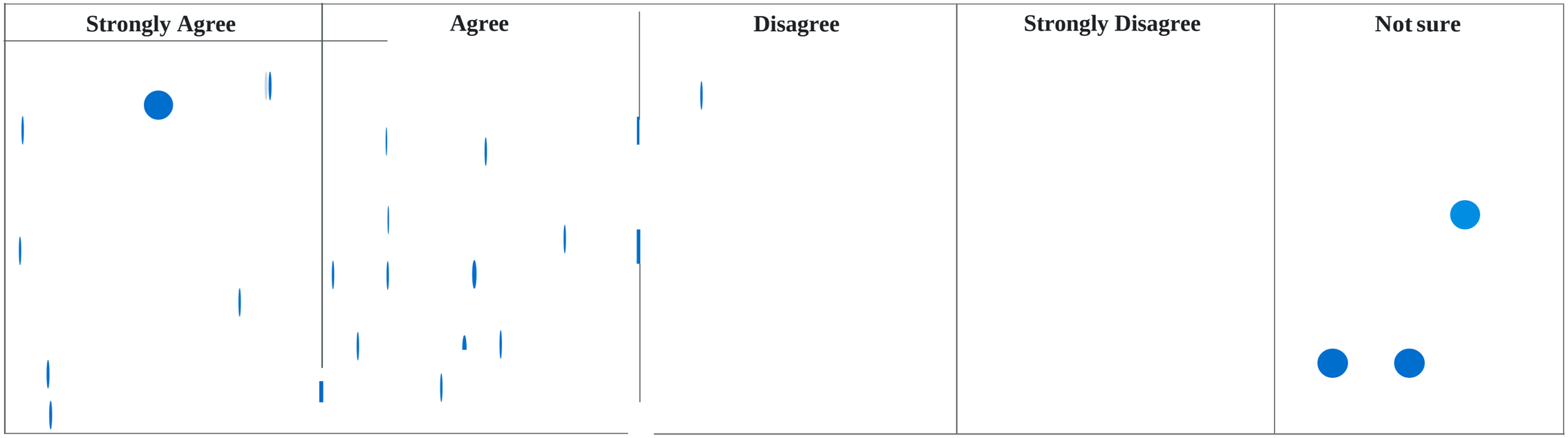
Strongly Agree	Agree	Disagree	Strongly Disagree	Not sure
				

GP..'"1

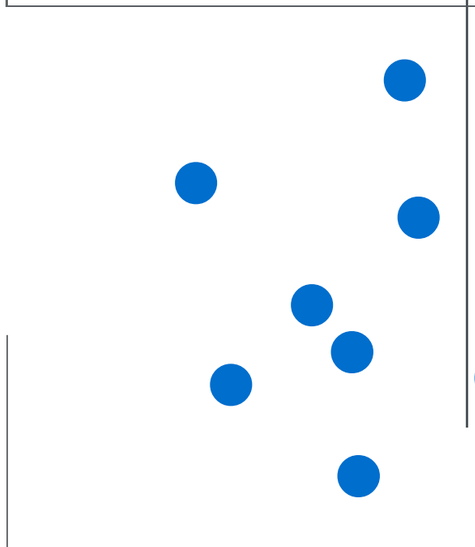
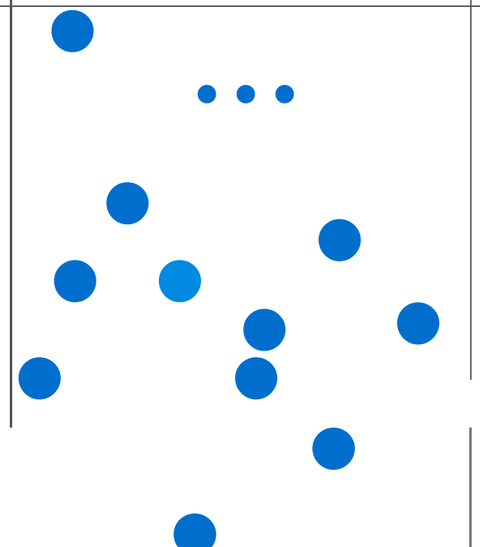
The States of Alderney should actively enforce"deliberate harm to ecologically important sites, habitats and species.



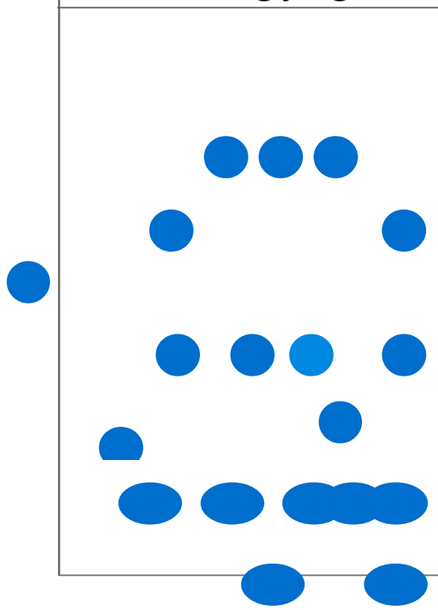
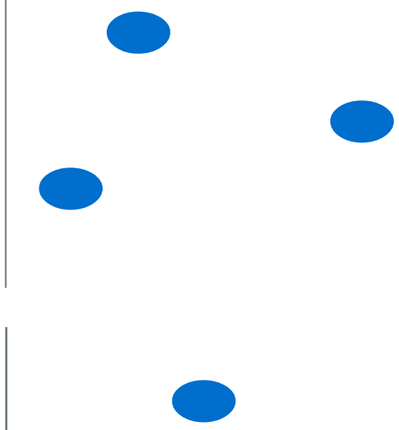
The Land Use Plan should provide more clarity on the level of protection given to trees and what constitutes 'harm' to a tree.



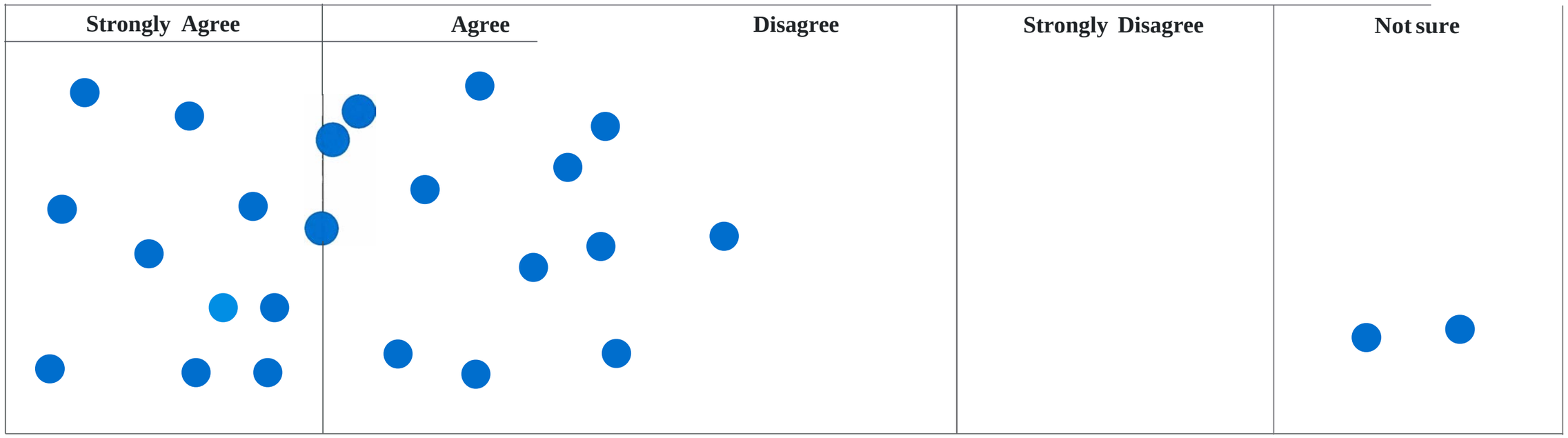
The Land Use Plan should define what constitutes an invasive species. Where defined invasive species are present on a development site, the developer should safely remove and dispose of the species as part of the sitepreparation works.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not sure
				

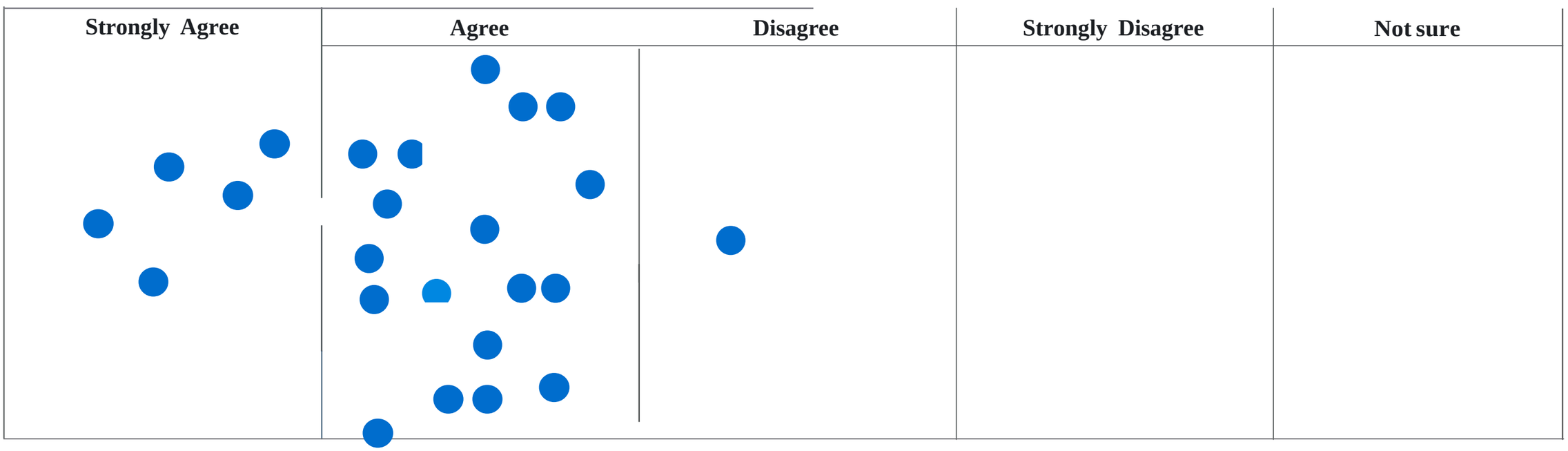
The LUP should define types and scales of development which should require an Environmental Impact Assessment as part of the application.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not sure
				

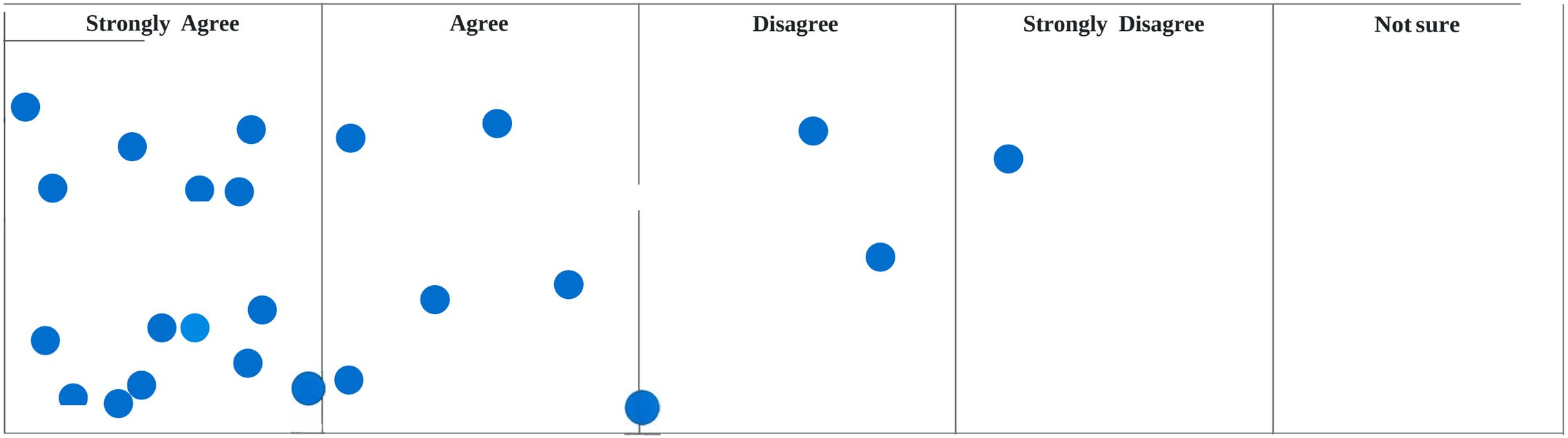
Climate Change raises challenges around issues such as (sea, air and land) temperature changes, sea level rise and the atmospheric balance (i.e. carbon dioxide). The Land Use Plan should identify these challenges and be a catalyst for more work to explore what this could mean for Alderney.



