

# Local Development Plan | 2030

## Draft Plan Strategy

Evidence Paper 12: Minerals

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## Executive Summary

- Minerals planning is a regional matter as individual Councils within Northern Ireland do not have all the natural resources they need for their micro-economies, and so will be dependent on other Councils and beyond for security of supply.
- A newly formed Regional Minerals Working Group will explore this provincial aspect as well as the major void in both regional and local-level information on the minerals industry.
- Regional planning policy requires Local Development Plans to ensure sufficient local supplies of construction aggregate; to safeguard mineral resources of economic or conservation value; and identify areas that should be protected from minerals development.
- Although it is not possible to quantify the amount of minerals required over the Local Development Plan period up to 2030, there is a need to ensure that supplies of raw materials are provided in pace with any economic growth that occurs.
- Mineral resources within Antrim and Newtownabbey include:
  - a) Plentiful stocks of igneous rocks for construction aggregate;
  - b) Minor deposits of sandstone, limestone, rhyolite, perlite, and peat;
  - c) Extensive reserves of lignite, located to the south west of Crumlin and under Lough Neagh; and
  - d) Indications that there may be significant, as yet undiscovered, oil or gas fields, with one of the main target areas being the Lough Neagh basin. Regional policy states there should be a presumption against unconventional hydrocarbon extraction methods until there is sufficient and robust evidence on all environmental impacts.
- There are five active mineral extraction sites, and one mineral landing site within the Borough. They provide supplies of hard rock and Lough Neagh sand and gravel to the Borough and wider Belfast area.

# 1 Introduction

- 1.1 This is one of a series of background papers and studies being presented as part of the evidence base to inform the preparation of the Antrim and Newtownabbey Local Development Plan 2030 (LDP). This paper draws together the evidence base used in relation to the topic of minerals. This paper should be read alongside the LDP to understand the rationale for the decisions therein. The evidence in this paper was collated at a point in time. Evidence papers should be read collectively.
- 1.2 In line with Departmental guidance, the Council has updated its evidence base to inform the next stage of the LDP, known as the Plan Strategy. This Paper updates the 'Facilitating Economic Development' baseline Evidence paper, insofar as it relates to minerals, which accompanied the Preferred Options Paper (POP), published in January 2017.
- 1.3 It should be noted that the evidence base collected to inform the draft Plan Strategy also forms the basis for additional assessments and appraisals required as part of the LDP preparation process, most notably the Sustainability Appraisal.
- 1.4 The purpose of this paper is to clarify the current planning position on minerals development within the Antrim and Newtownabbey Borough Council area and to examine available evidence.
- 1.5 The paper commences by outlining the policy context in which minerals planning sits, including extant operational planning policy and legacy development plans for the Borough. It highlights comments made during the public consultation following the publication of the Council's Preferred Options Paper (POP) regarding minerals.
- 1.6 Following these matters, this paper continues by examining how the Council's LDP can:
  - Ensure sufficient local supplies of construction aggregates for the LDP period;
  - Safeguard mineral resources that are of economic or conservation value and seek to ensure that workable resources are not sterilised by other surface development that would prejudice future exploitation; and
  - Identify areas that should be protected from minerals development because of their intrinsic landscape, amenity, scientific or heritage value.
- 1.7 These matters are all suggested content for a LDP according to the Strategic Planning Policy Statement.

## 2 Legislative Context

### The Planning Act (Northern Ireland) 2011

- 2.1 The Planning Act (Northern Ireland) 2011 (hereafter referred to as the 2011 Act) is the principal planning legislation in Northern Ireland, which underpins the reformed two-tier planning system that commenced on 1 April 2015. It introduced the plan-led system, where the LDP is the primary consideration for decision making on all new development schemes and proposals will be required to accord with its provisions unless, exceptionally other material considerations indicate otherwise.
- 2.2 Under the new Planning System introduced in 2015, the LDP will comprise of two documents, a Plan Strategy and a Local Policies Plan that will be prepared in sequence. It also requires the LDP to be subject to a Sustainability Appraisal.
- 2.3 The 2011 Act provides a planning definition for the following terms:

**Table 1: 2011 Act Mineral Planning Definitions**

Term	2011 Act Definition
Minerals	<i>'All minerals and substances in or under land of a kind ordinarily worked for removal by underground or surface working, except that it does not include turf cut for purposes other than sale'.</i>
Minerals development	<i>'Development consisting of mineral operations or involving the deposit of mineral waste'.</i>
Mining operations	<i>'(A) the winning and working of minerals in, on, or under land whether by surface or underground working; and (b) the management of waste resulting from the winning, working, treatment and storage of minerals.'</i>

- 2.4 The 2011 Act makes provision for the Review of Old Mineral Permissions (ROMPs), to ensure their planning conditions meet modern expectations and current environmental standards. It also outlines powers to impose aftercare conditions and compensation measures in relation to minerals development.
- 2.5 The legislation makes provision for mineral sites to be classed as Phase 1 sites if they had been granted approval before 31 December 1980 and Phase 2 sites if they have been granted approval after 31 December 1980 but before 31 December 1993. The pieces of legislation both state that all owners of Phase 1 and Phase 2 sites must apply to the planning authority to have the conditions to which their permission relates reviewed.
- 2.6 However, the 2011 Act requires further legislation in the form of an Order, before the ROMPS can be undertaken. This responsibility lies with the

Department for Infrastructure, who have advised the Council that there is currently no timetable for commencing the ROMPS provisions within the 2011 Act.

### **The Planning (Local Development Plan) Regulations (Northern Ireland) 2015**

- 2.7 These Regulations set out the sequence in which the Council's new LDP is being prepared, and in which will sit the Minerals Strategy, operational planning policy for mineral proposals, and mineral zonings and designations. The Regulations provide detail on the content and procedure of each stage in the plan preparation process and Independent Examination.

### **The Planning (Statement of Community Involvement) Regulations (Northern Ireland) 2015**

- 2.8 These Regulations set out the sequence in which the Council's Statement of Community Involvement (SCI) is to be prepared and provides detail on the content and procedures required. The Council published its SCI in January 2016 the purpose of which is to define how the Council will engage with the community in the delivery of the LDP. It is set within the context of the Council's Corporate Plan and meets the requirements of the 2011 Act.

### **Northern Ireland (Miscellaneous Provisions) Act 2006**

- 2.9 Section 25 of the Northern Ireland (Miscellaneous Provisions) Act 2006 requires all Northern Ireland Departments and a Council, in exercising their functions, to act in the way they consider best calculated to contribute to the achievement of sustainable development. Section 5 of the 2011 Act copper-fastens this duty by requiring those who exercise any function in relation to LDPs to do so with the objective of furthering sustainable development.

### **Local Government Act (Northern Ireland) 2014**

- 2.10 The Local Government Act (Northern Ireland) 2014 introduced a statutory link between a Council's Community Plan and LDP, and requests that the preparation of the LDP must take account of the Community Plan.

### **Section 75 of the Northern Ireland Act 1998**

- 2.11 The Council has a statutory duty under Section 75 of the Northern Ireland Act 1998 as a public authority, in carrying out its functions relating to Northern Ireland, to have due regard to the need to promote equality of opportunity between the nine equality categories of persons of different religious belief, political opinion, racial group, age, marital status or sexual orientation; men and women generally; persons with a disability and persons without; and persons with dependants and persons without.
- 2.12 Council has engaged and will continue to engage with Section 75 groups throughout the LDP process, adhering to the Council's SCI.

**Rural Needs Act (Northern Ireland) 2016**

- 2.13 The Rural Needs Act (NI) 2016 provides a statutory duty on public authorities to have due regard to rural needs when developing, adopting, implementing or revising policies, strategies and plans, and when designing and delivering public services and came into effect for Councils in June 2017.
- 2.14 Rural needs will be an ongoing and integral component of the Council's LDP.

**The Environmental Assessment of Plans and Programmes Regulations (Northern Ireland) 2004**

- 2.15 It is a statutory requirement that all plans and programmes that are likely to have a significant environmental effect must be subject to a Strategic Environmental Assessment (SEA). The European Union Directive '2001/42/EC' states that an SEA is mandatory and was transposed into local legislation in the form of The Environmental Assessment of Plans and Programmes Regulations (Northern Ireland) 2004 (the EAPP (NI) Regulations). The objective of the SEA directive is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the Council's LDP, with the view to promoting sustainable development.
- 2.16 The SEA is an ongoing process and must be carried out in conjunction with, and integrated into the LDP process. Under the provisions of the SEA Directive and the Regulations, an environmental report is published with the LDP document.

**The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995**

- 2.17 The LDP is required to consider its impact on the integrity of Natura 2000 sites (these comprise Special Areas of Conservation, Special Protection Areas and RAMSAR Sites) and will be subject to a Habitats Regulation Assessment (HRA). Similar to the SEA the HRA is an on-going process, which will take place at key stages during the preparation of the LDP. The Regulations contribute to transposing the requirements of the EC Habitats and Birds Directives.

**The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017**

- 2.18 These Environmental Impact Assessment (EIA) Regulations are to reinforce the quality of decision-making and improve the current levels of environmental protection. Notably, the extractive industry is heavily regulated through this legislation, with the majority of mineral operations being specifically listed as Schedule 1 and 2 developments.
- 2.19 The EIA Directive has been in force throughout the EU since 1985. As a result, along with the formation of a specialised minerals planning unit within the former Planning Service, it is generally accepted that planning permissions granted for quarrying development since the early 1990s have adequate environmental conditions attached. Permissions granted during the 1970s and 1980s, following the implementation of the Planning (General Development)



Order (Northern Ireland) 1973 may not have adequate conditions attached and subsequently need to be reviewed.

### **The Planning (General Permitted Development) Order (Northern Ireland) 2015**

- 2.20 This GPDO clarifies that there are certain permitted development rights where planning permission is not required. This includes exploration for petroleum, allowing limited borehole drilling, seismic surveys and other excavations. Importantly, there are certain limitations and conditions associated with this temporary permitted development right. For instance, the developer must notify the planning authority of the development, and the Council can decide whether or not the permitted development rights should be removed, and the proposal be made subject to the full planning application process.
- 2.21 In addition, where development is identified as a Schedule 1 or 2 development as defined in The Planning (EIA) Regulations (Northern Ireland) 2017, and an EIA is applicable based on the detail of the proposed development, permitted development rights do not apply (Article 3(8)).
- 2.22 The permitted development rights for mineral exploration are subject to a review, which the Department for Infrastructure commenced in March 2016, by holding a Call for Evidence. This public consultation closed in May 2016, and a report on the representations received was published in December 2016. Overall, there is support for an update of the GPDO in relation to the drilling of petroleum exploration boreholes, to bring Northern Ireland in line with the rest of the UK, where that type of exploration is excluded from permitted development rights.

### **Mineral Development Act (Northern Ireland) 1969**

- 2.23 This Act vested most minerals in what is now Department for the Economy (DfE) and enabled it to grant prospecting licences and mining licences for the exploration and development of minerals. The legislation covers all minerals with three main exceptions:
- Gold and silver belonging to the Crown Estate;
  - A few mineral deposits (mainly salt); and
  - 'Common' substances, including crushed rock, sand and gravel, and brick clays.
- 2.24 The Mineral Development (Applications, Fees and Model Clauses) Regulations (Northern Ireland) 1970 furthers this Act, controlling the development. For instance, the licensee shall keep the Department informed of any knowledge gained as to the existence, character, extent or value of the mines and minerals in the lands to which the mineral licence relates.

**Petroleum (Production) Act (Northern Ireland) 1964**

- 2.25 Any person wishing to explore for, drill for, or extract oil or gas in Northern Ireland must hold a Petroleum Licence granted by the Department for the Economy under this 1964 Act and subordinate legislation. Further legislation associated with licencing includes the Petroleum Production Regulations (Northern Ireland) 1987, Petroleum Production Royalties 1965, the Petroleum Production (Amendment) Regulations (Northern Ireland) 2010, and the Hydrocarbons Licensing Directive Regulations (Northern Ireland) 2010.

**Quarries (Northern Ireland) Order 1983**

- 2.26 This regulates practical matters for quarries, such as safety provisions, but notable to this evidence paper, is the requirement for operators to provide the Department with annual mineral returns, under Article 18(1). Quarries in the region are regulated by the Quarries Regulations (Northern Ireland) 2006.

**Groundwater Regulations (Northern Ireland) 2009 and Amendments**

- 2.27 These regulate the abstraction of groundwater, ensure water quality, pollution control, monitoring, and offences related to groundwater supplies.

