



## **WELSH GOVERNMENT**

### **Coal Extraction in Wales**

### **The Existing Impact Evidence**

**September 2019**

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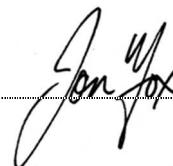
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## ACRONYMS

ARD	Acid Rock Drainage
ARM	Acid Mine Drainage
CA	Coal Authority
EA	Environment Agency
EBRD	European Bank for Reconstruction and Development
EHS	Environmental, Health and Safety

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EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
HIA	Health Impact Assessment
ICMM	International Council on Mining and Metals
IFC	International Finance Corporation
LA	Local Authority (Unitary Planning Authority)
MLP	Minerals Local Plan
MPA	Mineral Planning Authority
MPPW	Mineral Planning Policy Wales
MTAN2	Minerals Technical Advice Note 2
NPPF	National Planning Policy Framework
NPPG	National Planning Policy Guidance
PFA	Pulverised fuel ash
PPCA	Powering Past Coal Alliance
PPW 10	Planning Policy Wales 2010
SINC	Site of Importance for Nature Conservation

## EXECUTIVE SUMMARY

The Welsh Government powers under the Wales Act, 2017, means Welsh Ministers must authorise coal extraction licences determined by the UK's Coal Authority. This evidence based report examines the relationship between coal extraction in Wales and the markets served and considers the impact of national and UK markets that use coal.

Since December 2018 the Welsh Government planning policy is clear that surface, deep and spoil won coal will not receive planning consent in Wales, unless exceptional circumstances are identified in the context of the climate change emissions reductions or for reasons of national energy security (see para 5.10.14 of PPW 10).

The report has considered several aspects:

**Economy:** Coal extraction has been instrumental in the socio-economic history of the South Wales coalfield area extending from east to west across the unitary authorities of Torfaen, Blaenau Gwent, Caerphilly, Merthyr Tydfil, Rhondda Cynon Taf, Bridgend, Neath Port Talbot, Swansea, Carmarthenshire and Pembrokeshire. Currently, the production of coal, primarily from surface mines has reduced to approximately 1.1M tonnes in 2018. Since 2015 no new or greenfield permissions for surface mined coal extraction have been consented, although several existing permissions have been consolidated and extensions to existing workings considered. The overall production in the UK was less than 3M tonnes (2017) and the shortfall in demand has been imported to the UK (approximately 11.5M tonnes).

**Climate Change and Energy:** The Paris Agreement requires that Governments meet the international climate change commitment to keep global temperature rise well below 2°C and pursue efforts to limit it to 1.5°C. The Welsh Government have accepted recommendations, from the Committee on Climate Change that requires a 95% reduction target for emissions of greenhouse gases by 2050. The Welsh Government and UK Government are committed to the cessation of power generation from coal by 2025. In Wales, the last remaining coal-fired power plant will close in 2020. As a result, alternative energy generation methods are continuously increasing, including the modification of coal fired power plants to gas plants, with an approximate 50% decrease in associated CO<sub>2</sub> emissions as well as renewable sources, with onshore and offshore wind energy projects dominant across Wales. However, coal will continue to be required for both industrial and domestic uses which remain important to the economy of Wales. There is a need to assess the impact of importing coal in comparison to

indigenous extraction, as emissions from mining activity elsewhere and the transportation of this bulk commodity is not well defined.

**Transport:** Coal production in South Wales has been well served by rail and road infrastructure to transport coal to power stations and industrial users such as Port Talbot steel works and cement manufacturers. Along with rail infrastructure, provisions for assessing road haulage have been considered.

**Decommissioning and restoration:** The legacy resulting from deep and surface coal mining in South Wales is complex. The evidence from research is extensive and applies to the geography of the individual coalfield areas within the UK. The 'Best Practice Guide on Restoration Liability Assessments for Surface Coal Mines (February 2016)' published by Welsh Government and The Coal Authority assessed the risk of a default in the restoration of operational surface mines in South Wales, following the collapse of the Scottish coal industry. One of the key recommendations of the research was for an independent expert assessor to report on restoration liabilities and the value of financial bonds to cover this risk is a requirement on all applications for surface mine extraction of coal. The independent expert assessor is to be appointed by the Local Authority and funded by the site operator. Although primarily aimed at opencast mining, the research should also be applicable to any surface activity associated with any deep coal mine operation.