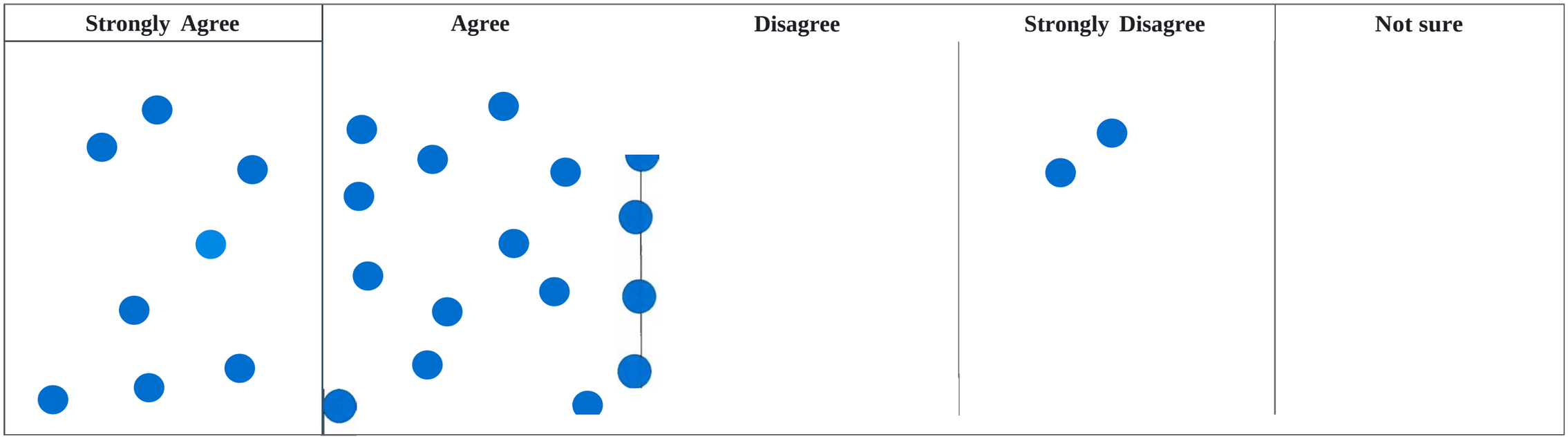
The States of Guernsey should be consulted on any planning application which may give rise to environmental health issues (e.g. air quality, noise and vibration, contamination).



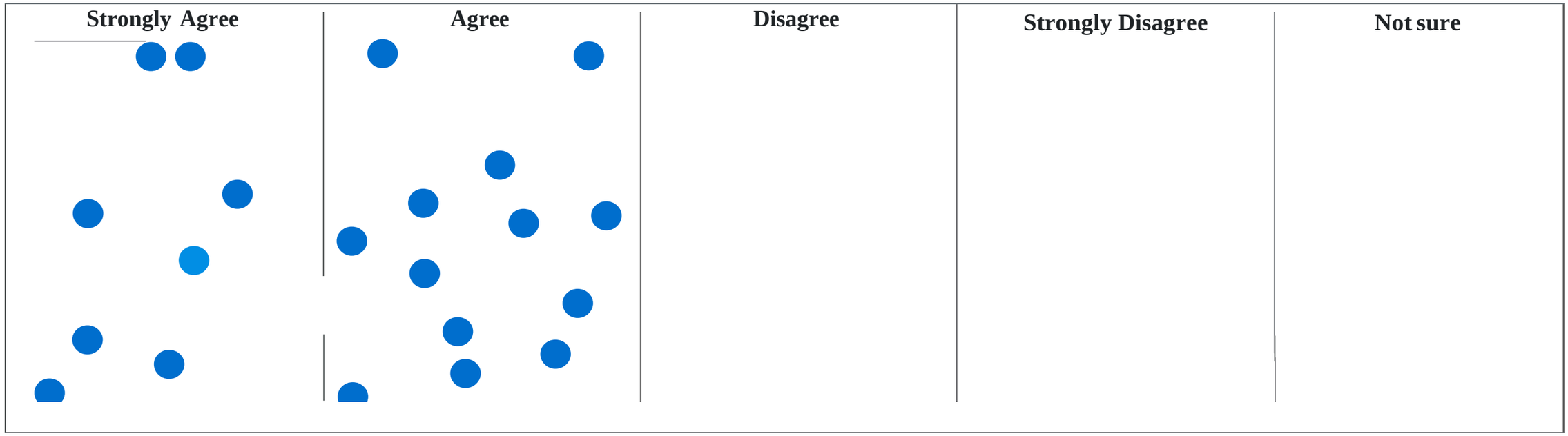
The Land Use Plan should require all new development to connect to the States drainage/sewerage system and avoid private sceptic tank/waste systems.



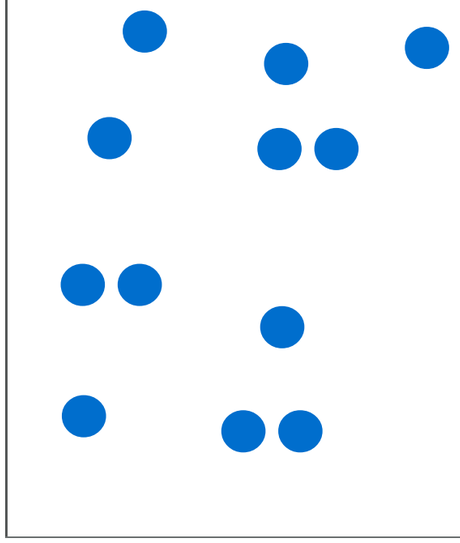
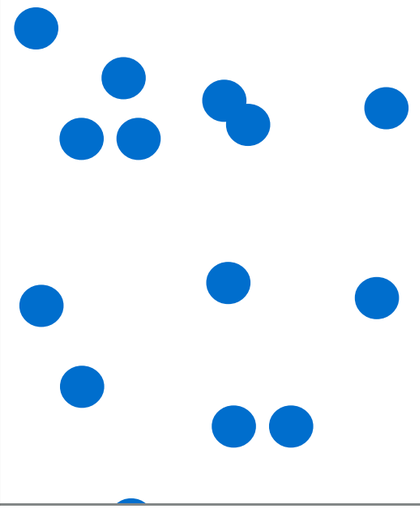
Where construction is judged to be sensitive, the States should levy a fee from developers to enable it to monitor construction work and ensure restoration of sites of ecological importance.



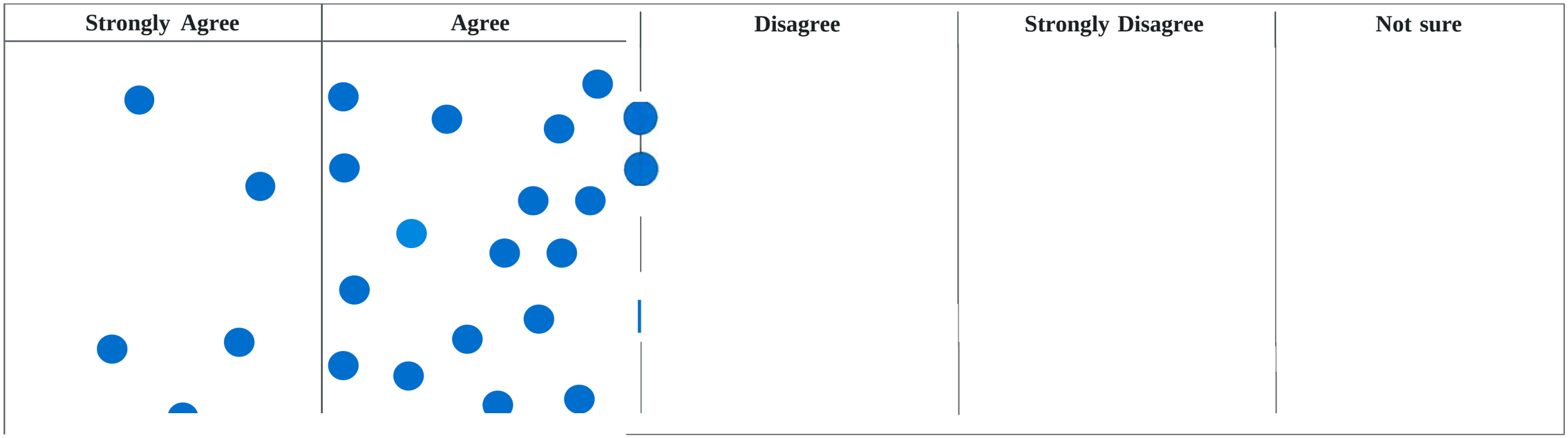
Alongside the Land Use Plan, the States should undertake regular environmental monitoring (e.g. water quality, air quality, noise, contaminated land, pollutant levels and sources of emissions).



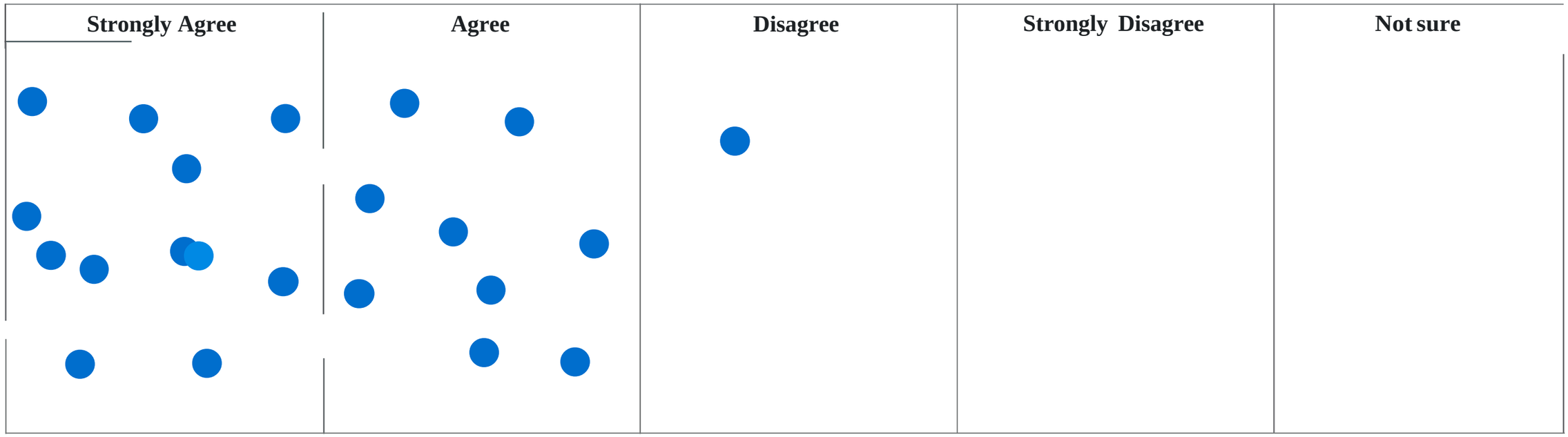
The scale of Alderney makes it a sensitive environmental 'receptor' - what might not as sensitive elsewhere could be more sensitive here. The Land Use Plan should define two tiers of Environmental Impact Assessment to enable a proportionate approach for smaller schemes where there is a risk of environmental impact.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not sure
				

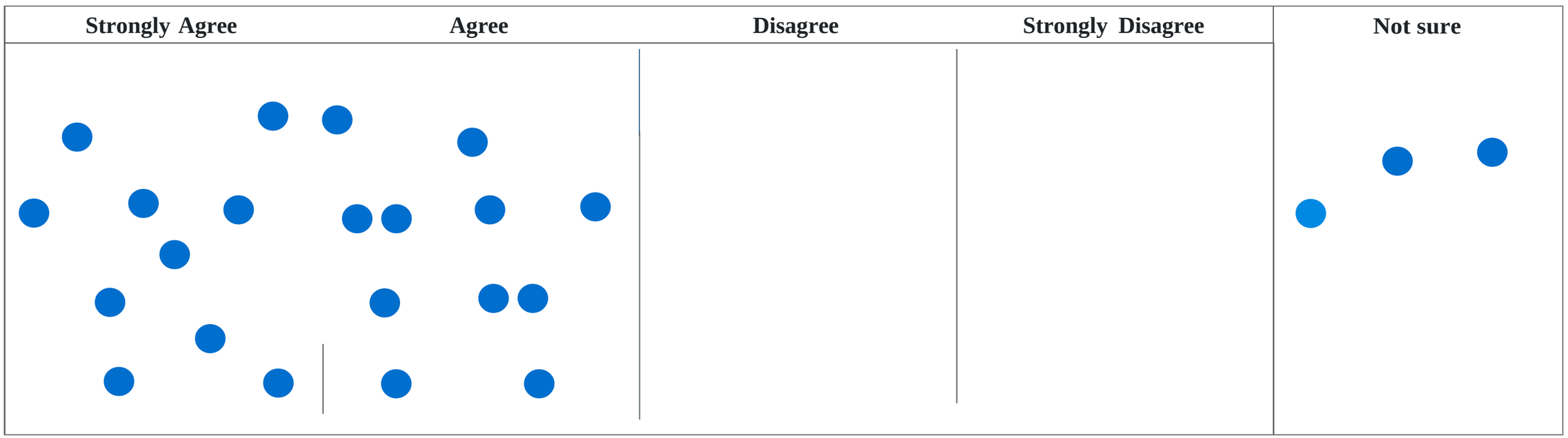
Geodiversity is defined as the variety of rocks, minerals, fossils, natural processes, landforms and soils which underlie and determine the character of the landscape and environment.
Geodiversity should be integrated within the Land Use Plan.