**The Planning (Management of Waste from Extractive Industries) Regulations (Northern Ireland) 2015**

- 2.28 These Regulations were provided under the EU Mining Waste Directive to manage extractive waste in order to prevent environmental damage or threat to human health. It sets out specific requirements on operators for the management of waste material arising from the on-shore prospecting, extraction, treatment and storage of mineral resources and the working of quarries.
- 2.29 The Regulations define 'extractive waste, as *'waste produced from an extractive industry and resulting from the prospecting, winning, working, treatment and storage of minerals'*, with a number of small exceptions. The Regulations introduce the requirement for Waste Management Plans. This will be reflected in the Council's LDP.

### **3 Regional Policy Context**

**Draft Programme for Government Framework 2016-2021**

- 3.1 The key aim of the draft Programme for Government (PfG) is to grow a sustainable economy through investing in the future, tackling disadvantage, improving health and wellbeing, protecting the people and the environment, building a strong and shared community and delivering high quality services.
- 3.2 The delivery of many of the strategic outcomes will be the responsibility of central government, however, the LDP will play a supporting role in helping to deliver many of these. Any specific responsibilities for the LDP and its minerals

policies will be borne out of discussions with central government departments, especially the Department for Infrastructure, the Department for the Economy (including Geological Survey of Northern Ireland), and the Department of Agriculture, Environment and Rural Affairs. The strategic nature of the outcomes is particularly relevant since minerals holds such regional importance.

### **Sustainable Development Strategy Northern Ireland 2010**

- 3.3 One of the key principles outlined in the Everyone's Involved - Sustainable Development Strategy (SDS) relates to 'Living within Environmental Limits'. This promotes the need to protect and improve the environment with emphasis on the limits of the planet's environment, resources and biodiversity and to ensure that finite resources are protected for future generations. One of the key priority areas relates to 'striking an appropriate balance between the responsible use and protection of natural resources in support of a better quality of life and a better quality environment'. This promotes sustainable land and marine management, better planning and management of development in ways which are sustainable and which contribute to creating a better environment.
- 3.4 Mineral development has the potential for the loss of, fragmentation, and damage to habitats and/or species in relation to European sites. Minerals require protection from degradation and safeguarding for future use. Sustainable use of minerals can help to support the economy.

### **Regional Development Strategy 2035**

- 3.5 The Regional Development Strategy 2035 (RDS) aims to protect and enhance the environment for current and future generations. It recognises that Northern Ireland's environment is one of its greatest assets which has benefits in terms of the economy and quality of life.
- 3.6 Whilst the RDS does not provide specific policy aims and objectives for minerals, its Regional Guidance (RG 11) provides objectives for the conservation, protection, and enhancement of our built heritage and natural environment. These matters have been included within the Council's new minerals planning policy. Spatial Framework Guidance (SFG 13) recognises rural communities need sustained, and since mineral development is largely rural in nature, the Council's LDP can play its part in supporting this rural economy.

### **Regional Transportation Strategy for Northern Ireland 2002-2012**

- 3.7 The Regional Transport Strategy (RTS) for Northern Ireland 2002-2012 identifies strategic transportation investment priorities and considers potential funding sources and affordability of planned initiatives over the strategy period. The RTS is a 'daughter document' of the Regional Development Strategy for Northern

Ireland 2035, which sets out the spatial development framework for Northern Ireland up to 2035.

- 3.8 This Strategy was supported by three initiatives namely Belfast Metropolitan Transport Plan 2004, Regional Strategic Transport Network Transport Plan 2015 and the Sub-Regional Transport Plan 2007.

#### **Belfast Metropolitan Transport Plan 2004**

- 3.9 The Belfast Metropolitan Transport Plan (BMTP) 2004 is the local transport plan for the Belfast Metropolitan Area (BMA) including Metropolitan Newtownabbey. This plan will deliver a phased and costed implementation programme of transport schemes to 2015. This plan takes forward the strategic initiatives of the RTS 2002-2012.

#### **Regional Strategic Transport Network Transport Plan 2015 (2005)**

- 3.10 The former Department for Regional Development (DRD), now the Department for Infrastructure (DfI) prepared the Regional Strategic Transport Network Transport Plan (RSTN TP) 2015. The Plan is based on the guidance set out in the RDS 2035 and the RTS 2002-2012. The Plan presents a range of multi-modal transport initiatives to manage, maintain and develop Northern Ireland's Strategic Transport Network. The Regional Strategic Transport Network of Northern Ireland comprises the complete rail network, five Key Transport Corridors (KTCs), four Link Corridors, the Belfast Metropolitan Transport Corridors and the remainder of the trunk road network.

#### **Sub-Regional Transport Plan 2007**

- 3.11 The Sub-Regional Transport Plan (SRTP) 2007 covers Antrim and takes forward the strategic initiatives of the Regional Transportation Strategy (RTS) for Northern Ireland 2002-2012. The SRTP deals with the transport needs of the whole of Northern Ireland with the exception of the BMA and the rail and trunk road networks, which are covered, in the BMA and RSTN TP.

#### **Ensuring a Sustainable Transport Future – 'A New Approach to Regional Transportation' 2011**

- 3.12 Ensuring a Sustainable Transport Future (ESTF) was developed to build on the RTS for Northern Ireland 2002-2012 and to refocus and rebalance the investment in the future. Unlike the 2002 Strategy, Ensuring a Sustainable Transport Future (ESTF) does not include details of schemes or projects. Rather, the Department has set three High Level Aims for transportation along with twelve supporting Strategic Objectives, covering the economy, society and the environment. The ESTF complements the RDS 2035 and contains high-level aims and strategic objectives to support the growth of the economy, enhance the quality of life for all and reduce the environmental impact of transport. It sets out the approach to regional transportation and is used to guide strategic investment decisions beyond 2015. Work is progressing on the implementation

of the ESTF and the Council will ensure that any future transportation projects affecting the Borough are appropriately reflected in the LDP.

### **Forthcoming Transport Plans**

- 3.13 The Department for Infrastructure is currently preparing new Transport Plans which will cover the Borough. This includes a new Regional Strategic Transport Network Plan for all of Northern Ireland and a new Belfast Metropolitan Transport Plan which will cover Belfast City Council, Lisburn and Castlereagh City Council, Ards and North Down Borough Council and Mid and East Antrim Borough Council as well as Antrim and Newtownabbey Borough Council. Antrim and Newtownabbey Borough Council is represented on the Project Boards for both plans along with other Councils.
- 3.14 As part of the preparation for the Belfast Metropolitan Transport Plan, the Department is preparing a Transport Study for the greater Belfast area and the Council has taken the emerging study into consideration in the preparation of its draft Plan Strategy. Work will also continue to bring forward the next stage of the LDP, the Local Policies Plan, alongside the Department's Transport Plans.
- 3.15 Further information on the Transport Study and Transport Plans is available on the Department of Infrastructure's website <https://www.infrastructure-ni.gov.uk/>.

### **Sustainable Water – A Long-Term Water Strategy for Northern Ireland 2015-2040**

- 3.16 'Sustainable Water – A Long-Term Water Strategy for Northern Ireland (2015-2040)' sets out a range of initiatives to deliver the Executive's long term goal of a sustainable water sector in Northern Ireland. The Strategy recognises how planning can impact on flood risk and water quality and aims to ensure that existing water and sewerage infrastructure and investment proposals inform future planning decisions and the preparation of LDPs.
- 3.17 The Strategy sets out a number of matters that the Council's new LDP will need to take into account which are summarised below:
- Ensuring planning decisions are informed by up to date information on the risk from all significant sources of flooding;
  - Prevention of inappropriate development in high flood risk areas and ensuring that future development does not increase flood risk;
  - Exceptional development within high flood risk areas must make provision for adequate mitigation measures;
  - Ensure surface water drainage is adequately addressed; and
  - Planning policy should promote sustainable water and sewerage services by making appropriate space for water and sewerage infrastructure including sustainable drainage systems.

**Strategic Planning Policy Statement 2015**

3.18 The policy approach outlined by the Strategic Planning Policy Statement (SPPS) seeks to balance the need for mineral resources against the need to protect and conserve the environment.

3.19 The Regional Strategic Objectives for minerals and minerals development relate to:

- The facilitation of sustainable minerals development;
- Minimising the effects of minerals development on society and the wider environment; and
- Ensuring that minerals sites are restored in a sustainable, safe, and timely manner, which promotes reuse.

3.20 In preparing LDPs, the SPPS states that Councils should bring forward appropriate policies and proposals that:

- Ensure sufficient local supplies of construction aggregates can be made available for use within the local, and where appropriate, the regional market area and beyond, to meet likely future development needs over the LDP period;
- Safeguard mineral resources which are of economic or conservation value, and seek to ensure that workable mineral resources are not sterilised by other surface development which would prejudice future exploitation; and
- Identify areas that should be protected from minerals development because of their intrinsic landscape, amenity, scientific or heritage value (including natural, built and archaeological heritage). There should be a general presumption against minerals development in such areas.

3.21 With regard to an evidence base, the SPPS points toward the Minerals Resources Map of Northern Ireland. This is discussed later in this paper.

**Other Planning Policy**

3.22 Insofar as they relate to minerals development, extant operational planning policy is contained within:

- A Planning Strategy for Rural Northern Ireland (PSRNI);
- Planning Policy Statement (PPS) 2: Natural Heritage;
- PPS 6: Planning, Archaeology and the Built Heritage;
- PPS 11: Planning and Waste Management;
- PPS 15 (Revised): Planning and Flood Risk; and
- PPS 21: Sustainable Development in the Countryside.

- 3.23 These planning policies, as well as the SPPS, have been taken into consideration in the formulation of the detailed development management policies, which are contained within the draft Plan Strategy document.
- 3.24 The LDP has been prepared taking account of Departmental policy and guidance. Departmental policy and guidance is available by contacting the Department for Infrastructure.
- 3.25 The Development Plan Practice Note 7 'The Plan Strategy' published in 2015, guides officers and relevant users through the key requirements for the preparation of the Plan Strategy and deals primarily with procedures as well as good practice.
- 3.26 Development Control Advice Notes (DCANs) are non-statutory planning guidance, which is intended to supplement, elucidate and exemplify policy documents, including PPSs and development plans. The DCANs relating to Minerals is DCAN 10 – Environmental Impact Assessments.

### **Strategic Energy Framework 2010**

- 3.27 This framework aims to achieve a more secure and sustainable energy system for Northern Ireland. It recognises the region's dependence on energy minerals, such as oil and coal for heat and electricity production. It further recognises the indigenous gas and lignite resources, and the environmental issues surrounding these fuels.

### **Valuing Nature: A Biodiversity Strategy for Northern Ireland to 2020**

- 3.28 Published by DAERA in 2015, this Strategy highlights that peatland in Northern Ireland is one of the most significant groups of habitats in Europe. Recently their value as a carbon store, as a sponge for flood water, and as a filter to clean drinking water has become very high.

### **Mineral Prospecting and Petroleum Licences Map**

- 3.29 Prospecting for precious metals is conducted under permissions from the Crown Estate Commissioners (CEC). Companies wishing to explore for precious metals should apply simultaneously to CEC for a precious metal option and to the Department for a mineral prospecting licence. Prospecting licences are normally granted for a period of six years.
- 3.30 Licensees are required to carry out an agreed scheme of prospecting and to report the results of their work programmes to the Department for the Economy. A licence gives the licensee the exclusive right to explore over the whole licensed area, which can cover up to 250 square kilometres.
- 3.31 Further information on prospecting licenses can be found on the Department for the Economy's website, <https://www.economy-ni.gov.uk>.

### **Minerals Resource Map of Northern Ireland**

- 3.32 In May 2012, the Minerals Resource Map of Northern Ireland was launched by the Environment Minister and the Minister of Enterprise, Trade and Investment. It can be viewed on the British Geological Survey website, at <https://www.bgs.ac.uk/mineralsuk/planning/resource.html#NI>. The map provides a tool to assist future decisions on a county-by-county basis, in relation to the supply of minerals and in the protection of the environment. The map was developed by British Geological Survey, Minerals UK, and the Centre for Sustainable Mineral Development. While this map is a useful reference to assist in strategic decision making, the data does not shed light on the extent of each mineral deposit, its quality, nor its commercial viability. This can only be determined through site-by-site exploration.
- 3.33 The SPPS advises that in identifying mineral resources, Councils may wish to refer to this Minerals Resource Map. The map highlights that a regional context needs to be considered to ensure adequate supplies. In recognition of this, a Regional Minerals Working Group was established, as mentioned previously in this Paper.