**Health Impacts:** Reducing coal extraction is required to meet decarbonisation targets and will reduce health risks for communities living near mines, along coal transport services and where coal is burnt. The evidence informing Planning Policy Wales Edition 10 resulted in the Welsh Government's policy to avoid the continued extraction and consumption of fossil fuels. The Welsh Government has published guidance for assessing the environmental effects of coal extraction with that of public health and wellbeing. The guidance on health impact assessment (HIA) predates the 2017 EIA Regulations, when the requirement for this assessment was introduced into Regulations.

**Environmental Impacts:** EIA is a comprehensive process that is based on sector specific guidance for coal extraction. Natural Resources Wales (NRW) are statutory consultees for pre-application and during the determination stage of planning submissions. The UK Coal Authority licensing procedures are independent although pre-application discussion can

reflect key stages of the EIA process. Checks on the EIA approach will ensure effective monitoring by the Welsh Government for new or extensions to existing coal extraction sites.

**In conclusion,** it is considered that output from the coal industry in South Wales will continue to decline, as coal-fired power is replaced by gas, nuclear and renewables on or before 2025 and as coal imports increase. There will continue to be markets for industrial and domestic coals that are currently important to the economy of South Wales. Where an application demonstrates a significant contribution to Welsh policies and towards achieving overall commitments to tackling climate change, the Local Planning Authority can progress an application, and if minded to approve, then escalate the decision-making to the Welsh Ministers.

## 1. INTRODUCTION

### 1.1 Scope

1.1.1 The Wales Act 2017 gave Welsh Ministers the duty to authorise coal extraction licences, granted by the Coal Authority (CA). This report considers the current procedures for coal extraction licensing and provides the Welsh Government with evidence of the impact of coal extraction for five themes: economy, climate change, transport, health and environment. This report will inform the policy against which licence applications will be considered.

1.1.2 The objectives of the evidenced based study are to:

- Examine the relationships between coal extraction and sectors which are of particular relevance to Wales such as energy generation (power station fuel); steel manufacturing (energy and processing); the chemical and cement industries; filtration products; and the domestic solid fuel sector; and consider evidence in the context of the unique Welsh political, social, economic, industrial and legislative landscape.

1.1.3 In consideration of the objectives for each theme (see paragraph 1.1.1), the lessons learned and conclusions that apply to Wales have been examined to identify critical gaps in the evidence base with recommendations given. The analysis takes account of inconsistencies and divergence in assumptions used, where these are evident. On this basis, relevant conclusions have been drawn.

1.1.4 The report does not aim to consider the CA licensing or development control procedures. However, it provides a summary of, and takes into consideration, recent research and studies, in conjunction with current UK and internationally sourced case studies. Where relevant, a summary of international best practice requirements has been reviewed, to provide an understanding of how certain liabilities have been assessed. The report concludes with recommendations to be considered by Welsh Government in formulating future policy with respect to CA approved applications for coal extraction.