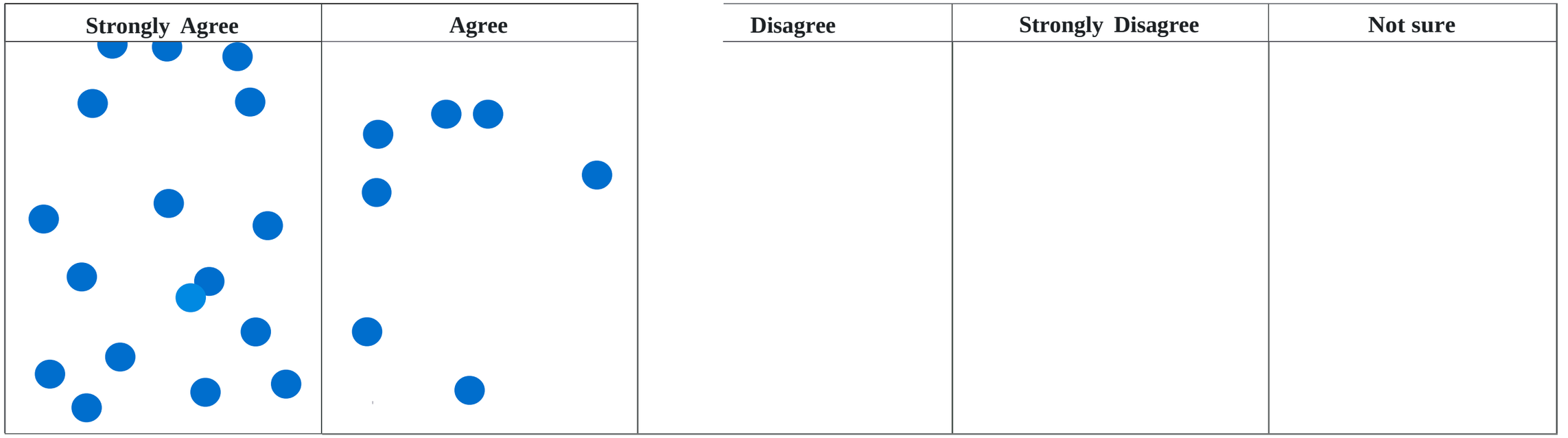
In order to protect the marine environment (biodiversity, shipwrecks etc.) and to manage future marine-related development, Alderney's planning powers should extend to cover its territorial waters.



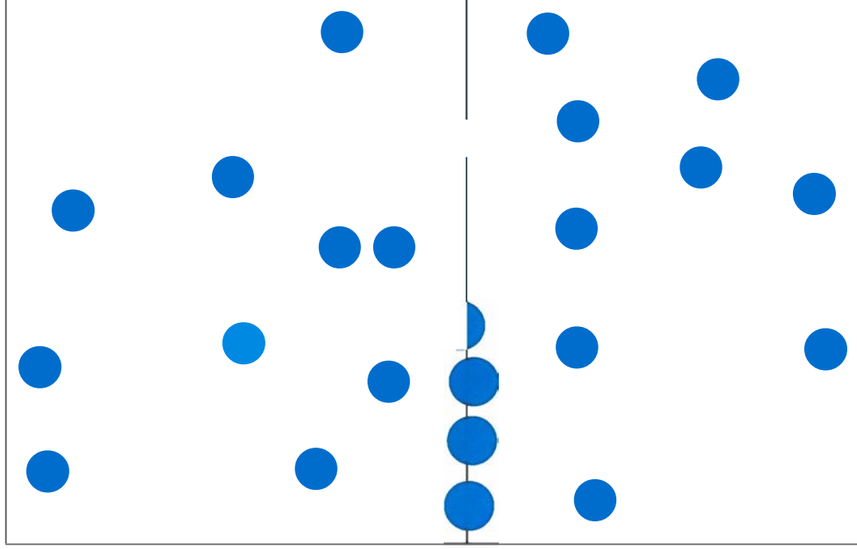
The States Works Department should be consulted on any planning applications which may affect the Island's water demand or supply, or are proposed in areas of flood risk.



To help applicants, the Land Use Plan should provide greater clarity on what development or uses might be acceptable around protected areas.



The Alderney Wildlife Trust should be consulted on any planning application which may have an ecological impact.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not sure
				

Appendix C

Biodiversity Sites, Habitats and Species of Importance on Alderney

C1 Biodiversity Sites, Habitats and Species of Importance on Alderney

Table C.1 Current and potential future sites of biodiversity importance on Alderney

Hierarchy	Site	Currently Designated Sites		Potential Future Sites Subject to Additional Assessment
		Site	Location	
International	Ramsar Site	Alderney West Coast and the Burhou Islands	West coast of Alderney and adjacent islets	
	Important Bird and Biodiversity Areas	Gannetries	Les Etacs Ortac	Potential for designation for other islets and Alderney subject to detailed assessment.
Regional (Channel Islands, France and UK)	Sites of Special Scientific Interest (SSSI)			Potential for designation subject to detailed assessment.
	Sites of Special Interest (SSI)			Potential for designation subject to detailed assessment.
	Coastal National Park			Potential for designation subject to detailed assessment.
	Sites of Special Significance (SSS)			Potential for designation subject to detailed assessment.
	Areas of Biodiversity Importance (ABI)			Following designation of SSS's, natural or semi-natural land surrounding any SSS and/or the foreshore.
Local (island-wide)	Local Nature Reserve			Longis Nature Reserve Val du Saou Nature Reserve Community Woodland

Hierarchy	Site	Currently Designated Sites		Potential Future Sites Subject to Additional Assessment
		Site	Location	
	Parkland and Open Space[15]	Saye Campsite Football pitch Golf course and recreational land surrounding Fort Albert Recreational land at Mannez Quarry The Butes/York Hill green infrastructure Braye/Lower Road area		Additional areas including: • Platte Saline Common • Bonne Terre • Giffoine area • Wooded areas (airport and Barrackmasters Lane) • Coastal routes • Islets and rocks • Fort Tourgis Batteries 2 and 3 • Bibette Head

[15] These sites have been identified based on the locations of 2016 Land Use Plan Designated Area Recreational Zone, those sites in the 2016 Land Use Plan located in the Building Area but for which the provisions of the Designated Area Recreational Zone apply, plus land at Braye/Lower Road.

Table C.2 Current and potential future habitats of biodiversity importance on Alderney[16]

Hierarchy	Designation	Currently Identified Habitats		Potential Future Habitats Subject to Additional Assessment	
		Habitat	Location	Habitat	Location
International	EC Habitats Directive	Annex II reefs: *Saccorhiza polyschides* and other opportunistic kelps on disturbed sublittoral fringe rock	Brinchetais, Houmet-Herbe, Impot/Cachliere, Longis Bays	Perennial vegetation of stony banks	Clonque, Houmet-Herbe, Impot/Cachliere, Braye, Saye Bay and Longis Bay
		Inland dunes with open Corynephorus and Agrostis grasslands	Saye Bay	Salicornia and other annuals colonising mud and sand	Fort Houmet Herbe
		Dry Atlantic coastal heaths with *Erica vagans*	Along South Cliffs until Longis Hill	Large shallow inlets and bays	Longis, Corblets and Saye Bays
		Vegetated sea cliffs of the Atlantic and Baltic coasts (crevice/ledge vegetation)	Longis Bay	Vegetated sea cliffs of the Atlantic and Baltic coasts	South Cliffs near the airport
		Inland salt meadow	Simon's Place	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	Platte Saline, Impot/Cachliere
		Fixed coastal dunes with herbaceous vegetation (grey dunes; Open Dune)	Longis, Saye, Braye, Crabby, Platte Saline	Mudflats and sandflats not covered by seawater at low tide	Longis Bay, Braye, Saye, Corblets and Platte Saline
				Shifting dunes along the shoreline with *Ammophila arenaria* (`white dunes`)	Platte Saline, Braye, Corblets and Saye

[16] Some habitats and locations are duplicated over regional and local tiers. This is because regional habitats are based on regionally important habitats whilst the local habitats were identified according to their rarity (<10%) on the island using the DAFOR scale. The revised Land Use Plan may adopt a rationalised approach which takes the highest tier only.

Hierarchy	Designation	Currently Identified Habitats		Potential Future Habitats Subject to Additional Assessment	
		Habitat	Location	Habitat	Location
		Vegetated sea cliffs of the Mediterranean coasts with endemic *Limonium* spp.	Cliffs below hanging rock, near Houmet Herbe		
		Boreal Baltic sandy beaches with perennial vegetation	Platte Saline and Crabby		
		Dunes with *Hippophae rhamnoides*	Hedge at Les Mielles, Platte Saline		
		Mediterranean tall humid herb grasslands of the *Molinio-Holoschoenio*	Small Locations all over Alderney		
		Sandbanks which are slightly covered by sea water all the time	Longis Bay, Braye, Saye, Corblets and Platte Saline		
		Submerged or partially submerged sea caves	Longis Bay		
	Ospar	Zostera beds, seagrass beds	Longis and Braye	*Sabellaria spinulosa* reefs	Coque Lihou, La Tchue
		Littoral chalk communities	Bibette Head		
Regional (Channel Islands, France and UK)	Protected under UK law (for example, the Wildlife and Countryside Act). This only includes SSSI	The Baie du Grounard rock salt-marsh. An [SM18]: *Juncus maritimus* salt-marsh community	Houmet-Herbe	Vegetated shingle	Across Alderney bays
		Open dune	Saye bay, Longis Bay, Braye, Platte Saline		
		Dune scrub	Targets at Longis Bay		
		Dune grassland	Longis common		

Hierarchy	Designation	Currently Identified Habitats		Potential Future Habitats Subject to Additional Assessment	
		Habitat	Location	Habitat	Location
		Coastal heath (with *Ulex gallii*)	Patches along south coast from Longis to airport, largest areas of heathland are at western end of Island which was not surveyed.		
		Freshwater habitats - standing waters	Longis pond Mannez Pond Rose Farm/airport Platte Saline		
		Sea cliffs and slopes	Giffoine		
	UK Biodiversity Action Plan – priority habitats	Acid Grassland	Saye Farmland, Simon's Place		
		Broadleaved Woodland	Small isolated patches around the island		
		Coastal Grassland	Braye Beach, Saye, Lighthouse		
		Crevice/Ledge Vegetation	Longis Bay		
		Arable and Horticultural	Around South Cliff's and the airport		
		Dune Grassland	Longis Reserve, Saye bay, Braye beach, Crabby bay		
		Dune Scrub	Longis Bay, Saye Bay		
		Hedgerows	Behind the Airport		

Hierarchy	Designation	Currently Identified Habitats		Potential Future Habitats Subject to Additional Assessment	
		Habitat	Location	Habitat	Location
		Improved Grassland	Along the West and South coast of the island		
		Marsh Grassland	Tourgis Hill		
		Neutral Grassland	Simon's Place		
		Saltmarsh	Fort Houmet Herbe		
		Standing water – Eutrophic	Longis Reserve		
		Swamp	Tourgis hill		
		Intertidal Mudflat (Based on Marine Biotope – LS.LSa.MuSa.MacAre)	Longis		
		Intertidal Chalk (Based on Marine Biotope – LR.HLR.FR.Osm)	Houmet-Herbe, Hannaine, Bibette		
		Intertidal Underboulder Communities (Based on Marine Biotope – LR.MLR.BF.Fser.Bo)	Impot/Cachliere, Houmet-Herbe		
		Seagrass Beds *(polygon provided by Fab Link Ltd)*	Longis Bay		
		Sheltered Muddy Gravels (Based on Marine Biotope – LS.LMx)	Longis Bay		
		Tide Swept Channels (Based on Marine Biotope – LR.HLR.FT.FserTX)	Clonque, Impot/Cachliere, Braye		

Hierarchy	Designation	Currently Identified Habitats		Potential Future Habitats Subject to Additional Assessment	
		Habitat	Location	Habitat	Location
		Estuarine Rocky Habitats (Based on Marine Biotope – LR.FLR.Eph.Ent)	Bibette, Hannaine, Houmet-Herbe		
		Estuarine Rocky Habitats (Based on Marine Biotope – LR.FLR.Eph.EntPor)	Houmet-Herbe, Hannaine, Clonque Bays		
		Estuarine Rocky Habitats (Based on Marine Biotope – LR.FLR.Rkp.G)	Bibette, Clonque, Hannaine, Houmet-Herbe, Braye, Longis Bays		
		Estuarine Rocky Habitats (Based on Marine Biotope – LR.FLR.Lic.Ver.Ver)	Houmet-Herbe		
		Estuarine Rocky Habitats (Based on Marine Biotope – LR.FLR.Lic.YG)	Bibette, Clonque, Hannaine, Houmet-Herbe, Impot/Cachliere, Braye		
	Jersey nationally important habitats	Coastal heathland and cliff slopes	Giffouine, Essex Hillside, Houmet Herbe headland, cliffs on south and east of the island		
		Sand dune	Longis Common, Braye Common, Saye Common		
		Intertidal zone	Intertidal sites around the whole island, covering from mean low water line to mean high water line		

Hierarchy	Designation	Currently Identified Habitats		Potential Future Habitats Subject to Additional Assessment	
		Habitat	Location	Habitat	Location
		Marine environment, classified based on • High biodiversity • High productivity • Beneficial ecosystem functions (e.g. nursery areas) • Sensitivity to chemical/physical disturbance Includes, but not limited to: Maerl Beds, seagrass, kelp forests, dense clam/sandmason worm beds, flooded gulleys	Seagrass and kelp habitats identified.		
	Jersey locally important habitat	Wet meadows	Wet valley bottom at Bonne Terre		
		Woodland	Bonne Terre, Vau du Saou, Alderney Community Woodland		
		Marsh and freshwater	Longis Pond, Mannez Pond, reservoirs, Platte Saline,		
		Walls and banques	Unspecified.		
	Guernsey rare habitats	Open Dune	Longis, Saye, Braye, Crabby, Platte Saline	Dune Heath	Not yet identified on Alderney.
		Saltmarsh	Fort Houmet Herbe	Dune Slack	Not yet identified on Alderney.