### **Annual Mineral Statements**

- 3.34 An Annual Quarry Return is conducted by the Department for the Economy, under Article 18(1) of the Quarries (NI) Order 1983. However, despite the legal obligation to provide a return, no operators within the Borough submitted information to the latest Return (2016). The Department uses the Annual Quarry Returns to produce an Annual Minerals Statement, which details minerals production by Council area, as well as a count of persons employed at mines and quarries within Northern Ireland as a whole. These are available on the Department for the Economy's website, <https://www.economy-ni.gov.uk>. The Department has caveated the data as response rates are varied over the years and the data should not represent trends in output.

### **Annual Purchases Survey**

- 3.35 The Department for the Economy's Annual Purchases Survey report, November 2018, notes that Northern Ireland supplies a significant 61.8% of the Province's mining and quarrying goods, with 17.3% being imported from Great Britain, 7.4% from the Republic of Ireland, 6.6% from the EU, and finally, 6.8% being sourced from the rest of the world.

## **4 Local Policy Context**

### **Legacy Development Plans**

- 4.1 The following is a list of the legacy development plans that apply to the Borough:
- Antrim Area Plan 1984-2001 and its alterations (AAP);



- Belfast Urban Area Plan 2001 (BUAP);
- Carrickfergus Area Plan 2001<sup>1</sup> (CAP);
- Draft Newtownabbey Area Plan 2005 (dNAP); and
- Draft Belfast Metropolitan Area Plan 2015 (dBMAP).

4.2 It should be noted that the Belfast Metropolitan Area Plan adopted in September 2014 was subsequently quashed as a result of a judgement of the Court of Appeal delivered in May 2017. As a consequence, the BUAP is now the statutory development plan for the Metropolitan Newtownabbey area of the Borough, with dBMAP remaining a material consideration.

4.3 One of the aims of **Antrim Area Plan 1984-2001** (adopted in 1989), and its Alterations, was to protect the proven reserves of lignite and of any mineral of outstanding importance by limiting surface developments. It was considered that surface development may prejudice the recovery of those reserves, and seeks to ensure their working with the minimum of environmental disturbance. Part 2, paragraph 14 of the Plan deals with Extraction of Aggregates and Minerals and introduces policy with which to assess planning applications. The Plan specifically designates a Lignite Reserve Policy Area to the south east of Crumlin.

### **Community Plan – Love Living Here 2017**

4.4 The Council's Community Plan, 'Love Living Here', sets out a shared vision and agreed outcomes for the area up to 2030. The successful implementation of the Community Plan will be marked by a demonstrable improvement in how services are delivered across our Borough and the quality of life our citizens experience. As such the Community Plan is an important document and has been taken into account in the preparation of the Council's LDP.

4.5 The Community Plan sets out four outcomes which are as follows:

- Our citizens enjoy good health and wellbeing;
- Our citizens live in connected, safe, clean and vibrant places;
- Our citizens benefit from economic prosperity; and
- Our citizens achieve their full potential.

4.6 It also sets out one wildly important goal namely that our vulnerable people are supported.

### **Corporate Plan – Our Borough Your Vision 2019-2030**

4.7 The Council's Corporate Plan sets out a vision for the Borough and identifies what needs to be done between now and 2030 to achieve this. The Vision for the Borough up to 2030 is defined as,

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<sup>1</sup> Insofar as it relates to that part of the legacy Carrickfergus Borough Council area at Greenisland that transferred to Antrim and Newtownabbey Borough in 2015 under Review of Public Administration (RPA).

*'A progressive, smart and prosperous Borough. Inspired by our people; Driven by ambition'.*

- 4.8 The Corporate Plan sets out a number of objectives in relation to Place, People and Prosperity. The LDP has a key role to play under the objective of 'Place' and the Corporate Plan states:

*'People take pride in their surroundings. People feel safe. Our environment, natural habitats and built heritage are protected and enhanced. We have vibrant and welcoming towns, villages, neighbourhoods, and rural areas. We have an efficient planning process that promotes positive development and sustainable growth'.*

### **Council Masterplans/Village Plans**

- 4.9 Through the Village Renewal Scheme as supported by the Rural Development Programme 2014-2020, the Council benefited from funding to devise and update plans for the development of villages in the Borough. Whilst these plans are non-statutory, they have been prepared in close conjunction with local residents and identify a range of potential projects to improve the settlements. These range from short term goals to long-term aspirations. The village plans alongside the masterplans relating to the Borough will be considered in the preparation of the LDP where relevant.

### **Council Strategies**

- 4.10 The Council has published a number of strategies and the LDP has taken these into account. In relation to minerals development, the most relevant has been the Economic Strategy, which the Council commissioned in 2018.

### **Cross Boundary Policy Context**

- 4.11 In considering the local policy context, it is important to note that the Borough does not sit in isolation. Accordingly, it will be important to take account of neighbouring local authorities comprising Belfast City Council; Lisburn and Castlereagh City Council; Armagh, Banbridge and Craigavon Borough Council; Mid Ulster District Council; and Mid and East Antrim Borough Council.
- 4.12 Neighbouring Council's Preferred Options Papers (POPs), supporting evidence base and draft Plan Strategies have been taken account of, as these are regarded as the main cross boundary documents to be considered in addition to regional guidance.
- 4.13 Table 2 indicates each Council's position in relation to minerals as set out in their POP and draft Plan Strategy documents.

**Table 2: Neighbouring Council Positions**

Council	Position
Armagh City, Banbridge and Craigavon Borough Council (ACBCBC)	<p>In their POP (March, 2018), ACBCBC recognises that minerals development needs supported in a sustainable manner. The POP identifies 16 active quarries and 2 other operating sites associated with sand and gravel extraction in Lough Neagh (outside of their Council boundary). Approximately 3.2 million tonnes of aggregates is extracted within the Council area each year, which is 13.2% of the Northern Ireland total. Main products are sandstone, limestone, sand and gravel. The annual value of quarrying amounts to £14.5 million – the highest of all 11 Northern Ireland Council areas. The POP identifies two Areas of Mineral Constraint within legacy development plans, one of which is Lough Neagh and Lough Beg RAMSAR.</p> <p>The POP Preferred Option is to designate Mineral Safeguarding Zones and Areas of Constraint on Minerals Development, where appropriate. Suitable planning policy would be adopted to manage development within these areas. These would be in line with PSRNI Policies MIN 1-8, but updated to reflect the provisions of the SPPS and the Borough's particular resources, constraints and circumstances. It would be broadened to include land stability and subsidence issues.</p>
Belfast City Council (BCC)	<p>Through their draft Plan Strategy, BCC seeks to ensure the efficient and appropriate use of minerals. Its policy approach for minerals development is in line with the RDS and SPPS.</p> <p>The Council recognises that although some hard rock aggregates occur in the Belfast Hills, the potential for future extraction will be limited by the need to protect this area for its landscape and environmental value. To meet development needs, the Council area will continue to be a net consumer of construction materials sourced from outside the Council area, including materials imported through the port or transported by road from elsewhere in Northern Ireland.</p> <p>Technical Supplement 11: Minerals, which supplements the draft Plan Strategy, clarifies that there are no active quarries in the LDP area. It states that Belfast is especially dependent on the operational quarries in Counties Antrim and Down, which supply 49% of all minerals for Northern Ireland.</p>
Lisburn and Castlereagh City Council (LCCC)	<p>Published in March 2017, LCCC's POP proposes a Sustainable Objective that seeks to manage mineral resources in a sustainable manner, protecting vulnerable landscapes and safeguarding, where appropriate. It is envisaged that this Strategic Objective can be delivered through the Preferred Option of designating Mineral Safeguarding Zones and Areas of Mineral Constraint in addition to the existing policy-led approach in relation to mineral development.</p>

	The POP notes the strategically significant lignite resource at Lough Neagh and proposes this could be protected with a Mineral Safeguarding Zone designation.
Mid and East Antrim Borough Council (MEABC)	<p>MEABC published their POP in June 2017. It includes a Strategic Objective to manage the use of mineral resources in an efficient and sustainable manner. The delivery of this Strategic Objective is anticipated through the application of the Council's Preferred Options on Mineral Reserve Areas and Areas of Constraint on Mineral Development.</p> <p>The POP notes that the Borough contains nine quarries, producing 3.2 million tonnes annually of igneous/meta-igneous rocks, limestone and bauxite. There is one active salt mine and three commercial peat extraction sites.</p>
Mid Ulster District Council (MUDC)	<p>The Council has identified that it's District possesses more jobs in mining and quarrying than any other District in Northern Ireland (NISRA Census of Employment, 2014)</p> <p>In it's draft Plan Strategy, February 2019, the Council provides planning policy for Mineral Reserve Policy Areas and spatially identifies three of these designations within the District. These designations have identified reserves that have important economic benefits. The draft Plan Strategy also provides policy for the extraction and processing of hard rock aggregates; valuable minerals and hydrocarbons; peat extraction (which notably states that applications for commercial extraction of peat will not accord with the Plan); the restoration of mineral sites; and for development that may be affected by mines, shafts and adits. The draft Plan Strategy spatially defines Areas of Constraint on Minerals Development.</p> <p>The Minerals Development Background Paper, February 2018, which supplements the draft Plan Strategy, notes the rationale behind recommending that Lough Neagh should not be designated as an Area of Constraint on Minerals Development due to its historic sand dredging activity. This position will be reviewed after the regionally significant planning application for sand extraction from Lough Neagh has been determined.</p>

- 4.14 The Council has responded to neighbouring Council's POP and LDP documents as they are published. In addition, the Council is also represented on a number of working groups and project boards to discuss cross boundary issues. This includes the Metropolitan Area Spatial Working Group and the Regional Minerals Working Group, which is referred to in the next section of this paper.
- 4.15 In terms of growth across the region, the Council view is that no neighbouring Council's growth strategy should have a negative impact on the Council's LDP in terms of resources for infrastructure provision delivered by statutory providers.

- 4.16 In consideration of neighbouring Council's documents as well as regional policy, it is the opinion of the Council that it's draft Plan Strategy is sound and is not in conflict with neighbouring Council's emerging LDPs.

## **5 Preferred Options Paper**

- 5.1 The Council's Preferred Options Paper (POP) was published in 2017 and was the first formal stage in the preparation of the LDP for the Borough and was designed to promote debate in relation to key strategic planning issues arising in the area. The POP set out a range of strategic options in relation to how and where development should be located within the Borough. It included options for our settlements, our centres, employment land and housing locations, as well as a number of other key planning issues.
- 5.2 In addition, the Council asked the public for their views on a range of planning topics and issues. A total of 148 representations were received which were considered during the development of the draft Plan Strategy document and, where relevant, these will also be considered during the preparation of the Local Policies Plan. Details are set out in the Council's published 'Preferred Options Paper Public Consultation Report 2019'.

## **6 Soundness**

- 6.1 The LDP is prepared to meet the tests of soundness as set out in the Department for Infrastructure's Development Plan Practice Note 6: Soundness (Version 2, May 2017).

## **7 Regional Minerals Context**

- 7.1 The supply of minerals is a regional matter that goes beyond Antrim and Newtownabbey and its adjoining Council areas. The Department for the Economy has responsibility for collating information in relation to quarries operating in Northern Ireland and producing an annual minerals statement. Due to the need to ensure a regional supply and the importance of LDPs in bringing forward policy in relation to minerals development the Department for the Economy established a Regional Minerals Working Group in 2018 to consider the future of minerals in relation to LDP preparation.
- 7.2 The aim of this new Working Group is initially for Councils and central government (including GSNi and British Geological Survey) to work in partnership to establish a broad outline of the minerals industry performance within Northern Ireland. Initially, it is proposed that the Group will consider:
- Supply and demand for aggregates across each of the Council areas, and Northern Ireland as a whole;

- Minerals development issues, including the potential for high value and industrial minerals; and
- Raising awareness of Minerals Licencing regime and Annual Mineral Returns, and potential economic benefits, along with environmental protections.

7.3 As the Group progresses, it may become appropriate for environmental bodies and the trade association to participate.

## **8 Local Minerals Context**

- 8.1 Minerals provide raw materials for the Borough's construction, manufacturing, and agricultural sectors. Each of these sectors generates employment and stimulates other parts of the economy, such as transportation and engineering, with the world renown CDE Group recently locating in the Borough in order to fabricate complex processing equipment required by minerals operators. It is therefore imperative to ensure continuous supplies. The Council's LDP will assist in securing continuous and sufficient local supplies. This in turn will help deliver the Council's Community Plan goal for its citizens to benefit from economic prosperity.
- 8.2 Following the publication of the Preferred Options Paper, the Council had discussions with Mineral Products Association Northern Ireland (formerly Quarry Products Association Northern Ireland), which is the Northern Ireland branch of the UK trade association for companies supplying all types of quarry products.
- 8.3 In addition to the evidence held by the Department for the Economy in relation to minerals returns, the Council also contacted mineral operators that are currently extracting within the Borough, asking them to complete a return form (Appendix 1) to detail the mineral extracted, predicted extraction rate, remaining reserves (including land banking), and when that reserve is likely to expire. They were also asked if there was potential to expand the current site, the destination of the extracted mineral, and if there were any further areas within the Borough that might be a potential mineral reserve. The Council achieved a 50% return rate from this exercise and the (confidential due to commercial sensitivities) information supplied continues to be used by the Council as an evidence base.