#### ***The Welsh coalfields***

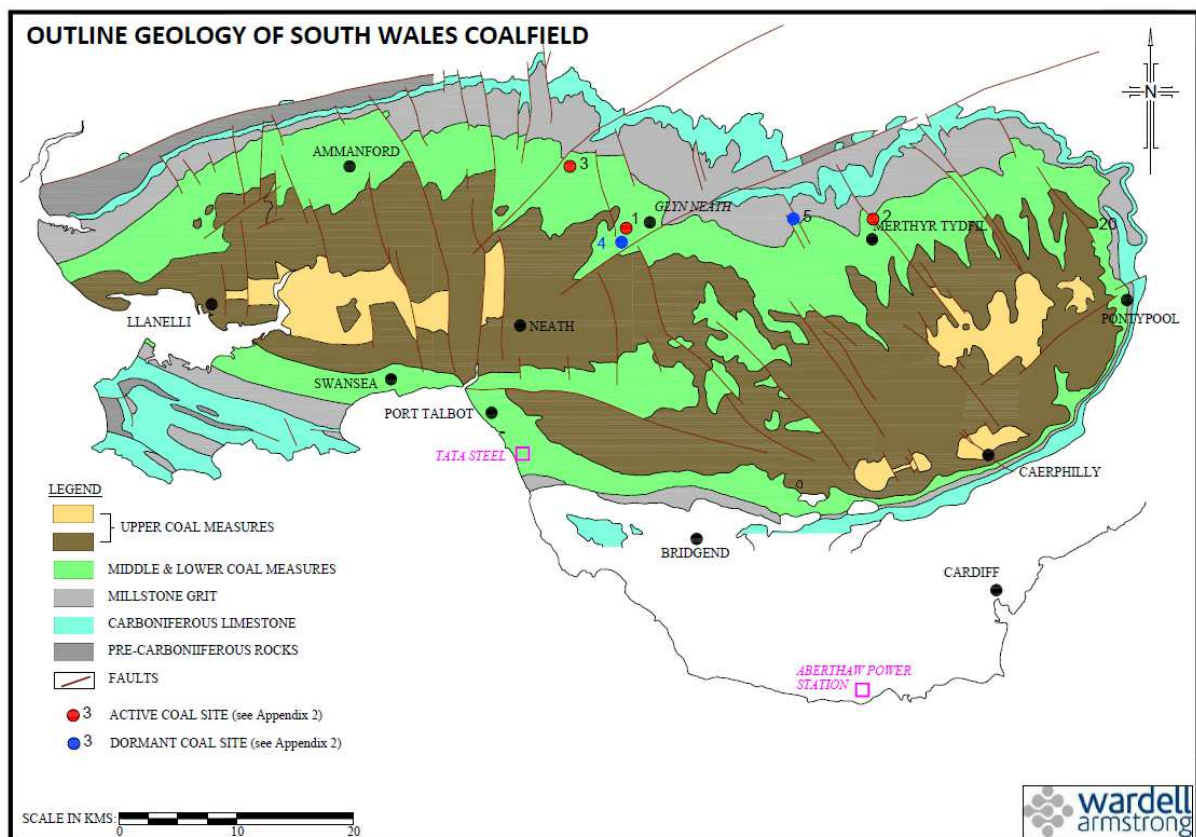
1.1.5 There are two coalfields within Wales, the major South Wales coalfield and the lesser North Wales coalfield. The latter is subdivided into the Flintshire coalfield and the Denbighshire coalfield which extend from Point of Ayr in the north east through Wrexham and Oswestry. The South Wales coalfield has been exploited from



Monmouthshire in the east to Pembrokeshire in west, centred on the valleys of the former counties of Gwent, Glamorganshire and Carmarthenshire. The coalfield extends approximately 145 km from east to west and is up to 24 km north to south.

- 1.1.6 The elongated basin comprises a rim of millstone grit and carboniferous limestone, the anticline structure produces a central zone of coal, located comparatively near to the surface (Figure 1).

**Figure 1 Outline geology of the South Wales coalfield**



- 1.1.7 Deep north-south valleys allow access to the upper, middle and lower coal measures through valley sides and deep vertical shafts. Bituminous coal is located in the eastern part of the coalfield, high-grade steam coal in the central portion, and anthracite in the west.

## 1.2 History of coal in Wales

### Underground mining for coal

- 1.2.1 Coal mining began with the exploitation of easily accessible deposits by local communities. This became intricately connected with the evolving iron industry.

Between 1913 and the 1920s, the coal industry in South Wales peaked, with 620 working deep mines, and up to 271,000 miners directly engaged in operations<sup>1</sup>. Welsh coal has been utilised for transport, metallurgical production, heating, power generation and a range of industrial process. In South Wales, the economy was long dominated by coal extraction alongside the resultant steel manufacture and power generation. The gradual decline of the South Wales deep mine coal industry during the post war years and throughout the early 21<sup>st</sup> Century has been considered as '*one of the most intractable development problems of any older industrial area in the whole of Britain*'<sup>2</sup>.