Hierarchy	Designation	Currently Identified Habitats		Potential Future Habitats Subject to Additional Assessment	
		Habitat	Location	Habitat	Location
		Coastal Heathland	Giffouine, Essex Hillside, Houmet Herbe headland	Marginal Vegetation	Not yet identified on Alderney.
		Soft Cliff	Clonque, Platte Saline, Saye, Arch, Corblets,	Unimproved Grassland	Not yet identified on Alderney.
		Swamp	Longis Pond, Mannez	Semi-improved Grassland	Not yet identified on Alderney.
		Shingle	Platte Saline, Crabby		
		Standing Water (+Brackish)	Longis Pond, Mannez Pond, reservoirs, Platte Saline,		
		Hard Cliff	South and east coast, Mannez Quarry, Corblets Quarry		
		Marshy Grassland	Wet valley bottom at Bonne Terre		
		Coastal Grassland	Giffouine, Torgis, Braye, Fort Albert, Chateau A L'Etoc, Lighthouse, Mannez		
		Dune Grassland	Longis Common, Saye bay, Braye beach, Crabby		

Hierarchy	Designation	Currently Identified Habitats		Potential Future Habitats Subject to Additional Assessment	
		Habitat	Location	Habitat	Location
		Semi Natural Broadleaved Woodland	Small pockets across the island. Especially down the wooded valleys, e.g. Bonne Terre, Vau de Sau and Barackmasters Lane.		
Local (island-wide)	Habitats reflected in any internationally designated sites but which lie outside those defined areas	Alderney South Sandbanks	Annex I habitat, outside of LUP geographic area and JNCC/EU designation		
	Habitats which support the life stages of any priority species identified	N/A – no quantitative data available to assess decline across the island		N/A – no quantitative data available to assess decline across the island	
	Habitats endemic to Alderney/and or Channel Islands			The Baie du Grounard rock salt-marsh.	Houmet-Herbe
	Habitats undergoing a decline across the Island	N/A – no temporal quantitative data available to assess decline across the island		N/A – no temporal quantitative data available to assess decline across the island	
	DAFOR scale of habitats across Alderney*	Terrestrial			
		Swamp(<1%)	Longis reserve reed bed		
		Marsh grassland (<1%)	Wet meadow at Bonne Terre		
		Boulders/rocks above HT mark (<1%)	Corblets		
		Crevice/ledge vegetation (<1%)	Point just beyond Fort Raz		

Hierarchy	Designation	Currently Identified Habitats		Potential Future Habitats Subject to Additional Assessment	
		Habitat	Location	Habitat	Location
		Saltmarsh - Scattered plants (<1%)	Near Houmet-Herbe		
		Wall (<1%)	Mostly airport		
		Hedges - intact - species-rich (<1%)	Airport road		
		Neutral grassland - semi-improved (<1%)	Small patches, along railway on Rue de Beaumont and adjacent to fields on south coast path		
		None-native cliff vegetation (<1%)	Chateau L'etoc, Doyle		
		Tall herb and fern - ruderal (<1%)	Patches on south coast near Impot and near Tourgis		
		Broadleaved woodland - plantation (<1%)	Small isolated patches across island		
		Standing water - Eutrophic (<1%)	Longis pond, Mannez Pond, Bonne Terre pond		
		Dune scrub (<1%)	Targets		
		Poor semi-improved grassland (<1%)	Essex farm and road junction adjacent to lighthouse		
		Woodland - Coniferous - Plantation (<1%)	Around Community woodland and golf course		
		Acid grassland - semi-improved (<1%)	Saye campsite & adjacent to football pitch		

Hierarchy	Designation	Currently Identified Habitats		Potential Future Habitats Subject to Additional Assessment	
		Habitat	Location	Habitat	Location
		Bracken - Continuous (<1%)	Patches along south coast from Longis to airport		
		Open dune (<1%)	Saye bay, Longis Bay, Braye, Platte Saline		
		Coastal heathland (<1%)	Patches along southern coast from airport to Essex		
		Scrub - scattered (1.1%)	Bonne Terre / Tourgis Hill, Airport		
		Cultivated/disturbed land - arable (1.5%)	Scattered patches in farming belt		
		Broadleaved woodland - seminatural (1.7%)	Several bands, one along Barrackmaster's lane, one up Le Grand Val/Val de la Bonne, patch opposite school off Braye road plus some other smaller areas		
		Dune grassland (2.5%)	Longis reserve plus some small scattered patches		
		Amenity grassland (2.5%)	Golf course		
		Coastal grassland (2.5%)	Majority at Eastern end of Island, from east end of Braye to Mannez and Houmet-Herbe		
		Marine			

Hierarchy	Designation	Currently Identified Habitats		Potential Future Habitats Subject to Additional Assessment	
		Habitat	Location	Habitat	Location
		LR.HLR.MusB	Hannaine Bay		
		LR.FLR.CvOv.FaCr	Longis Bay		
		LR.MLR.BF	Houmet-Herbe		
		IR.HIR.KSed.LsacSac	Longis Bay		
		IR.FIR.SG.CrSpAsAn	Brinchetais Ledge		
		LR.FLR.Lic.Ver.B	Longis Bay		
		LR.FLR.Rkp.FK	Houmet-Herbe		
		LR.FLR.Rkp.Cor	Clonque Bay		
		LR.LLR.F.FVes.FS	Bibette Head		
		LR.FLR.CvOv.AudCla	Impot/Cachliere, Longis Bays		
		LR.FLR.Rkp	Clonque Bays		
		LR.FLR.Rkp.Cor.Cor	Brinchetais Ledge, Houmet-Herbe, Longis, Bibette Head Bays		
		LR.LLR.F.Asc	Braye Bay		
		IR.HIR.KSed.XKScrR	Houmet-Herbe, Longis Bays		
		LR.FLR.Rkp.SwSed	Longis, Clonque Bays		
		LS.LMx	Longis Bay		
		LR.HLR.FR.Pal	Brinchetais Ledge, Impot/Cachliere, Houmet-Herbe, Hannaine, Longis Bays		

Hierarchy	Designation	Currently Identified Habitats		Potential Future Habitats Subject to Additional Assessment	
		Habitat	Location	Habitat	Location
		LR.MLR.BF.Fser.Bo	Impot/Cachliere, Houmet-Herbe, Longis Bays		
		LR.FLR.Eph.EntPor	Houmet-Herbe, Hannaine, Longis, Clonque Bays		
		LR.HLR.MusB.Cht.Lpyg	Impot/Cachliere, Houmet-Herbe, Hannaine, Braye, Longis, Bibette Bays		
		LR.FLR.Eph.BLitX	Bibette Head, Braye Bays		
		LR.LLR.F.Pel	Braye Bay		
		LR.HLR.MusB.Sem	Braye, Clonque Bay		
		LR.HLR.FT.FserT	Clonque Bay		
		LS.LSa.St	Clonque Bay		
		LR.HLR.FR.Osm	Bibette, Houmet-Herbe, Hannaine, Longis Bays		
		LR.FLR.Lic.Ver.Ver	Houmet-Herbe, Longis Bays		
		LS.LSa.St.Tal	Houmet-Herbe, Hannaine, Longis Bays		
		LR.FLR.Rkp.FK.Sar	Houmet-Herbe, Hannaine, Braye, Longis, Clonque Bays		
		LR.HLR.MusB.Cht.Cht	Impot/Cachliere, Longis Bays		

Hierarchy	Designation	Currently Identified Habitats		Potential Future Habitats Subject to Additional Assessment	
		Habitat	Location	Habitat	Location
		LR.FLR.Rkp.G	Bibette, Houmet-Herbe, Hannaine, Braye, Longis, Clonque Bays		
		LR.HLR.MusB.SemSem	Brinchetais Ledge, Impot/cachliere, Hannaine, Longis Bays		
		LR.FLR.Rkp.Cor.Bif	Brinchetais Ledge, Bibette, Houmet-Herbe, Hannaine, Longis, Clonque Bays		
		LR.LLR.F.Fspi.X	Longis Bay		
		LR.MLR.BF.Rho	Houmet-Herbe, Hannaine, Braye, Longis, Clonque Bays		
		LR.HLR.MusB.Sem.Fves.R	Brinchetais Ledge, Houmet-Herbe, Hannaine, Longis, Braye, Clonque Bays		
		LR.MLR.BF.Fser.R	Brinchetais Ledge, Bibette, Houmet-Herbe, Hannaine, Longis Bays		
		LR.HLR.FR.Coff.Coff	Brinchetais Ledge, Houmet-Herbe, Hannaine, Longis Bays		
		LR.FLR.Eph.Ent	Bibette Head, Impot/Cachliere, Houmet-Herbe, Hannaine, Longis		

Hierarchy	Designation	Currently Identified Habitats		Potential Future Habitats Subject to Additional Assessment	
		Habitat	Location	Habitat	Location
		LR.LLR.F.Asc.FS	Longis, Clonque		
		LR.LLR.F.Asc.X	Braye, Longis, Clonque Bays		
		LR.MLR.BF.FspiB	Houmet-Herbe, Bibette, Hannaine, Braye, Longis, Clonque Bays		
		LR.MLR.BF.PelB	Bibette, Impot/Cachliere, Houmet-Herbe, Hannaine, Longis, Clonque Bays		
		LR.HLR.MusB.Sem.LitX	Impot/Cachliere, Hannaine, Bibette, Clonque Bays		
		LR.LLR.F.Fserr.X	Houmet-Herbe, Longis Bays		
		LR.FLR.Eph.EphX	Brinchetais Ledge, Impot/Cachliere, Houmet-Herbe, Longis, Braye, Clonque Bays		
		LS.LSa.MoSa.BarSa	Bibette, Impot/Cachliere, Longis Bays		
		IR.HIR.KSed.Sac	Brinchetais Ledge, Impot/Cachliere, Houmet-Herbe, Longis Bays		

Hierarchy	Designation	Currently Identified Habitats		Potential Future Habitats Subject to Additional Assessment	
		Habitat	Location	Habitat	Location
		LR.FLR.Lic.Ver	Bibette Head, Impot Cachliere, Houmet-Herbe, Hannaine, Braye, Longis, Clonque Bays		
		LS.LSa.MuSa.MacAre	Longis Bay		
		LS.LCS.Sh.Barsh	Impot/Cachliere, Houmet-Herbe, Hannaine, Braye, Longis, Clonque Bays		
		LR.FLR.Lic.YG	Bibette Head, Impot/Cachliere, Houmet-Herbe, Hannaine, Braye, Longis, Clonque Bays		
		LR.HLR.MusB.Cht	Brinchetais Ledge, Bibette, Impot/Cachliere, Houmet-Herbe, Braye, Longis, Clonque		
		IR.HIR.KFaR.LhypR	Longis Bay		
		LR.HLR.FR.Him	Brinchetais Ledge, Bibette, Impot/Cachliere, Houmet-Herbe, Braye, Longis, Clonque Bays		
		LR.HLR.FR.Mas	Impot/Cachliere, Houmet-Herbe, Braye, Longis, Clonque, Bibette Bays		

Hierarchy	Designation	Currently Identified Habitats		Potential Future Habitats Subject to Additional Assessment	
		Habitat	Location	Habitat	Location
		LR.HLR.FT.FSerTX	Impot/Cachliere, Braye, Longis, Clonque Bays		
		LR.LLR.F.Fves.X	Impot/Cachliere, Houmet-Herbe, Braye, Longis, Clonque Bays		
		LS.LSa.MoSa	Braye, Clonque Bays		

*The DAFOR scale works on % cover: Dominant = > 75%; Abundant = 75% - 51%; Frequent = 50% - 26%; Occasional = 25% - 11%; Rare = 10% - 1%. This is based on evidence from: ACRE Consultancy Reports; AWT Ramsar Reports; MSc dissertation, Tom Rossiter; and Phase 1 Habitat Survey (Ralphs, 2010). For this assessment, only rare habitats are included. In addition, this may be an underestimate due to lack of availability of data for Giffoine area and housing plots from Longis Common to Mannez/Houmet-Herbe.