## **9 Sufficient Local Supply**

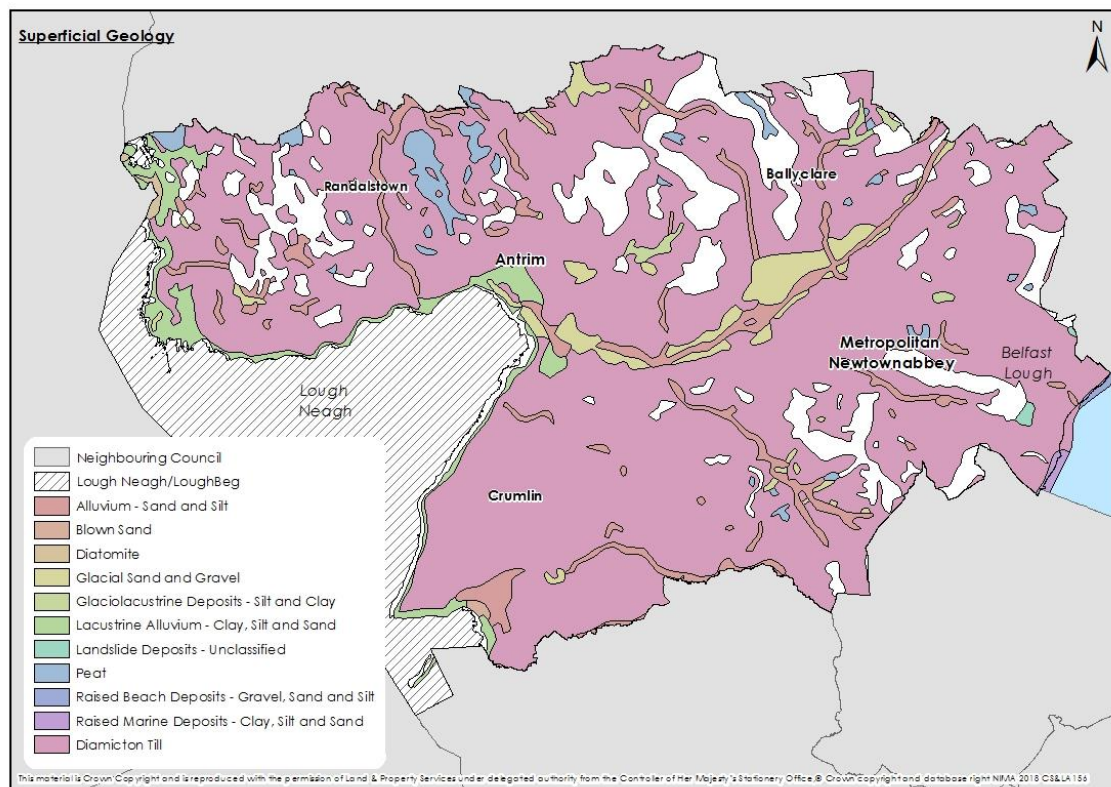
- 9.1 The Strategic Planning Policy Statement (SPPS) requires that LDPs ensure that sufficient local supplies of construction aggregates can be made available for use within the local, and where appropriate, the regional market area and beyond, to meet likely future development needs over the LDP period.

- 9.2 The Minerals Resource Map shows the Borough's position on top of a geological formation known as the 'Antrim Lava Group'. This offers an abundant stock of igneous basaltic rocks, which are useful for construction aggregate supplies. Lough Neagh is one of the main sources of good quality sand and gravel. There is also an extensive supply of lignite located outside Crumlin. Other minerals located within the Borough include, iron-rich clay, ironstone, salt, peat, and Lough Neagh Carboniferous organic rich shale.

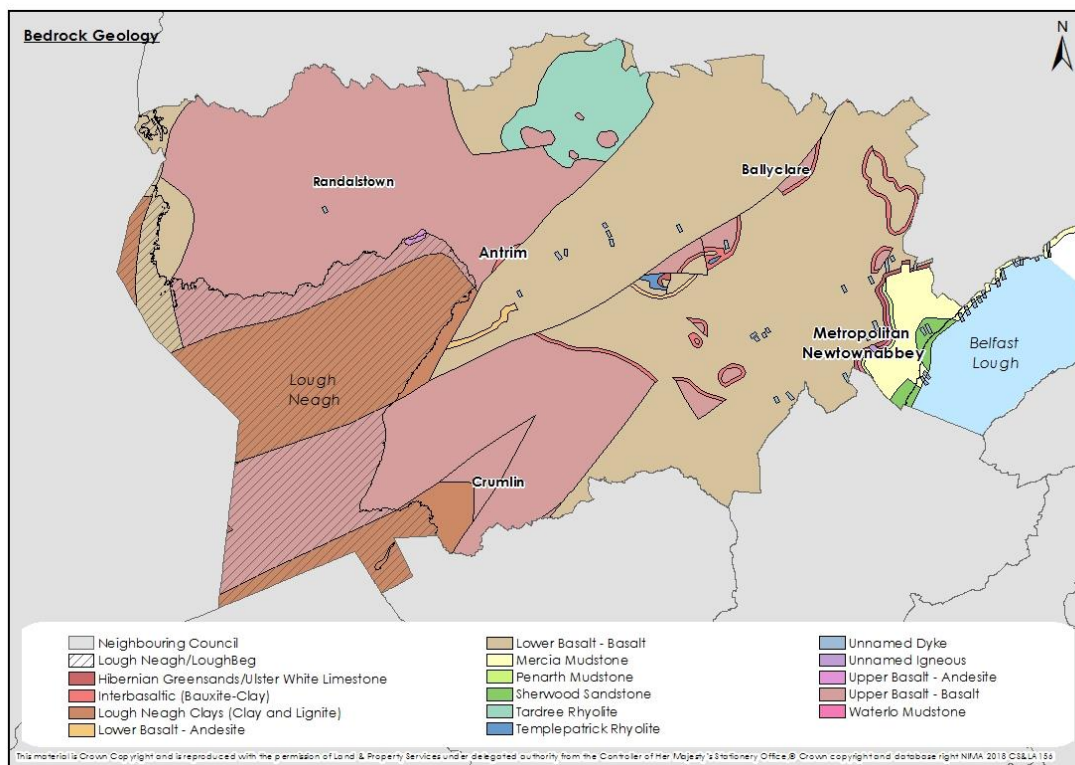
### Superficial & Bedrock Geology

- 9.3 The superficial geology (youngest of the geological formations) underlying the Borough is wide ranging as illustrated in Figure 1 below. The main superficial geology in the Borough is Diamicton, which is terrigenous sediment that has been derived from the erosion of rocks on land.

**Figure 1: Superficial Geology in the Borough**

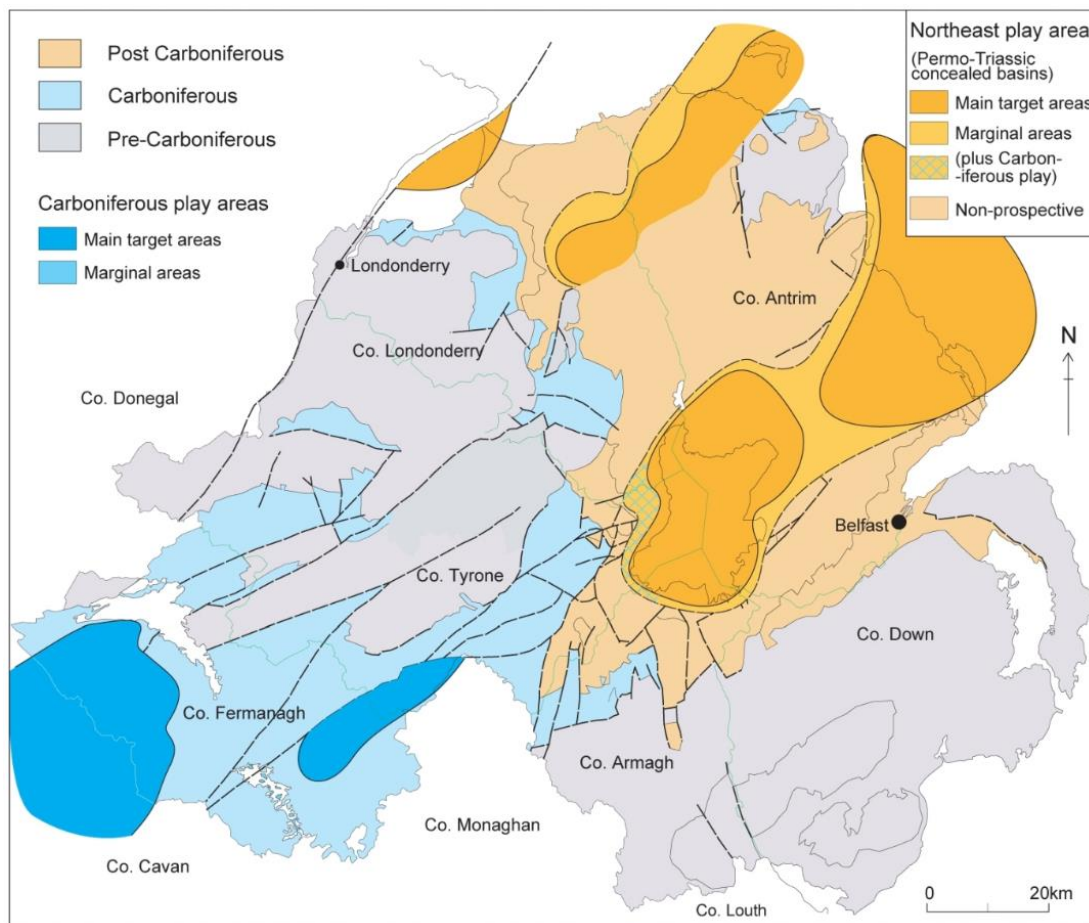


- 9.4 The Borough's position on the Antrim Lava Group, results in the primary bedrock sediment being igneous rock basalt, illustrated in Figure 2 overleaf.

**Figure 2: Bedrock Geology in the Borough**

- 9.5 The younger Permian and Triassic age rocks beneath Lough Neagh have potential for oil and gas, as illustrated in Figure 3 overleaf.
- 9.6 Lough Neagh basin is the deepest most prospective of the Permo-Triassic basins. The exploration borehole labelled 'Annaghmore No.1' identified black bituminous oil in the Permian-age Magnesian Limestone (Dolomite). In addition minor gas pockets were discovered at various intervals in the underlying Permian-age sandstones.
- 9.7 Shale gas is extracted directly from mudrocks and shales. The Carboniferous-age organic rich shales underlying Lough Neagh may have potential for unconventional shale gas production.
- 9.8 However, the distribution of shales at depths suitable for shale gas production is unknown because few exploration wells have been drilled into the basin.



**Figure 3: Oil and Gas Potential in the Borough**

Source: GSNi

### Sand and gravel

- 9.9 The Mineral Resource Map of Northern Ireland confirms that County Antrim is the third largest sand and gravel producer in Northern Ireland, principally from the dredging of Lough Neagh. According to Mineral Products Association Northern Ireland (MPANI), the Lough is one of the main sources of good quality sand and gravel in Northern Ireland with an estimated 1.5 million tonne of sand and gravel extracted each year, 30% of the Northern Ireland requirement. The sand and gravel extraction is regarded as an important source of employment at both local and indeed regional level through the extraction process, associated employers, and by supporting the construction industry itself.
- 9.10 While the main dredging takes place in the Mid Ulster District Council portion of the Lough area, sand is landed within the Borough along the loughshore at Northstone Depot, Loughview Road, Crumlin.
- 9.11 The Borough currently has no land-based sites, however, the Mineral Resource Map of Northern Ireland describes a large tract of sand and gravel along the Six Mile Water, extending east of Antrim. This has been worked in several quarries in the recent past, particularly just east of Parkgate. There are also a

number of smaller pockets of sand and gravel deposits dotted throughout the Borough. All land-based deposits within the Borough are illustrated in Figure 1.

- 9.12 It is considered at this stage, that the sand and gravel reserves within the Borough are not at risk of sterilisation from surface development, and therefore do not require safeguarding at this time.