### ***Surface mining for coal***

- 1.2.2 Opencast coal or surface mining for coal began in South Wales in 1943 as an emergency measure during WWII at the Pwll-du group of sites near Blaenavon, operated by Taylor Woodrow from 1943 to 1950. Responsibility for opencast mining passed from the Ministry of Fuel and Power to the National Coal Board in 1952 and shortly afterwards the Opencast Executive became established. It was subdivided into regions and run by regional opencast directors with each region subdivided into areas covering a number of working sites which was run by private contractors and supervised by opencast executive staff.
- 1.2.3 In the latter part of the 20<sup>th</sup> century, despite the amalgamation and closure of deep mines leading to a reduction in the overall number of operating mines and total employment, extraction of coal from surface opencast mines increased in many of the coal fields. During this period, following privatisation (1994), the portfolio of the British Coal Opencast Executive (South Wales) sites, was acquired by Celtic Energy Ltd. Later a number of other private operators, such as Tower Regeneration and Miller Argent, accounted for rates of coal production of > 2.3M tonnes per annum in 2015, declining to approximately 1.2M tonnes by 2017 and 1.1M tonnes in 2018, of which only 0.1M tonnes was derived from deep mined coal<sup>3</sup>.

## **1.3 Current situation**

- 1.3.1 In the period post 2015, no new (greenfield) surface mines have been granted planning permission (e.g. Nant Llesg refused in 2015 and Bryncwm refused in 2019). Planning applications have instead sought to vary conditions and to grant permissions

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<sup>1</sup> [https://www.bbc.co.uk/wales/history/sites/themes/society/industry\\_coal03.shtml](https://www.bbc.co.uk/wales/history/sites/themes/society/industry_coal03.shtml)

<sup>2</sup> Fothergill, 2008.

<sup>3</sup> Digest of UK Energy Statistics (DUKES) 2019 (see: Chapter 2 Statistics on supply and demand for coal and manufactured solid fuels).

to extend existing workings. Prior to 2015, planning decisions were taken on several new surface coal mines located within the South Wales coalfield.

- 1.3.2 Coal extraction schemes may also take place from a range of other developments, including tip washing (removal of coal from former deep mine colliery spoil heaps), reclamation schemes (incidental coal following removal of plant and machinery), windfall coal (extracted when associated with other minerals, for example sandstone and brick making clay); and the extraction of coal prior to development for future use (including residential, industrial and infrastructure). The extraction of in-situ coal requires planning permission for the winning and working (of coal) from the Local Planning Authority together with a licence from the Coal Authority (CA). Certain operations required for the winning and working of coal will also require an Environmental Permit, determined by Natural Resource Wales (NRW), the environmental regulator in Wales.
- 1.3.3 The main coal producing sites post 2014 are illustrated in Figure 1, with a database of details provided in Appendix 2. There are no active coal sites within the North Wales coalfield. Currently there is c. 3.3M tonnes of opencast coal reserves within the South Wales coalfield being exploited across three operational or granted sites, including:
- Ffos y Fran;
  - Nant Helen; and
  - Bryn Defaid (not yet operational)
- 1.3.4 The only operational deep mine is at Aberpergwm near Glynneath, operated by Energybuild, which was granted planning permission in 2018 by Neath Port Talbot County Borough Council and has potentially 42M tonnes of anthracite coal reserves remaining. The Glyncastle Mine (formerly known as Unity Mine) near Cwmgwrach in the Vale of Neath drift mine opened in 2007 with reserves of up to 90M tonnes of coal and supplied Tata Steel and the Aberthaw power station. The mine, which is rail linked, went into administration in October 2013 and is currently under a programme of care and maintenance.

## **2 LEGISLATIVE FRAMEWORK**

### **2.1 Town and Country Planning**

2.1.1 Permissions and consent for coal extraction in Wales is subject to the following principal elements of policy and guidance:

- Planning Policy Wales Edition 10, 2018 (PPW 10, including the relevant guidance in Technical Advice Notes, TANs);
- Minerals Technical Advice Note 2: Coal, 2009 (MTAN2);
- Minerals Planning Guidance Notes (MPGN, those still in force);
- Town and Country Planning Act 1990 (as amended);
- Local Development Plans (specific to each authority); and
- Town and Country Planning (Environmental Impact Assessment) (Wales) 2017 (EIA Regulations 2017).