Appendix D

Climate Change Supporting Information

D1 Climate Change Supporting Information

The photographs below illustrate current location of coastal erosion on Alderney.

Photograph D.1 Telegraph Bay/South Cliffs, 2016

Photograph D.2 South Cliffs, 2016

Photograph D.3 Hannaine Bay, 2016

Photograph D.4 Clonque Bay, 2016

Photograph D.5 York Hill/Cutting area, 2016

Photograph D.6 Corblets Bay, 2016

Appendix E

Geodiversity Supporting Information

E1 Geodiversity Supporting Information

The information in this appendix was produced by Dr Trevor Davenport in 2016.

E1.1 Alderney Geology

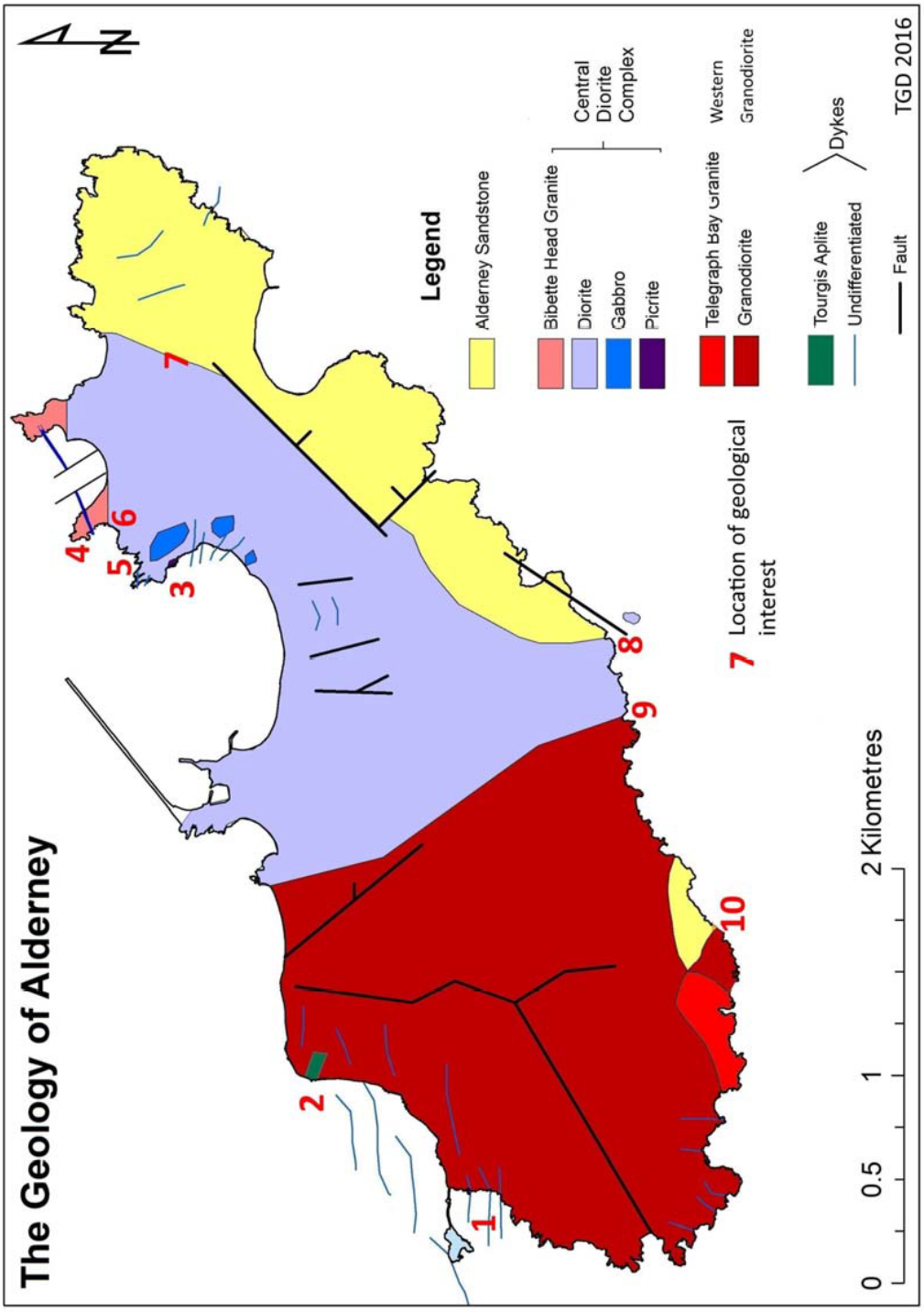
As might be expected, the rocks of Alderney belong to the Armorican Province of north-west France rather than the south-west province of England. Although many different rock types occur on the island, the 'hard' rocks have been divided into three major units that are in turn overlain by the superficial sands and gravels deposited during the latter part of the Great Ice Age:

1. The Western Granodiorite
2. The Central Diorite Complex
3. The Alderney Sandstone

Figure E.1 Geological history of Alderney

AGE	EVENT
c. 0.1 million years	Soil formation Pleistocene deposits
UPLIFT & EROSION	
c. 300 million years	More faulting Intrusion of lamprophyres Intrusion of Dolerite Folding and some faulting of Alderney Sandstone Deposition of Alderney Sandstone
UPLIFT & EROSION	
c. 550-600 million years	Bibette Head Granite Central Diorite with Gabbro and Picrite
c. 690 million years	Intrusion of Tourgis Aplite Intrusion of Micro-granite dykes Metamorphism and foliation of Western Granodiorite
c. 2220 million years	Intrusion of Aplite Intrusion of Telegraph Bay Granite Intrusion of Granodiorite
Unknown	Basement rocks – represented in Alderney only as igneous and sedimentary enclaves

Map E.1 Geological map of Alderney



E1.2 Locations of Special Geological Interest

1. Intersecting dykes of several ages and types: aplite, porphyritic microgranite and lamprophyre.

   Photograph E.1 A profusion of dykes in the cliffs at Hanaine Bay south of the causeway to Fort Clonque

2. Tourgis Aplite: A well-exposed outcrop with associated dykes occurs on the beach north of Fort Tourgis.

3. A small outcrop (<50 metres square) of picrite occurs on the eastern side of Braye Bay.

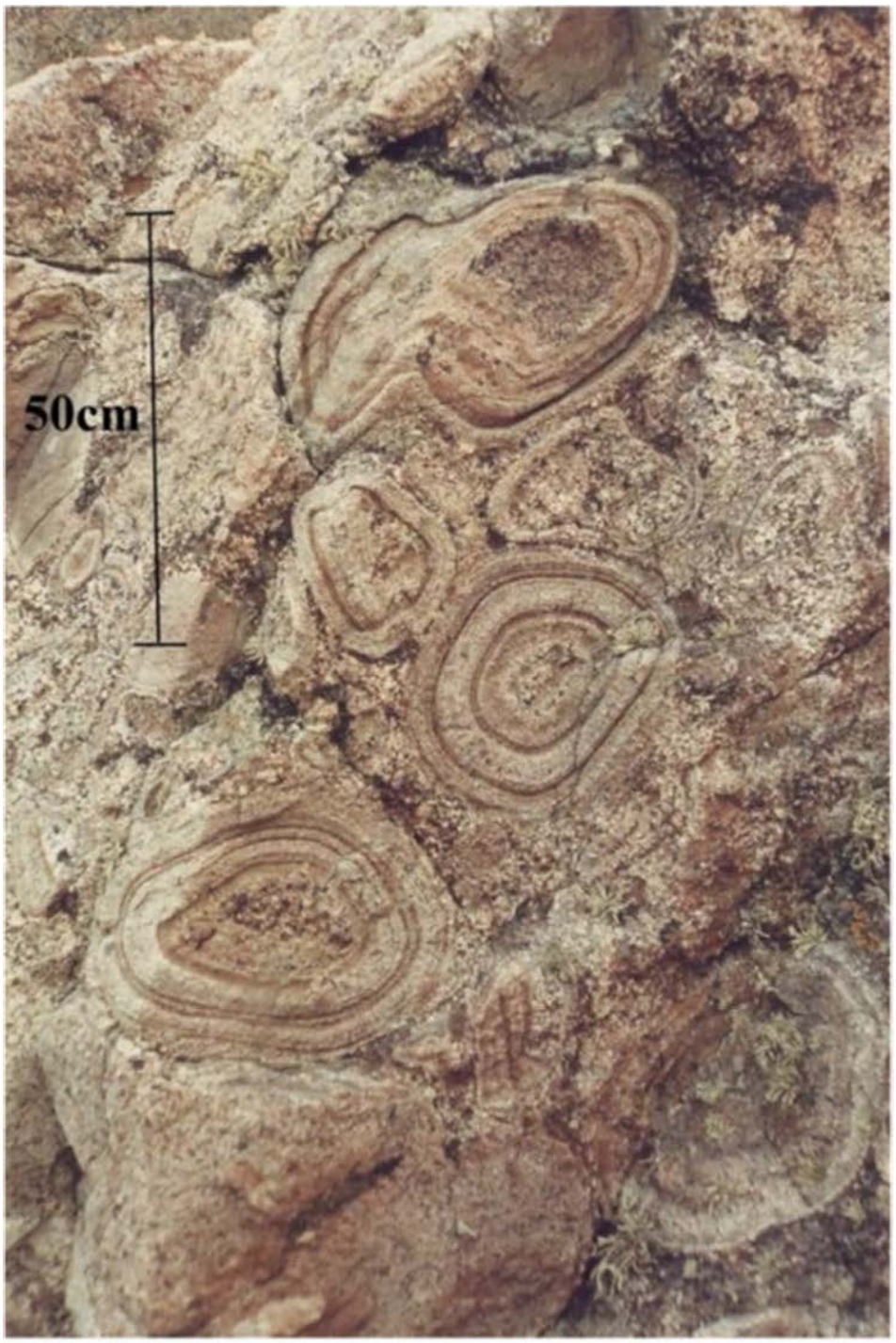
Photograph E.2 Contact between diorite (left) and coarse grained picrite (right)

4. Dolerite dykes at Bibette Head and Roselle Point.

Photograph E.3 Dolerite dykes at Bibette Head (top); Dolerite dyke showing spheroidal weathering (bottom)

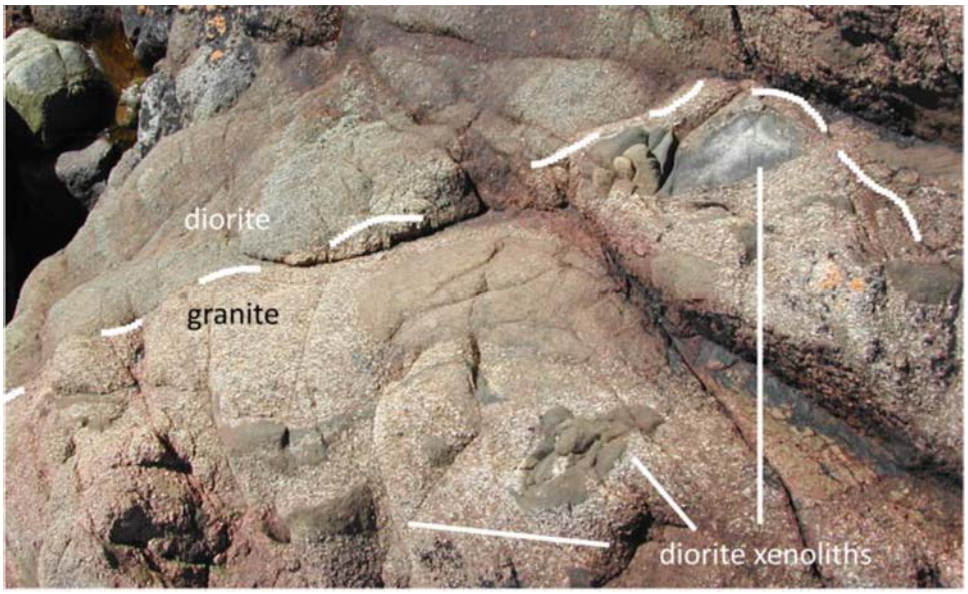
5. Orbicular diorite – also at Roselle Point, and in a few other places on the coast, a very unusual rock termed orbicular diorite is exposed. As the name suggests, the rock exhibits concentric banding of alternating white feldspar and black hornblende crystals.