### **Crushed Rock Aggregates**

- 9.13 The Department for the Economy has advised the Council that the Borough is located predominantly on the basaltic rocks of the Antrim Plateau. These rocks are a valuable source of high quality hard rock aggregate material, widely used by the construction industry throughout Northern Ireland.
- 9.14 The Department has also notified the Council that additional hard rock aggregate resources may occur in the Borough, within small outcrops of intrusive igneous rocks within the Cretaceous Ulster White Limestone. However, these are not currently used and there is insufficient evidence on their economic viability to warrant safeguarding at present. The extent of mineral deposits used for construction aggregate within the Borough is illustrated in Figure 2.
- 9.15 Although several quarries in the Borough have been worked in the past, there are three known operational quarries (namely Mallusk, Boghill, and Upper Hightown). However, Boghill is subject to a planning application for a regionally significant waste facility on its quarry bed. The quarry at Upper Hightown has already partially been developed as a waste facility and further extraction is occurring on a low scale, piecemeal fashion. The quarry at Mallusk has a steady production rate, and is subject to a current planning application to seek an extension for further extraction and on-site processing. It is considered that should permission be granted, this extension would safeguard sufficient reserves for this LDP period and a formal designation would be unnecessary. This situation can be monitored and should the need arise, further safeguarding may be applied.

### **Sandstone**

- 9.16 Minor deposits of sandstone are sporadically dotted along the coastal area of Metropolitan Newtownabbey, as illustrated at Figure 2.
- 9.17 The capacity to extract these small deposits would be heavily restricted due to the surrounding built urban form, in addition to the protection of the coastal environment in Belfast Lough. It is therefore considered that these sandstone deposits do not require safeguarding at this time.

### **Limestone**

- 9.18 The Borough has minor deposits of limestone, which are scattered along Carnmoney Hill, on the slopes of Carrickfergus Escarpment, and within Castle Upton estate, Templepatrick. These deposits are illustrated at Figure 2.

- 9.19 It is considered that these limestone deposits do not require safeguarding within the Council's LDP due to insufficient evidence on their economic or conservation value. The ability to extract these small deposits would be heavily restricted due to the surrounding built urban form, in addition to the protection of the historic and natural environment.

### **Rhyolite**

- 9.20 Rhyolite is a relatively uncommon rock type in Northern Ireland, and small deposits are located around Tardree (see Figure 2), and identified at two inactive quarries in the area – Sandy Braes and Tardree Quarry. The later deposit is known to be the largest instance in the country and has geological features not found elsewhere in the Province. Both deposits have been identified as Areas of Special Scientific Interest (ASSIs) due to their geological features. These ASSI designations will be identified in the Council's LDP.
- 9.21 While the deposits are of conservation value and could be candidates for safeguarding within the Council's LDP, it is considered that safeguarding is unnecessary due to the protection of the ASSI designation. The deposits are unlikely to be sterilised by surface development given their rural location, and development is also restricted as damage to the geological features are prevented by the ASSI designation.

### **Clay**

- 9.22 The Mineral Resource Map of Northern Ireland has informed the Council that Lough Neagh clay extends over 500 km<sup>2</sup>, of which 300 km<sup>2</sup> underlies the lough bed. Currently there are two prominent areas of Lough Neagh clay in Co. Antrim. In the south, they extend around the south eastern shore of Lough Neagh and the clays are interbedded with flat lying or shallow dipping sands, silts and lignite measuring up to 400 m in thickness. The Lough Neagh clay deposits within the Borough are illustrated at Figure 2. Land-based deposits within the Borough are illustrated at Figure 1.
- 9.23 Over 200 million tonnes of iron-rich clay and ironstone have been identified in the Crumlin area, at depths down to 60 metres. There are further clay deposits within the urban area of Metropolitan Newtownabbey, between it and Greenisland, and under the slopes of Carrickfergus Escarpment. Clays with high iron content have limited usage and the Department for the Economy, Minerals and Petroleum Branch have confirmed the clays within the Borough probably do not have any mineral resource potential. In addition, future extraction may be limited due to their thickness and variability. As such, it is therefore considered that they do not warrant safeguarding at this time.

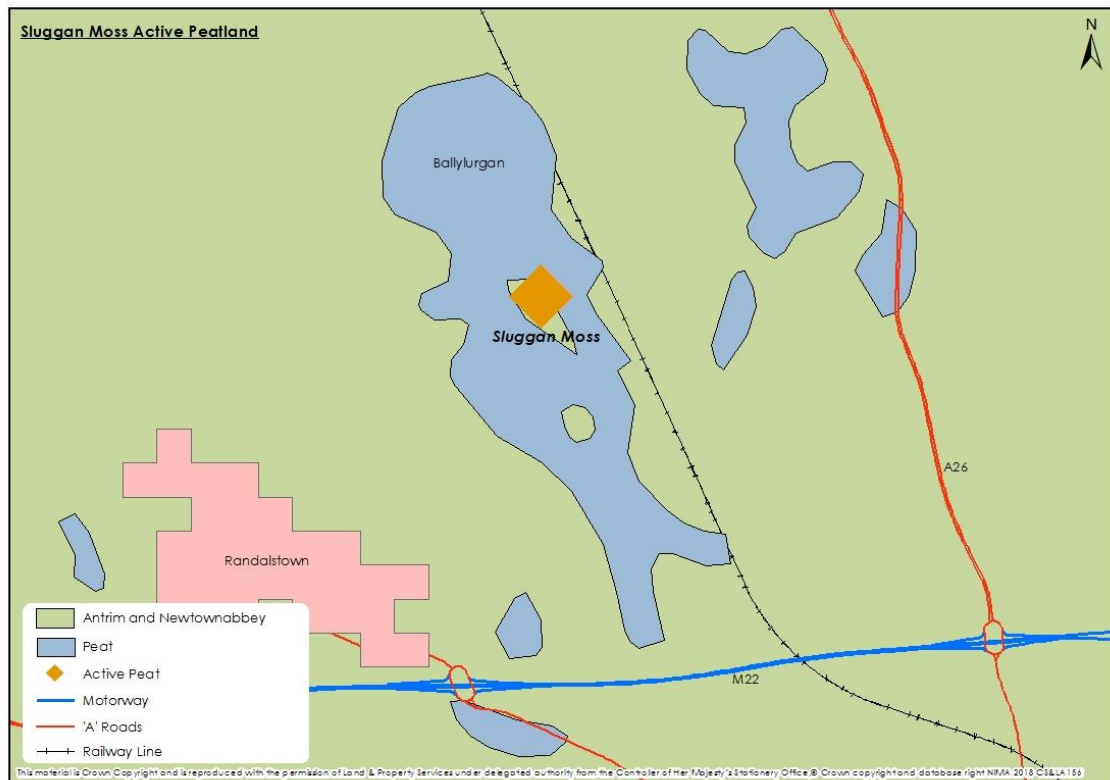
### **Peat**

- 9.24 Northern Ireland Environment Agency (NIEA) has confirmed that the Borough does not hold a wealth of peatland. However, they have advised that a number of identified deposits are Priority Habitats. These can be identified on

the online NIEA Natural Environment Map Viewer (<https://apps.dpera-ni.gov.uk/nedmapviewer/>). The distribution of peat deposits within the Borough is illustrated at Figure 1. There are a number of small pockets dotted throughout the Borough, with the most significant undisturbed deposit located northeast of Randalstown, known as Sluggan Moss.

- 9.25 To the north of Sluggan Moss is Ballylurgan, which is one of two areas of current commercial peat extraction within the Borough. The second is located at Loughbeg Road, north of Toome, and straddles the Council boundary with Mid and East Antrim Borough Council.
- 9.26 In their response to the Council's Preferred Options Paper, the Royal Society for the Protection of Birds (RSPB) advised that an area of Sluggan Moss, where extraction has occurred, is undergoing trial restoration. NIEA has confirmed that a 2017 survey of the inner area of Sluggan Moss shows evidence of active peatland (Figure 4).

**Figure 4: Area of Known Active Peatland, Sluggan Moss, northeast of Randalstown**



- 9.27 The NIEA Development Management Team Advice Note (November 2012) confirms the definition of 'active' as meaning 'still supporting a significant area of vegetation that is normally peat forming'. The SPPS is clear (para. 6.192) that planning permission should only be granted for a development proposal that is not likely to result in the unacceptable adverse impact or damage to known priority habitats or active peatland.
- 9.28 The SPPS further clarifies that where a proposal is likely to result in an unacceptable adverse impact on, or damage to a priority habitat or

peatland, it may only be permitted where the benefits of the proposed development outweigh the value of the habitat or feature. In such cases, appropriate mitigation and/or compensatory measures will be required.

- 9.29 It is considered that at this stage, these potential peat extraction sites will not be safeguarded in the LDP as they are not perceived to be at risk of sterilisation from surface development. Should an operator apply for permission to extract peat, such an application would be considered on its individual merits and against planning policy.

### **Perlite**

- 9.30 Perlite, the industrial name for volcanic glass, forms part of the Tardree Rhyolite Complex, with small pockets of the deposit located northeast of Antrim. When fused Perlite froths up and forms an inert, lightweight and porous granular product. This product can be used in a wide range of construction uses, i.e. insulation, packaging, and within agricultural industries.
- 9.31 There is insufficient evidence at present to suggest that perlite deposits within the Borough are of economic or conservation value and require safeguarding from surface development.

### **Conventional Hydrocarbons**

- 9.32 The conventional extraction of hydrocarbons can produce valuable energy minerals, such as oil and gas. According to the British Geological Survey, exploration for oil and gas began in Northern Ireland in 1965. Gas has been discovered but not yet in commercial quantities. The Department for the Economy, Minerals and Petroleum branch have confirmed that exploration results indicate that there may be significant, as yet undiscovered, oil or gas fields within the Borough. The thick basalt rocks that overlie the hydrocarbons make exploration more difficult, but small amounts of oil and gas found in wells suggest that larger accumulations may be trapped below these basins. In relation to hard coal deposits, the Department has also indicated that deposits may extend below the Lough Neagh basin, but at depths too great for conventional mining.

### **Unconventional Hydrocarbons**

- 9.33 In basic terms, the unconventional extraction of hydrocarbons refers to oil or gas that is deposited within shale or coal seams, or unconsolidated sandstone. They require extraction methods that are not normally necessary in the conventional extraction of hydrocarbons. The unconventional extraction methods carry environmental and safety concerns, such as the volume of water required, the release of pollutants, groundwater contamination, and possible increased seismic activity.

- 9.34 As mentioned earlier, the carboniferous-age organic rich shales underlying Lough Neagh may have potential for unconventional shale gas production. However, prospective exploration for shale gas has been limited.
- 9.35 Currently prospective drilling operations may be conducted under permitted development rights in accordance with The Planning (General Permitted Development) Order (NI) 2015. As previously mentioned in this evidence paper, the Department for Infrastructure is reviewing this Order, particularly for petroleum exploration.
- 9.36 The SPPS is clear that there should be a presumption against this exploitation until there is sufficient and robust evidence on all environmental impacts. This position will be reflected in the Council's LDP.

### **Geothermal**

- 9.37 The Department for the Economy, Minerals and Petroleum Branch have advised the Council that there is considerable potential within the Borough for the use of both shallow and deep geothermal energy resources for the production of heat, and possibly electrical power. The Minerals and Petroleum Branch explain how rocks at a few kilometres depth may contain hot water that can be pumped to the surface and used to provide direct heating for district heat networks and, if hot enough, to generate electricity.
- 9.38 In the Lough Neagh and Larne sedimentary basins Permo-Triassic and possibly Carboniferous sandstones have sufficient water-filled pore space and are hot enough to form a viable deep geothermal resource for direct heating applications, in those areas where they are buried to depths of more than 1 kilometre. If these rocks are buried to depths of approaching 3km, temperatures of about 100°C might be expected which would be hot enough for electricity generation. Within the Borough the locations believed to have the greatest deep geothermal energy potential are around Antrim and to the northwest of Mallusk.
- 9.39 The Borough also has widespread potential for the use of shallow geothermal energy. The temperature of the ground is similar to the air temperature but at shallow depths of only a few metres, the temperatures are relatively stable and not significantly affected by seasonal fluctuations in air temperature, at temperatures of about 12°C – 14°C the ground is hotter than winter and cooler than summer air temperatures.
- 9.40 Ground source heat pump technology uses the ground's heat energy to provide heating for domestic and non-domestic buildings via horizontal closed loop systems buried at depths of 1 – 2 metres or vertical systems installed in boreholes up to 100 metres deep. In some locations, vertical open loop systems can circulate water through aquifer rocks at depths of a few hundred metres to produce either heating or cooling for buildings according to their seasonal needs. In the Borough this Aquifer Thermal Energy Storage could be deployed

in the Sherwood Sandstone aquifer that is present beneath Metropolitan Newtownabbey.

- 9.41 As geothermal schemes do not involve a significant surface area, there is presently no need to safeguard land for future exploitation of this heat and power resource.

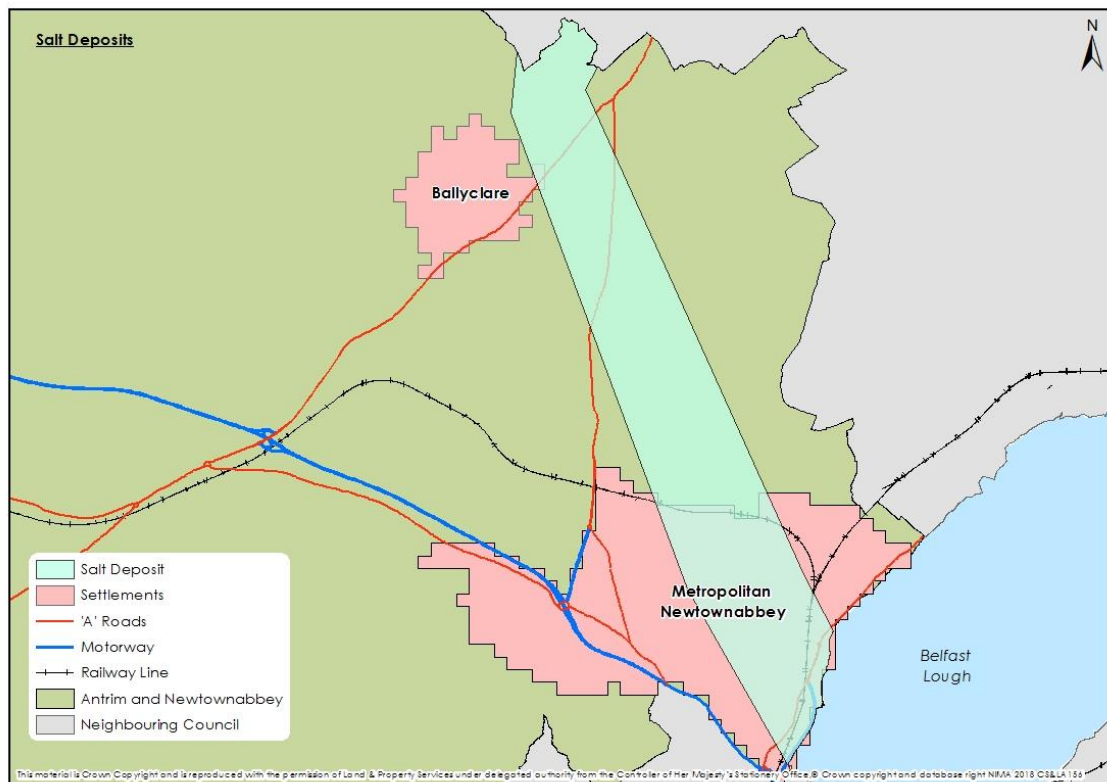
### **Groundwater**

- 9.42 The Department for the Economy, Minerals and Petroleum Branch explain that groundwater is water that is underground in both the loose material above bedrock and in bedrock itself. Contrary to popular ideas, groundwater is not like surface water in that, typically, it is not found in underground streams and lakes. Groundwater fills the tiny void space between grains of material or in the cracks in the ground. The proportion of voids in the ground affects how much water can infiltrate down through the ground to form what are known as aquifers. The greater the proportion of voids, the larger and more productive the aquifer will be.
- 9.43 Groundwater can be viewed as a natural resource that requires careful protection and as a water source that can be used for growth and economic development. It is important that both aspects are given consideration so as to look after the valuable resource and to use it sustainably to enhance and support future development needs.
- 9.44 Groundwater is regulated by the Northern Ireland Environment Agency, and all abstractions of over 20m<sup>3</sup> per day require a licence. The licensing system operated on a 'first come, first served' basis, therefore once an operator has a licence, their investment is protected from others who may wish to use groundwater also.
- 9.45 The Borough has a variety of groundwater conditions, with land along the south eastern edge of Metropolitan Newtownabbey being located on top of the Sherwood Sandstone aquifer, which is the most regionally important aquifer in Northern Ireland, holding 20 times more water than the Silent Valley reservoir. The remainder of the Borough is largely located on the Basalts, which provides much scope for up to medium sized businesses. However, many of the larger businesses operating around Mallusk are exploiting this Basalt groundwater resource. Many farms using groundwater pumped from boreholes for a range of agricultural activities.
- 9.46 The Minerals and Petroleum Branch have confirmed that current evidence shows that all of the aquifers within the Borough are in a healthy condition and are suitable for most forms of existing industries within the area.
- 9.47 Groundwater resources are underutilised within the Borough and it presents much scope for sustainable exploitation. Similar to geothermal resources, groundwater proposals involve a relatively small surface area, and as such, there is presently no requirement for the LDP to safeguard land for future exploitation for this resource.

## Salt

- 9.48 The Mineral Resource Map for Northern Ireland shows the subsurface extent of salt-bearing strata. This is robustly based on mapping and borehole evidence. Boreholes north of the Six Mile Water fault extending north east from Ballynure towards Larne indicate salt present. In addition, recent evidence suggests that salt occurs north of the Six Mile Water fault. The Borough's salt deposits are illustrated at Figure 5.
- 9.49 The Department for the Economy, Minerals and Petroleum Branch have indicated that the Borough's salt reserves are not a potential mineral resource.
- 9.50 However, the Mineral Resource Map notes that salt-bearing strata are ideally suited for the creation of storage cavities for natural gas, compressed air and fluids. The caverns are developed by drilling a well into a salt dome or bedded salt sequence and then leaching out the salt by the controlled circulation of water.
- 9.51 At present, there is insufficient evidence on the economic viability of the Borough's salt deposits to warrant safeguarding. However this can be monitored throughout the LDP period, and should the need arise, safeguarding may be applied.

**Figure 5: Salt Deposits within the Borough**





### High Value Minerals

- 9.52 Valuable minerals may be classified as including metalliferous minerals such as lead, copper and zinc, as well as precious metals such as gold, silver and platinum. These minerals are essential for a wide range of manufacturing industries and, because of their relatively high value, are often mined in one country and exported to global destinations.
- 9.53 The SPPS does not specifically mention these types of minerals. However, it does clarify that from time to time minerals may be discovered that are particularly valuable to the economy and their exploitation may create environmental effects that are particular to the methods of extraction or treatment of that mineral. The SPPS expands by stating that there will not be a presumption against their exploitation in any area, however in considering a proposal where the site is within a statutory policy area, due weight will be given to the reason for the statutory zoning.
- 9.54 The Department for the Economy has explained that exploration for valuable minerals begins with low-impact techniques, such as small samples of soil or stream sediment being collected and analysed for anomalously high concentrations of specific elements. The Department notes that under current legislation any proposed surveys are assessed to ensure that they would not have a significant detrimental effect on environmentally designated sites such as ASSIs or Natura 2000 sites. They therefore consider it unnecessary to place further restrictions on such activities through LDPs. A Mineral Prospecting Licence may be applied for from the Department and in the case of drilling, an abstraction licence or a discharge licence from NIEA is needed if a company wishes to abstract water or discharge water to surface or groundwater bodies.
- 9.55 The Department has further advised that the Borough currently has no areas under licence for high value minerals vested in the Department. They also confirmed that historically Bann Valley (1989 – 1991) held licences for diatomite in the north west of the Borough, Glenshesk (1990) targeted zeolite minerals in the basalt and Antrim Perlite (1987 – 1997) targeted perlite at the Tardree Rhyolite. Despite extensive historic workings of the interbasaltic layer between the Upper and Lower Basalts of the Antrim Plateau for iron ore and bauxite, there is no indication of potential interest in the Council area for metallic or industrial mineral exploitation in the immediate future.
- 9.56 Within the Borough, there are a few gold 'hotspots' around Crumlin, Ballynure, Templepatrick, and Tardree. However, the Department for the Economy, Minerals and Petroleum Branch have advised the Council that gold is not a potential mineral resource for the Borough.
- 9.57 The Borough has legacy of historic mines that extracted iron ore and bauxite (the principal ore of aluminium), particularly at Lyles Hill and Straid Hill. The Mineral Resource Map for Northern Ireland confirms that a number of assessments indicate that Co. Antrim bauxite is highly variable in composition

and grades, and, given the abundance of low cost, high-grade deposits in other countries, the Co. Antrim deposits are currently deemed uneconomical.

- 9.58 In summary, there is presently insufficient evidence to suggest that these high value minerals within the Borough will be exploited during this LDP period. Added to this, they are unlikely to be sterilised from surface development due to their remote nature and small scale. It is considered, therefore, that they do not warrant safeguarding at present. However, this can be monitored throughout the LDP period and should the need arise, safeguarding may be applied.

### Existing Extraction Sites

- 9.59 In terms of local supplies of construction aggregates, the following active extraction mineral sites, and a Lough Neagh sand and gravel landing site have been identified in the Borough (Table 3).
- 9.60 Aside from construction aggregate, it is worth noting that two commercial peat extraction sites are operating within the Borough (Table 4).
- 9.61 There are a number of historical mineral extraction sites in the Borough that are no longer in operation. These abandoned mines are now owned and monitored by the Department for the Economy. They mainly centre on two rural locations, Irish Hill and Lyles Hill, and are unlikely to be reinstated. Further information can be found at <https://www.nidirect.gov.uk/articles/abandoned-mines>.

**Table 3: Active Construction Aggregate Extraction and Landing Sites in the Borough**

Active Construction Aggregate Extraction Sites		
Address	Commodity	Operator/Owner
Mallusk Quarry, 140 Mallusk Road, Newtownabbey	Basalt – aggregate	James Boyd & Sons (Carnmoney) Ltd.
Hightown Quarry, 40 Boghill Road, Newtownabbey	Basalt – aggregate This site is subject to a proposed Arc 21 waste facility.	Tarmac (Northern) Ltd.
59 Upper Hightown Road, Newtownabbey	Hard rock - aggregate	Macwill Services Ltd.
Active Construction Aggregate Landing Site		
Address	Commodity	Operator/Owner
Ballyginnif Quay, Loughview Road, Crumlin	Sand extracted from Lough Neagh	Northstone (NI) Ltd.

**Table 4: Active Commercial Peat Extraction Sites in the Borough**

Address	Commodity	Operator/Owner
55 Loughbeg Road, Toome	Peat	Clover Peat Products Ltd.
135a Magheralane Road, Randalstown	Peat	Bulrush Horticulture Ltd.