Photograph E.4 Weathered orbicular diorite showing the size of the orbs



6. Contact between the diorite and the Bibette Head granite. The igneous contact between the Bibette Head granite and the main diorite is exposed on the rocky beach in the small bay to the south-west of Bibette Head.

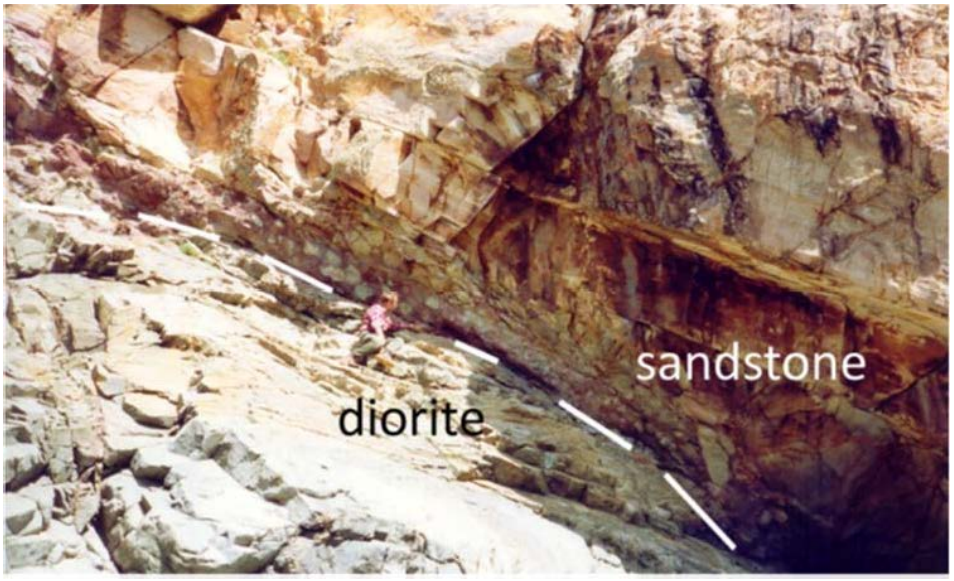
Photograph E.5 A section showing the igneous contact between the Bibette Head granite and the main diorite showing diorite xenoliths



7. Unconformable contact between diorite of the Central Diorite Complex and the Alderney Sandstone is exposed in south side of the railway cutting south of Berry's Quarry. It is currently obscured by vegetation.

8. Unconformable contact between diorite of the Central Diorite Complex and the Alderney Sandstone is exposed in the area between Bluestone Bay and Cachalière Pier.

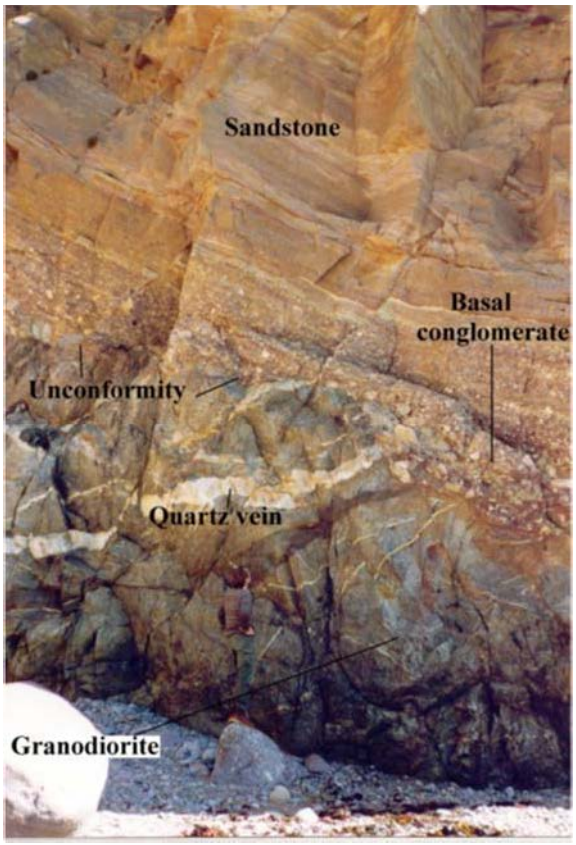
Photograph E.6 The unconformable, possibly faulted, contact between the diorite of the Central Diorite Complex and the Alderney Sandstone



9. Contact between the Central Diorite Complex and the Western Granodiorite: The contact is exposed in a gulley in the south cliffs approximately 200 metres west of Cachalière Pier.

10. Unconformity between sandstone rocks of the Alderney Sandstone outlier and the Western Granodiorite west of Platte Côtil on the south cliffs.

Photograph E.7 A classic unconformity between rocks of the Alderney Sandstone outlier and the Western Granodiorite showing basal conglomerate



Photograph E.8 Unconformity exposed on the beach west of Platte Côtil

Appendix F

Maps

N

A

Map F.1
Sea Level Rise
Alderney

Elevation

11111 0.59m increase

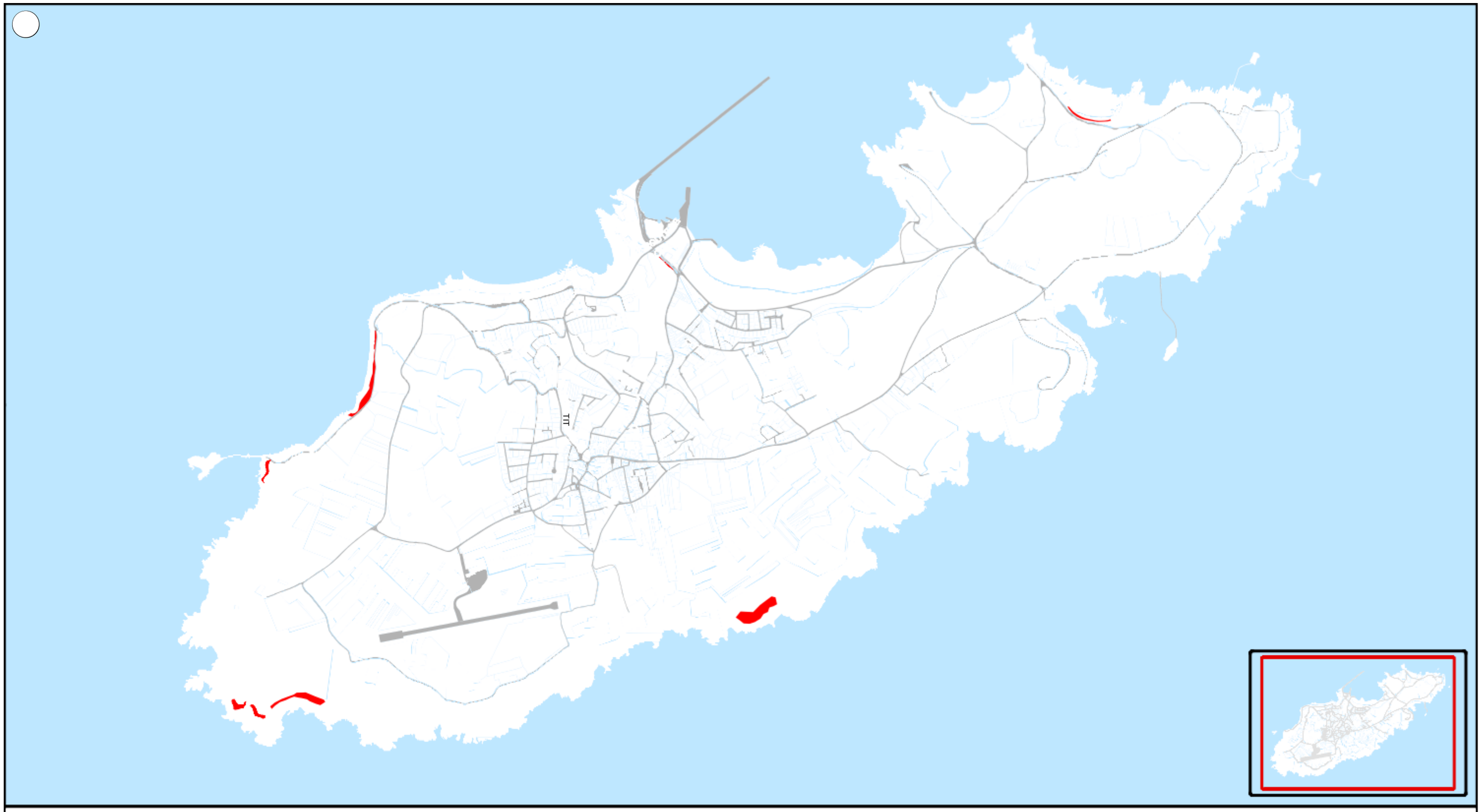
11111 0.18m increase

Below MHWS

0 0.375 0.75 1.5 Kilometers

Triangulated irregular network created from States of Guernsey Digital Map height data.

A3



Legend

Coastal Erosion

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ARUP

13 Fitzroy Street
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Fax +44 20 7580 3924
www.arup.com

Island Hall
Alderney GY9 3UE
Tel +44 1481 822811
Fax +44 1481 822436
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States of Alderney

Job Title
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Content
Map F.2
Coastal Erosion
Alderney

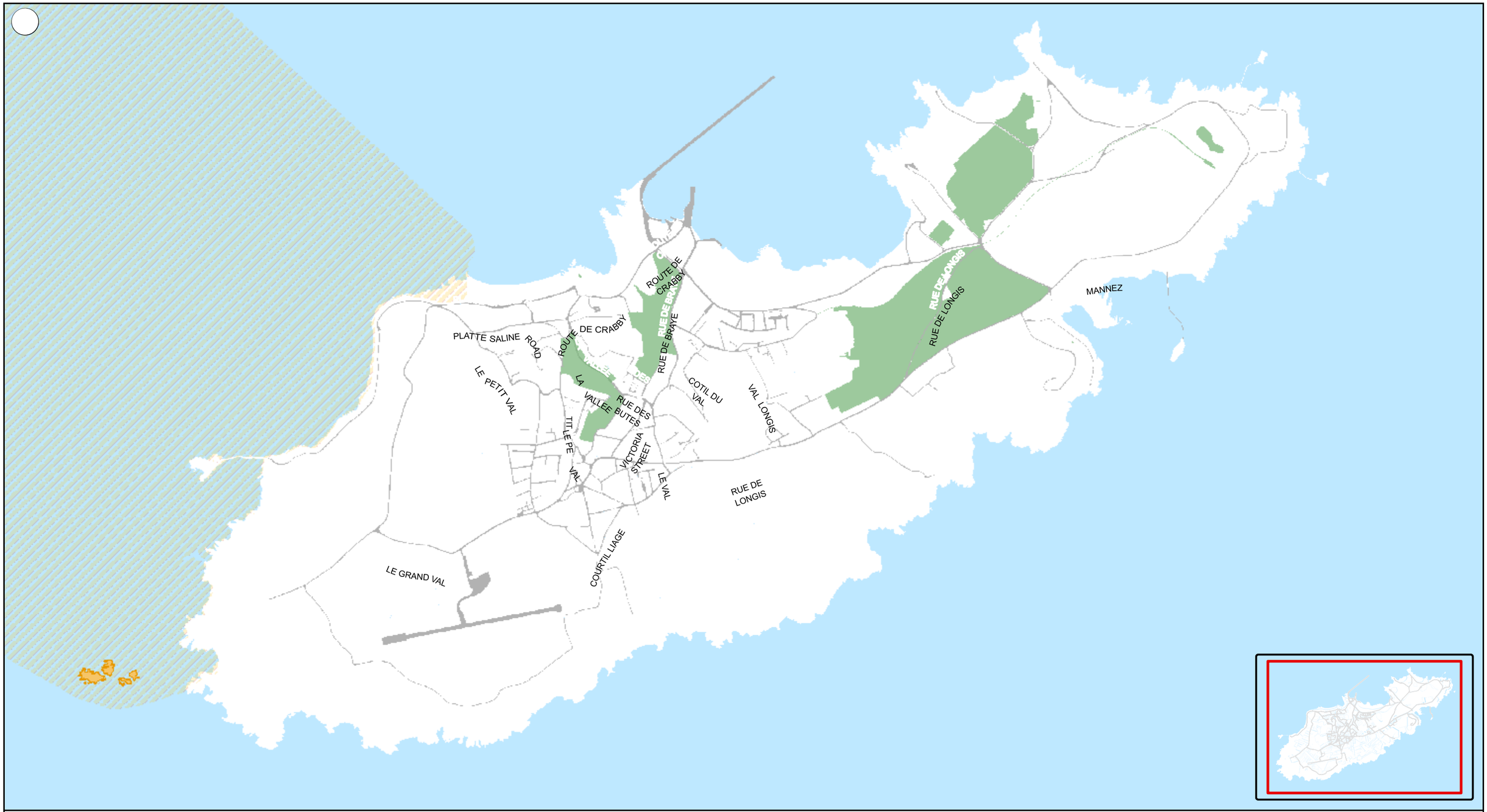
Scale at A3
1:18,000

0 0.125 0.25 0.5 Miles

Drawing No
NES001

Issue
P1

A3



Legend

Ramsar Site

Ramsar Site

Gannetries

Parklands and Open Space

Parklands and Open Space

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www.arup.com

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Alderney GY9 3UE
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Content
Map F.3
Existing Designated Sites
Alderney