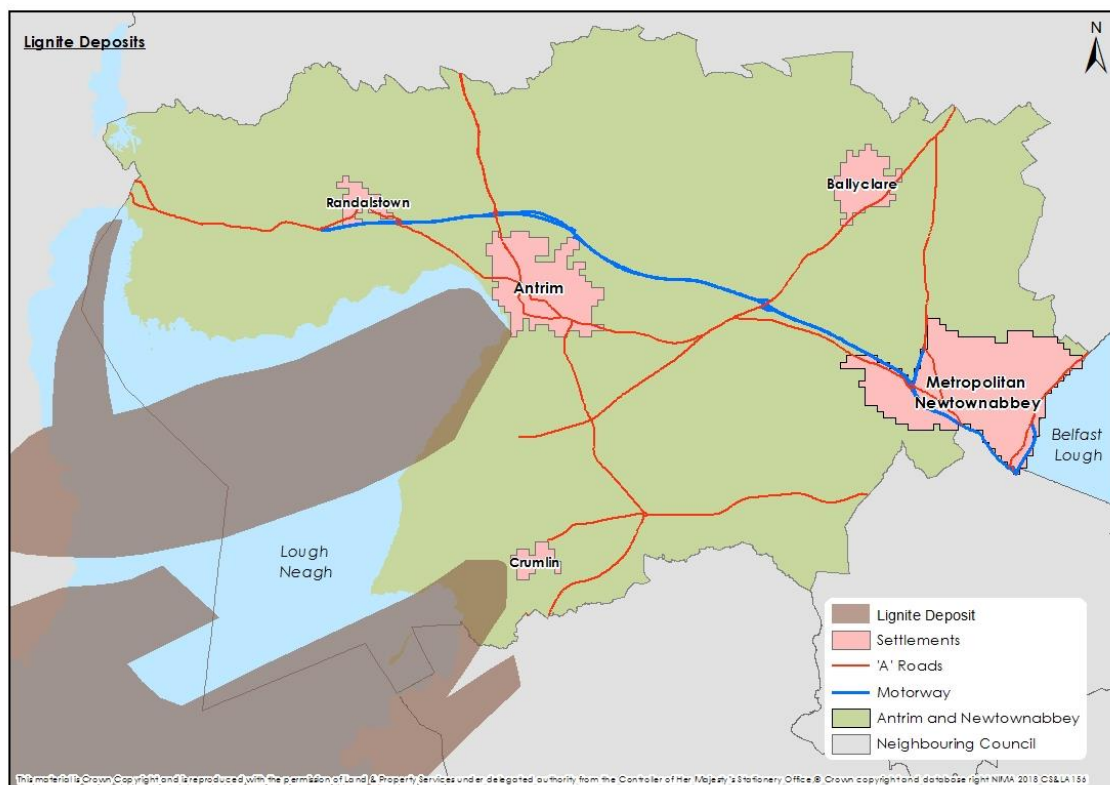
## 10 Safeguard Mineral Resources

- 10.1 A key aspect of sustainable development is the conservation and safeguarding of non-renewable resources, such as minerals, for future generations. With increased pressure on land-use, there is a need to ensure that these resources are not sterilised by other surface development. This will not only ensure adequate supplies for the future, but will retain flexibility for planners and operators to identify areas that will have the least impact on the environment.
- 10.2 The Strategic Planning Policy Statement (SPPS) advises that 'LDPs should safeguard mineral resources which are of economic or conservation value, and seek to ensure that workable mineral resources are not sterilised by other surface development which would prejudice future exploitation' (SPPS, p.77). The SPPS expands this by advising that mineral reserve areas will normally be where exploitation is likely to have the least environmental and amenity impacts, as well as offering good accessibility to the strategic transport network.
- 10.3 The Mineral Resource Map of Northern Ireland describes extensive areas of lignite within County Antrim. The Department for the Economy has confirmed to the Council that this deposit is the only mineral reserve within the Borough that Geological Society of Northern Ireland is aware of that warrants protection within the LDP (Appendix 2). The Department concludes that the historic perlite deposit at Sandy Braes has been designated as an ASSI therefore has protection in place and a mineral development constraint designation would be unnecessary.
- 10.4 This lignite reserve has benefited from prospecting and the planning history can be viewed at Appendix 3. The Department has indicated that given the extent of the lignite resource and its potential economic value there is a case for safeguarding the resource, despite it being highly unlikely that it would be worked over the lifetime of the LDP. This would allow for the consideration of its use with potential carbon capture and storage (CCS) technology in the future or as part of any future carbon credit scheme (Appendix 4).
- 10.5 The extent of the lignite deposit has been estimated through a series of exploration boreholes, interpreted 2D seismic lines, mining plans, and a deposit

feasibility report. There is an estimated extent of approximately 440 million tonnes, split between approximately 250 million tonnes onshore, and the remainder offshore (Figure 6).

- 10.6 The land-based portion of the deposit is designated as a Lignite Policy Area in the Antrim Area Plan. This was to ensure that surface development did not prejudice the exploitation of the reserve. The Council considers it appropriate to continue this approach, and the Mineral Reserve Policy Area will be reflected in the LDP.

**Figure 6: Extent of Lignite Deposit within the Borough and adjoining Council Areas**



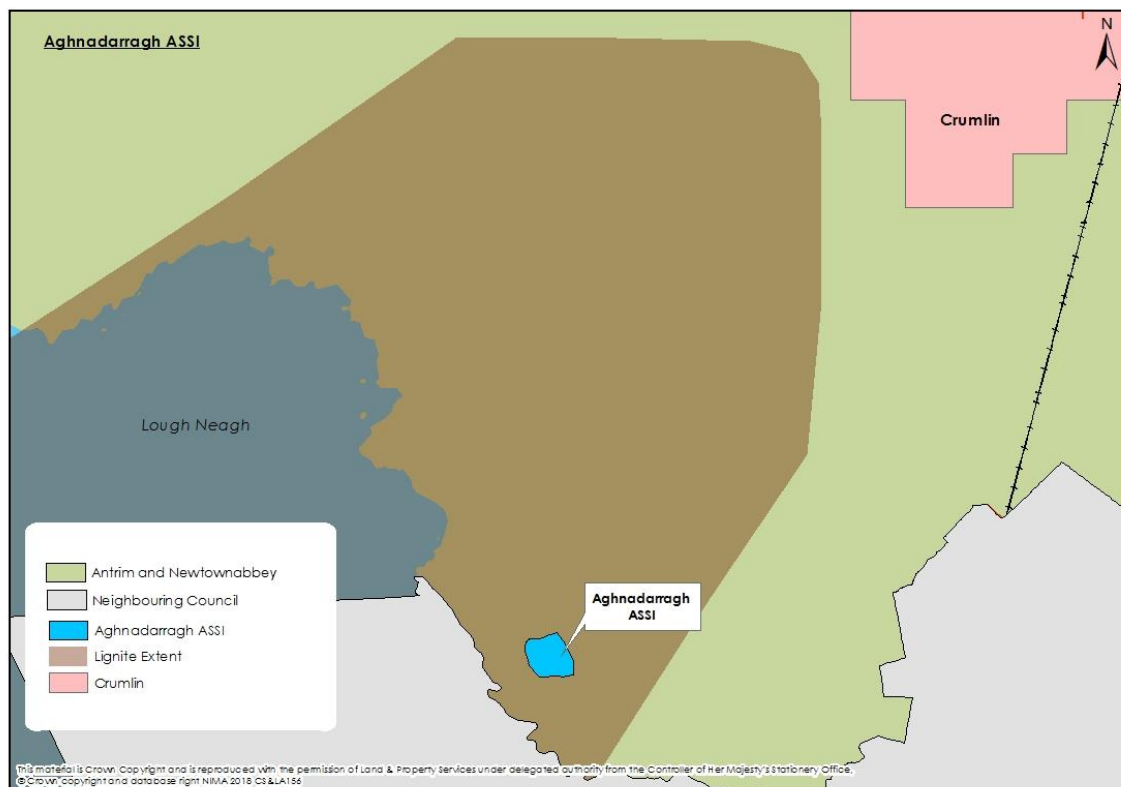
## 11 Protecting Natural Heritage and the Historic Environment

- 11.1 While mineral development and its related industries are an important part of the economic make up of Northern Ireland, the development and exploitation of mineral resources can have significant environmental impacts. By their nature, the scale, location, and duration of operation, mineral workings can impact the environment more severely than many other forms of development. They can damage or destroy sites of nature conservation or scientific value and sites of historic and archaeological importance. They can also have a significant visual impact on the landscape and an adverse impact on the amenity of people.

- 11.2 The importance of securing a continuous supply of minerals to support the construction industry is accepted, while ensuring that an appropriate balance is achieved with regard to protecting the environment and safeguarding residential amenity.
- 11.3 Aggregates, industrial minerals and high value metallic minerals can, by their nature, only be extracted where they occur and, once used they are not renewed on a human timescale. It is important to remember that as mineral extraction sites are predominantly rural in their location, the transportation of minerals to end users relies heavily on the public road network.
- 11.4 The Department for the Economy (DfE) Minerals and Petroleum Branch notes in their response to the Council's POP that minerals are essential to support sustainable economic growth and quality of life. Minerals within the Borough can contribute positively to improving health and well-being and provide employment opportunities, whether directly or indirectly related to quarrying.
- 11.5 The Strategic Planning Policy Statement (SPPS) states that LDPs should identify areas that should be protected from minerals development because of their intrinsic landscape, amenity, scientific or heritage value (including natural, built and archaeological heritage). There should be a general presumption against minerals development in such areas.
- 11.6 However, the SPPS also reminds us that from time to time minerals may be discovered that are particularly valuable to the economy. It notes that their exploitation may create environmental effects that are particular to the methods of extraction or treatment of that mineral. The SPPS clarifies that there will not be a presumption against their exploitation in any area, however in considering a proposal where the site is within a statutory policy area, due weight will be given to the reason for the statutory zoning. In certain circumstances there may be justified exemptions.
- 11.7 The Borough has a wealth of diverse natural heritage and historic environment that forms an important part of the character and appearance of the Borough's urban and rural areas. It is a role of the LDP to respect these environmentally sensitive assets and as such, it will include focused landscape policy areas where mineral development will be constrained. The Council considers it appropriate that this should include Strategic Landscape Policy Areas, Belfast Lough Coastal Policy Area, registered Historic Parks, Gardens and Demesnes, and Sites of Nature Conservation Importance (International, National and Local sites). This approach will balance the need to protect and conserve the environment with the requirement to ensure that sufficient supplies of minerals are available for the local and regional market. The Council considers it appropriate to apply a flexible approach should exceptional instances arise when there is a regional need for a mineral resource in an environmentally sensitive location. The LDP will provide a flexible policy approach that may permit this development and ensure the extraction is conducted in a sustainable manner.

- 11.8 The Borough has a wealth of diverse natural heritage and historic environment that forms an important part of the character and appearance of the Borough's urban and rural areas. Further information on these assets are within Evidence Papers 7: Historic Environment, 16: Landscape Character Assessment, 17: Natural Heritage, 19: Coast, and 20: Loughs.
- 11.9 There are various factors that will influence the impact a mineral working will have. These include the size of the scheme, working methods, proposals for disposing of waste, the nature and extent of processing and ancillary operations, the arrangements for transporting the resource away from the site, and proposals for restoration.
- 11.10 NIEA Historic Environment Division has advised the Council that mineral developments have the potential to impact on historic environment assets, particularly previously unrecorded archaeological remains. Conversely, certain quarries may be important resources of natural stone used in historic buildings, which may be utilised when carrying out repair works.
- 11.11 In terms of the strategic lignite reserve outside of Crumlin, Aghnadarragh ASSI is located on the deposit (see Figure 7) and on the Lignite Policy Area, as designated in Antrim Area Plan 1984-2001.

**Figure 7: Aghnadarragh ASSI in context with Lignite Policy Area**

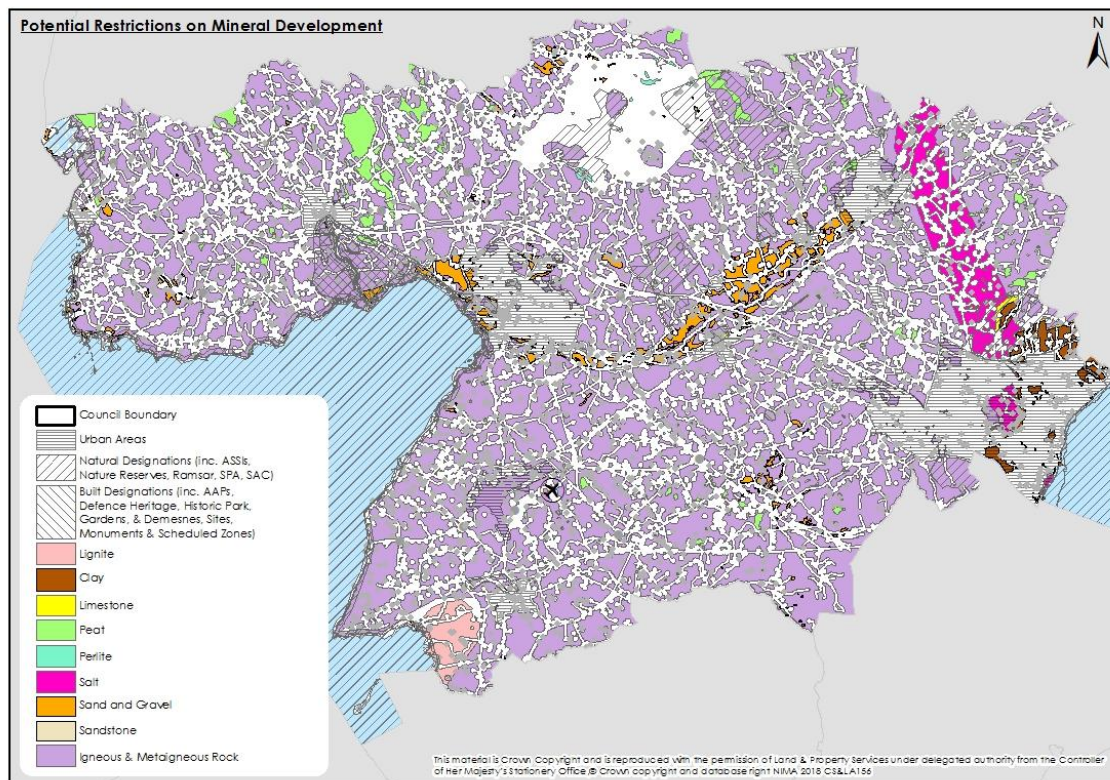


- 11.12 The Department for the Economy has advised that it is unlikely that any extraction will take place during the lifetime of the LDP (refer to the letter in the annex) and the Council will liaise with NIEA and DOE on the future of this site.

NIEA have confirmed that lignite extraction at the ASSI would likely destroy it and remove the interest that led to the designation. This will be considered at Local Policies Plan stage when the extent and boundaries of the lignite mineral reserve will be determined. NIEA further clarifies that the potential scientific interest extends beyond the current ASSI boundary, and should an extraction licence and planning permission ever be granted, full survey and recording of interest in the area would be a condition that NIEA would request.

- 11.13 At this stage, it is considered that this site of geological scientific interest is satisfactorily protected under the ASSI designation and no further protection is required in the draft Plan Strategy. This stance is corroborated by the Department for the Economy (Appendix 2).
- 11.14 As previously mentioned in this report, DAERA has confirmed that the Borough does not hold a wealth of peatland, however a number of identified deposits are Priority Habitats. DAERA has confirmed that the peat deposit located northeast of Randalstown (Sluggan Moss), includes active peatland.
- 11.15 The SPPS is clear (para.6.192) that planning permission should only be granted for a development proposal that is not likely to result in the unacceptable adverse impact or damage to known priority habitats or active peatland. The SPPS further clarifies that where a proposal is likely to result in an unacceptable adverse impact on, or damage to a priority habitat or peatland, it may only be permitted where the benefits of the proposed development outweigh the value of the habitat or feature. In such cases, appropriate mitigation and/or compensatory measures will be required.
- 11.16 In terms of restoration, the RSPB have advised the Council that mineral sites have the potential to enhance biodiversity through restoration, advising that part of Sluggan Moss is undergoing trial restoration. They recommend that the Council include planning policy to the LDP to recognise this potential, and for mineral proposals to include details of sustainable restoration, including the enhancement of biodiversity where possible.
- 11.17 Mineral constraints in relation to the natural and built environment, may appear vast and restrictive to mineral development, however there are extensive quantities of land remaining where mineral proposals are welcomed, subject to prevailing planning policy. The coloured and non-hatched areas in Figure 8 represent minerals not constrained by urban development, road infrastructure, and natural and built environmental designations.
- 11.18 In summary, the Borough enjoys a wealth of diverse landscapes, heritage and features of scientific value, and the Council places high value on its citizen's safety, amenity and well-being. These matters are all worthy of protection from the adverse effects of mineral development and to realise opportunities for enhancement. The Council's LDP therefore contains planning policy addressing these matters, tailored to the Borough and in line with the SPPS.



**Figure 8: Potential Restrictions on Mineral Development in the Borough**

## 12 Key Findings

- 12.1 This Evidence Paper has provided clarification on the current planning position on minerals development within the Borough in order to provide a robust evidence base to underpin the new minerals planning policy within the Council's LDP. It replaces the Council's Facilitating Economic Development Evidence Paper, January 2017, insofar as it relates to minerals development.
- 12.2 This Paper commenced by outlining the policy context in which minerals planning sits, including current operational minerals planning policy and legacy development plans for the Borough. It highlighted comments received following the publication of the Council's Preferred Options Paper regarding minerals. The Paper discussed how minerals planning is a regional matter and introduced the work continuing at the Regional Minerals Working Group, highlighting the commitment to bring forward any new evidence.
- 12.3 Following these matters, this Paper continued by examining how the Council's LDP aims to ensure sufficient local supplies of construction aggregates; safeguard mineral resources that are of economic or conservation value; and identify areas that should be protected from minerals development because of their intrinsic landscape, amenity, scientific or heritage value, in line with the SPPS.



- 12.4 In conclusion, the Council acknowledges the significant contribution that the minerals industry makes to the Borough and beyond. Based on the robust evidence presented, the Council is confident that its LDP will strike the right balance between mineral development, and protecting and conserving the environment, and well-being and economic prosperity of its residents.

## Appendix 1: Local Operator Return Form

The following table was sent by the Council to known operators within the Borough:

<b>Site Address</b>	
<b>Operator Name</b>	
<b>HQ Address</b> (if different from site address)	
<b>Type of Minerals Extracted</b> <b>Average tonnage rate extracted per year</b>	
<b>Predicted Yearly extraction rate</b>	
<b>Remaining Reserves – how much reserve is left</b> (including land banking) <b>and when reserve is year likely to expire</b> (metric tonnes)	
<b>Potential to expand current site</b> (please indicate any potential expansion on map, as a guide)	
<b>Destination of current product</b> (i.e remains in ANBC/exported outside NI/neighbouring council)	
<b>Other areas of potential reserve</b> (Are there any areas of minerals outside your current site that you consider need to be protected for future mineral extraction? If so please supply address and map. Please confirm date that you may start extraction?)	
<b>Any other information that you consider the Forward Planning Section needs to know.</b>	

## Appendix 2: Department Position on Safeguarding Reserves



Dundonald House  
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BT4 3SB  
Phone: 02890388462

Sharon Mossman  
Principal Planning Officer  
Mossley Mill,  
Carnmoney Road North,  
Newtownabbey. BT36 5QA

Dear Sharon

Further to your communication of 7<sup>th</sup> November regarding specific sites of key economic minerals within the Antrim and Newtownabbey district council area.

I can confirm that there are no mineral reserve considerations within the Antrim and Newtownabbey council area the GSNI is aware of that warrant protection, other than those that have been previously discussed in respect of lignite. The historic perlite deposit at Sandy Braes has been designated an ASSI so has protection in place. There are no current mineral prospecting licences, either active or in application for any part of the DC area, so in the immediate future this is unlikely to change.

Yours sincerely

Mark Patton  
Minerals Geologist  
Geological Survey of Northern Ireland

## Appendix 3: Lignite Planning History

Planning applications submitted within the Antrim Area Plan Lignite Policy Area designation are as follows:

Reference	Applicant	Proposal	Location	Decision
T/2010/0238/F	Mr David Watt	Digging of a trench 30m wide, 120m long and 10-15m deep for the extraction of lignite from an area immediately to the north-east of the existing trial pit	400-500m south-west of 25 Aghnadarragh Road, Crumlin, BT29 4QQ	Refused 03.07.2012 – incompatible with the existing economic development undertaking in the vicinity by reason of impact upon Radox by potential atmospheric pollution interfering with the research interests of an economic development.
T/2006/0816/RM	The Antrim Coal Company Ltd	Single Dwelling	Aghnadarragh Trial Pit Site, Ballyvollen Townland, Aghnadarragh Road, Crumlin, BT29 4QQ	Granted 25.05.2007
T/2002/0971/O	Mr David Watt, The Antrim Coal Company Ltd	Single Dwelling for manager / caretaker	Aghnadarragh Trial Pit Site, Ballyvollen Townland, Aghnadarragh Road, Crumlin, BT29 4QQ	Planning Appeal Upheld (2003/A100) 14.10.2003

## Appendix 4: Department Position on Lignite



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Sharon Mossman  
Forward Planning and Policy Manager  
Antrim and Newtownabbey Borough Council  
Mossley Hill  
Newtownabbey  
Co Antrim  
BT36 5QA

15 December 2017

Dear Sharon

At our recent meeting you requested confirmation from the Department with regard to the policy position on Lignite exploration and an assessment of the reserves in your Borough, and I must apologise at the outset for the delayed response.

I can confirm that since 23 September 2004 it has been Departmental policy not to grant Mineral Prospecting Licences for Lignite exploration. In terms of Lignite reserves please see the attached **Annex A** which sets out the position in the Borough.

I hope this is helpful to you.

Yours sincerely

**Lorraine Fleming**  
Head of Geological Survey NI/ Minerals Branch



**Annex A****Crumlin Lignite Deposit**

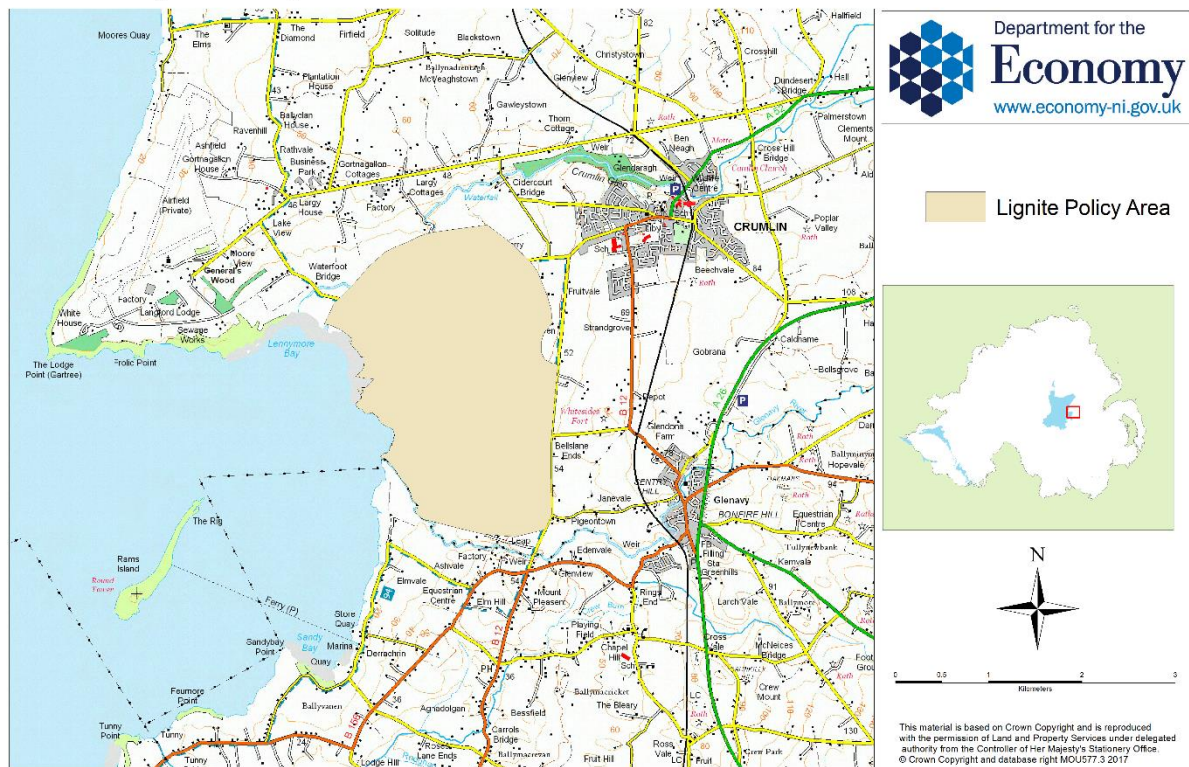
The extent of the lignite deposit at Crumlin, on the eastern shore of Lough Neagh has been established through geological prospecting by companies operating under licence from the Department for Economic Development and Department for Enterprise Trade and Investment.

- A resource assessment carried out in 1984 identified approximately 440 million tonnes of lignite split as 225 million tonnes onshore and the remainder offshore under Lough Neagh.
- The more recent 2003 Wardell Armstrong report identifies c.250 million tonnes of in-situ lignite within the onshore area of the deposit.
- Mine feasibility studies subsequent to the initial exploration identified the potential for a 450MW opencast mine mouth lignite fired power plant with a life span of approximately 30 years.
- In response to the public opposition to a planning application for a similar plant at the Ballymoney lignite deposit, a moratorium on lignite prospecting was put in place by DETI.
- Current policy is to reject any application for the development of lignite in Northern Ireland.
- The resource at Crumlin was subject to a study carried out at the request of DETI to establish an area of planning constraint with the aim of protecting the long term security of the lignite deposit for potential future use.
- Exploration boreholes, interpreted 2D seismic lines, mining plans and a deposit feasibility report were used to establish the extent of the area which forms part of the Lignite Policy Area.
- The extent of the Lignite Policy Area for the Crumlin lignite deposit is shown in the map below.
- The Lough Neagh Basin is recognised as a potential economic source of lignite and the current Lignite Policy Area includes the Crumlin deposit on the eastern shore of Lough Neagh, covering an area of 5.8 km<sup>2</sup> and containing reserves of over 250 million tonnes. It is highly unlikely that the lignite would be worked over the life of the Local Development Plan, given currently available extraction technologies and the need to reduce carbon emissions. However given the extent of the resource and its potential economic value there is a case for safeguarding the resource to allow for consideration of its use with potential carbon capture and storage (CCS) technology in the future or as part of any future carbon credit scheme.

## References

Jay Mineral Services 1984. Crumlin Lignite Reassessment of Resource and Reserves. Report compiled for the Department of Economic Development  
 Wardell Armstrong 2003 Crumlin Lignite Policy Area. Report compiled for the Department for Enterprise Trade and Investment.

### Crumlin Lignite Policy Area





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