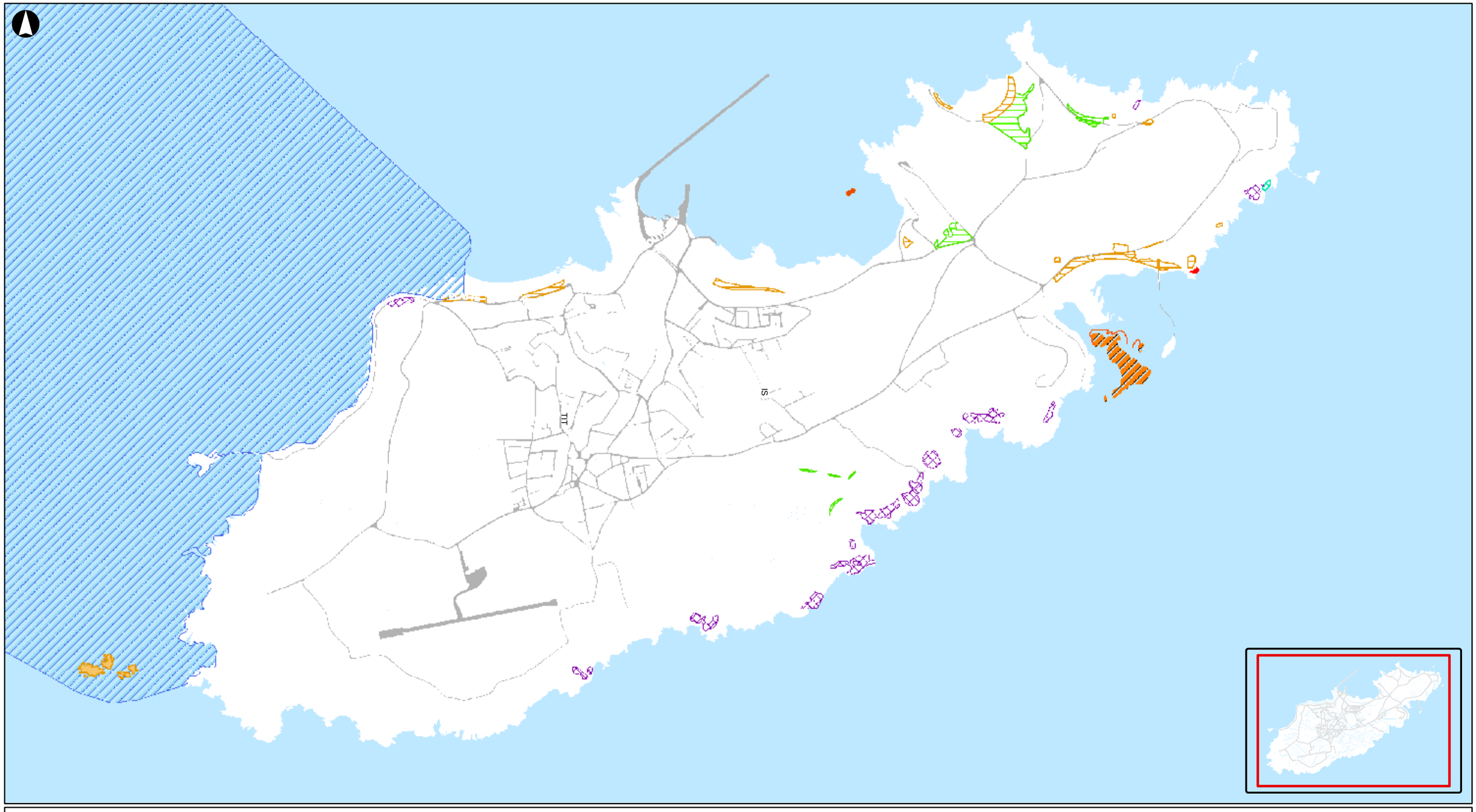
Scale at A3
1:18,000

0 0.125 0.25 0.5 Miles

Drawing No
NES002

Issue
P1

A3



Legend

EC Habitats Directive

- Open grassland
- Dry Atlantic coastal heaths with Erica vagans
- Vegetated sea cliffs of the Atlantic and Baltic coasts
- Gannetries: Les Etacs; Ortac
- Fixed coastal dunes with herbaceous vegetation

OSPAR Convention

- Zostera beds
- Zostera beds
- Zostera beds
- Ramsar site
- Glasswort and other annuals colonising mud and sand

Table C.2 of Appendix C presents all identified terrestrial and inter-tidal habitats. The collation of mapping data remains on-going and therefore not all habitats identified in Table C.2 are represented on this map. Further GIS data is held by the Planning Office for sub-tidal habitats, which are not shown on this map.

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Fax +44 20 7580 3924
www.arup.com

Island Hall
Alderney GY9 3UE
Tel +44 1481 822811
Fax +44 1481 822436
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Content
Map F.4
Identified habitats of biodiversity importance on Alderney
International tier
Alderney

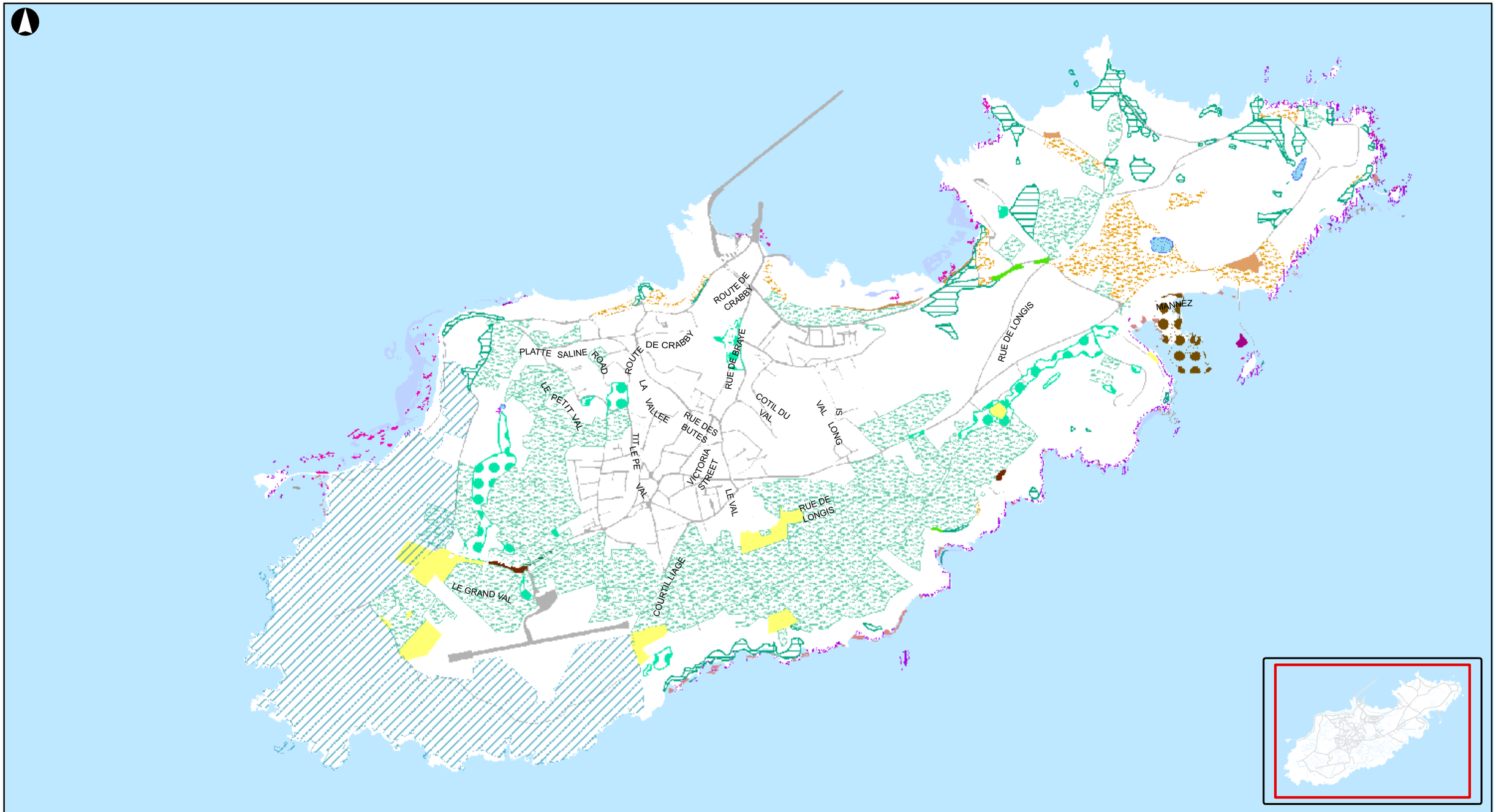
Scale at A3
1:18,000

0 0.125 0.25 0.5 Miles

Drawing No
NES007

Issue
P1

A3



See next page for map legend

Table C.2 of Appendix C presents all identified terrestrial and inter-tidal habitats. The collation of mapping data remains on-going and therefore not all habitats identified in Table C.2 are represented on this map. Further GIS data is held by the Planning Office for sub-tidal habitats, which are not shown on this map.

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13 Fitzroy Street
London W1T 4BQ
Tel +44 20 7636 1531
Fax +44 20 7580 3924
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Island Hall
Alderney GY9 3UE
Tel +44 1481 822811
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Content

Map F.5
Identified habitats of biodiversity importance on Alderney
Regional tier
Alderney

Scale at A3

1:18,000

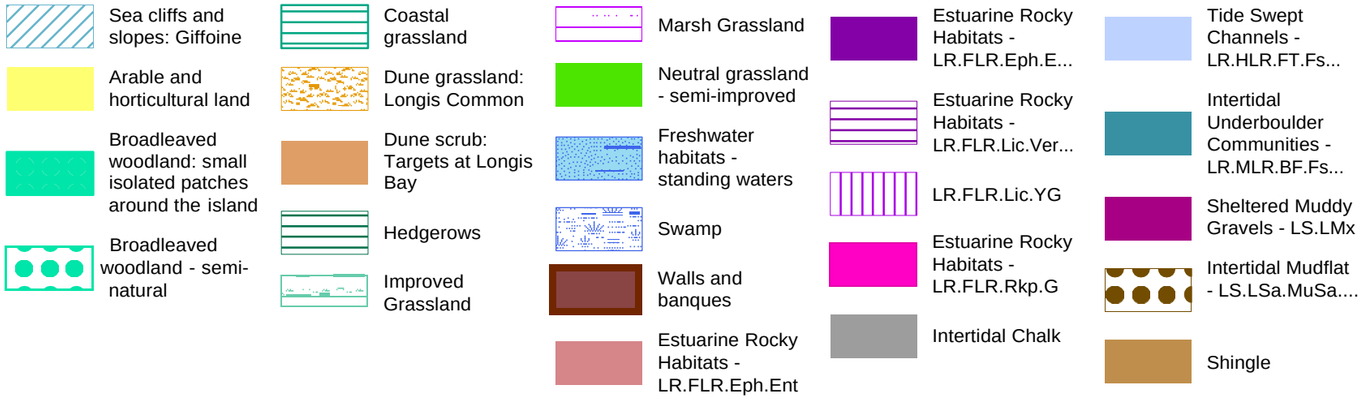
0 0.125 0.25 0.5 Miles

Drawing No **NES005**

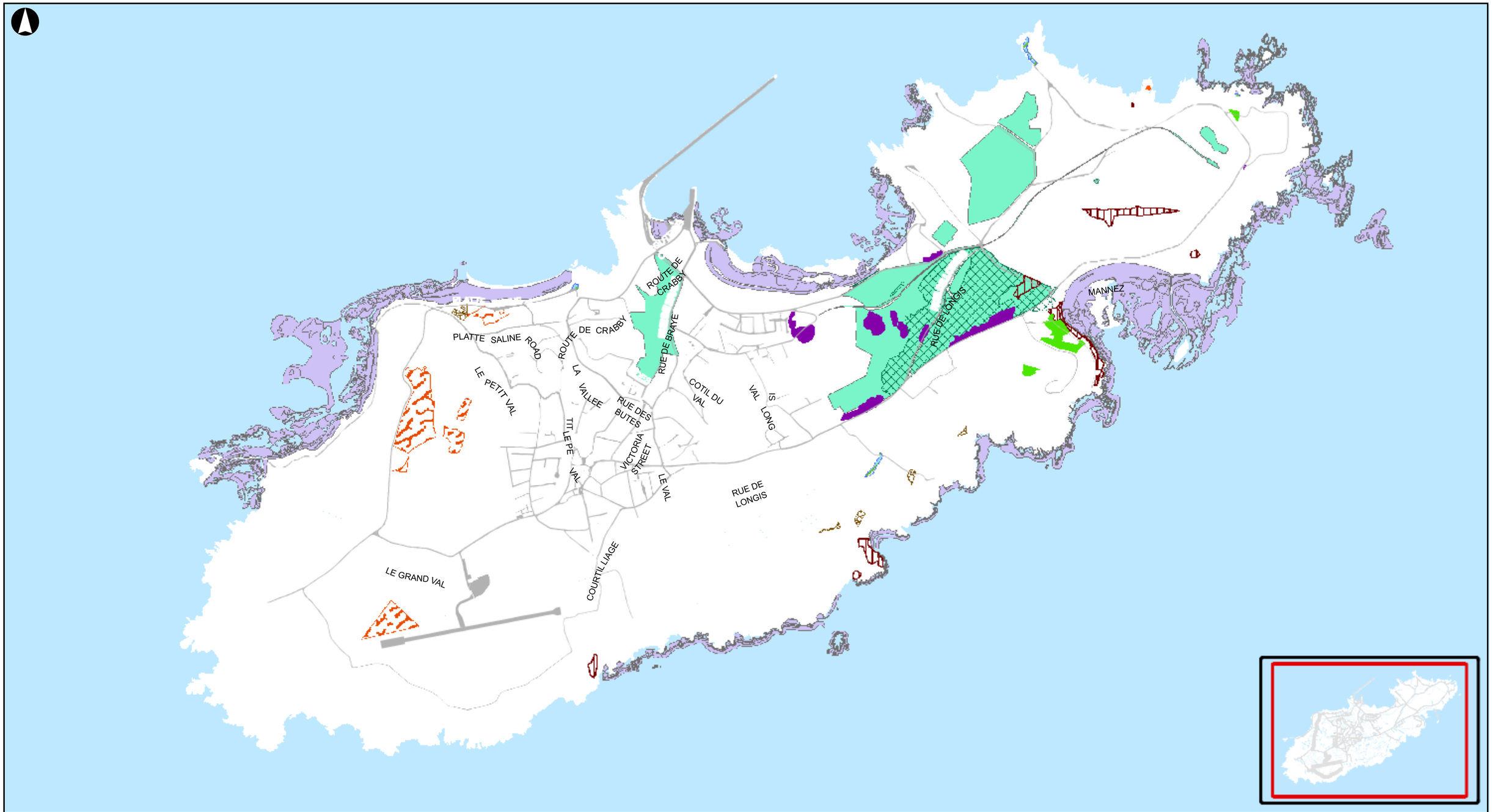
Issue **P1**

A3

Legend


Sea cliffs and slopes: Giffoine
Arable and horticultural land
Broadleaved woodland: small isolated patches around the island
Broadleaved woodland - semi-natural
Coastal grassland
Dune grassland: Longis Common
Dune scrub: Targets at Longis Bay
Hedgerows
Improved Grassland
Marsh Grassland
Neutral grassland - semi-improved
Freshwater habitats - standing waters
Swamp
Walls and banques
Estuarine Rocky Habitats - LR.FLR.Eph.Ent
Estuarine Rocky Habitats - LR.FLR.Eph.E...
Estuarine Rocky Habitats - LR.FLR.Lic.Ver...
LR.FLR.Lic.YG
Estuarine Rocky Habitats - LR.FLR.Rkp.G
Intertidal Chalk
Tide Swept Channels - LR.HLR.FT.Fs...
Intertidal Underboulder Communities - LR.MLR.BF.Fs...
Sheltered Muddy Gravels - LS.LMx
Intertidal Mudflat - LS.LSa.MuSa....
Shingle

A3



Legend

- Amenity grassland
- Boulders/rocks above High Tide mark
- Bracken - Continuous
- Non-native cliff vegetation
- Poor semi-improved grassland
- Scrub - scattered
- Tall herb and fern - ruderal
- Woodland - Coniferous - Plantation
- Parklands and Open Space
- Intertidal Habitats (Consolidated Layer)

Table C.2 of Appendix C presents all identified terrestrial and inter-tidal habitats. The collation of mapping data remains on-going and therefore not all habitats identified in Table C.2 are represented on this map. Further GIS data is held by the Planning Office for sub-tidal habitats, which are not shown on this map.

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ARUP

13 Fitzroy Street
London W1T 4BQ
Tel +44 20 7636 1531
Fax +44 20 7580 3924
www.arup.com

Island Hall
Alderney GY9 3UE
Tel +44 1481 822811
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Content
Map F.6
Identified habitats of biodiversity importance on Alderney
Local tier
Alderney

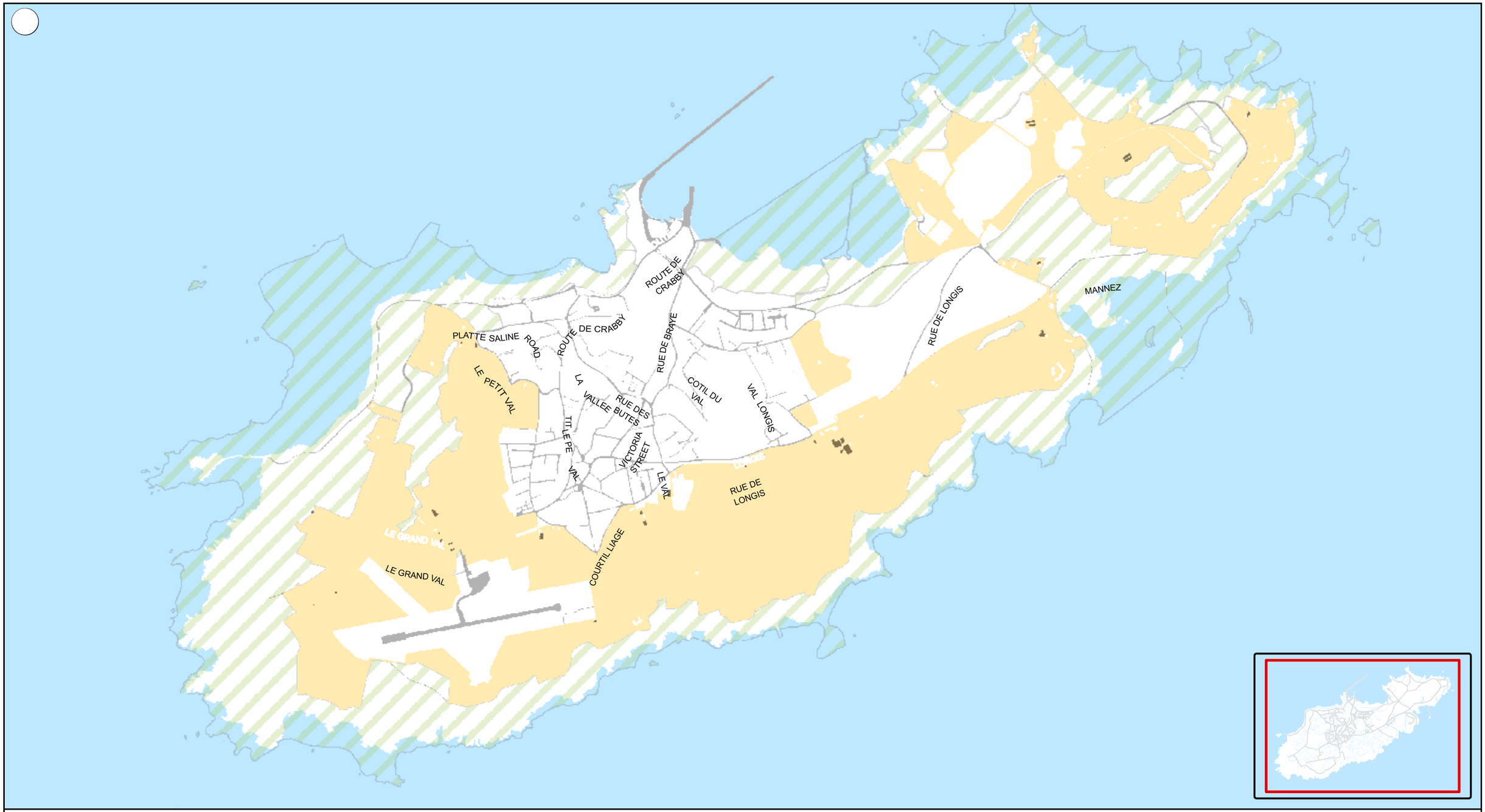
Scale at A3
1:18,000

0 0.125 0.25 0.5 Miles

Drawing No
NES005

Issue
P1

A3



Legend

- Agricultural Zone
- Protected Area Zone
- Agricultural buildings in the Designated Area

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Tel +44 20 7636 1531
Fax +44 20 7580 3924
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Island Hall
Alderney GY9 3UE
Tel +44 1481 822811
Fax +44 1481 822436
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Content
Map F.7
Agricultural land and buildings
Alderney

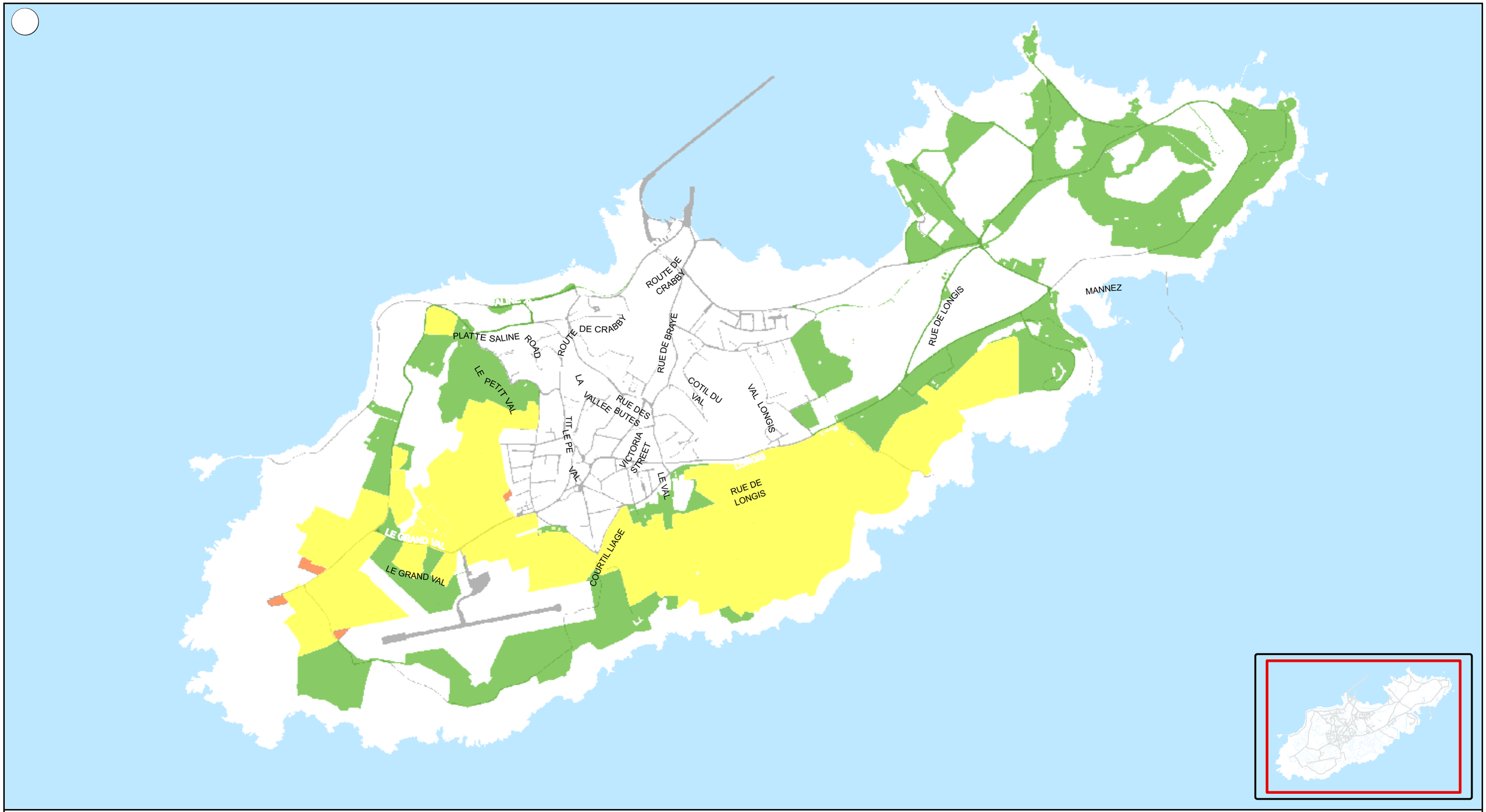
Scale at A3
1:18,000

0 0.125 0.25 0.5 Miles

Drawing No
NES008

Issue
P1

A3



Legend

- Agricultural designation in agricultural use
- Agricultural designation not in agricultural use
- Not agricultural designation in agricultural use

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Fax +44 20 7580 3924
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Content
Map F.8
Agriculture
Alderney

Scale at A3
1:18,000

0 0.125 0.25 0.5 Miles

Drawing No
NES001

Issue
P1

A3