### **2.2 Coal Authority Licence**

2.2.1 The CA define extraction licences by the plan area for targeted coal seams and the area necessary to excavate the proved coal resource safely, which is termed the limit of excavation. The approved licence identifies an Area of Responsibility for the licence. The Area of Responsibility contains potential hazards including where coal-mining subsidence damage is evident, and other Surface Hazards, including former mine shafts, infrastructure and surface depressions resulting from the collapse of former shallow mine workings.

2.2.2 The boundary of the CA licence is not necessarily the same as that of the planning permission granted by the LPA/MPA, as the licensee may wish to identify a larger area, e.g. for prospecting, which may then identify a smaller area of extraction. The requirements of the CA licence relate only to the extraction of coal, whereas the planning permission is likely to include land required for ancillary operations. The coal extraction licence area can be surrendered once operations have finished and restoration has achieved a point where all significant liabilities (that fall within the remit of the CA) have been addressed. Individual operational sites may have been subject to multiple planning permissions and CA licences, as working areas are extended. However, as CA licences are surrendered by the operator, these can apply over a small proportion of the land within the permitted planning's total acreage.

2.2.3 The CA guidance for Applicants for Surface Coal Mining Licences (2016) states the

following:

*“6.2 We will determine an application in the light of our statutory duties, as outlined in the Coal Industry Act 1994. These include the duties:*

*6.2.1 to secure, so far as practicable, that:*

- an economically viable coal mining industry is maintained and developed, and*
- licensees are able to finance both the operations and the discharge of any liabilities resulting from them, and*
- adequate security is in place so that those affected by subsidence damage do not sustain a loss;*

*6.2.2 to have regard to:*

- the desirability of securing that licensees have at their disposal the appropriate experience and expertise to ensure that operations are properly carried out; and*
- the desirability of securing that competition is promoted between the different persons carrying on, or seeking to carry on, coal mining operations;*
- the subsidence damage that may be caused by coal mining operations.*

*6.3 We will also take account of the extent to which the Applicant has obtained the other necessary surface access rights, permissions and consents.”*

All legislation relating to coal remains reserved to the UK Government. [Wales Act 2017 Explanatory Notes Section D3 – Coal Paragraph 213]<sup>4</sup> Operational matters in relation to coal reserves and the issue of mining licences are for the Coal Authority. The Wales Act 2017 provided to Welsh Ministers the responsibility to decide whether to authorise coal licences in Wales.

*6.4 The Wales Act 2017<sup>5</sup> states section 26 of the Coal Industry Act 1994 insert—  
“26A Licences for coal-mining operations in Wales: approval by Welsh Ministers*

*(1) If or to the extent that a licence under this Part authorises coal-mining operations in relation to coal in Wales, it shall have effect only if the Welsh Ministers notify the Authority that they approve*

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<sup>4</sup> [http://www.legislation.gov.uk/ukpga/2017/4/pdfs/ukpgaen\\_20170004\\_en.pdf](http://www.legislation.gov.uk/ukpga/2017/4/pdfs/ukpgaen_20170004_en.pdf)

<sup>5</sup> <http://www.legislation.gov.uk/ukpga/2017/4/section/67/enacted>

*the authorisation.*

The reservation of powers to the UK Government covers all legislation relating to coal, including in particular ownership and exploitation, deep and opencast mining, subsidence and water discharge. Policy towards the UK coal industry continues to be dealt with on a UK basis, in consultation with the Welsh Ministers when appropriate.

Planning Policy in Wales states “Proposals for opencast, deep-mine development or colliery spoil disposal should not be permitted. Should, in wholly exceptional circumstances, proposals be put forward they would clearly need to demonstrate why they are needed in the context of climate change emissions reductions targets and for reasons of national energy security.”

2.2.4 The decision process for determination of the CA licence is shown in Appendix 1.

## 2.3 International Guidance

- 2.3.1 International Finance Institutions such as the World Bank and the European Bank for Reconstruction and Development (EBRD), have established a set of Environmental, Health & Safety (EHS) guidelines, which are sector specific and include mining. For any natural resource project to be funded by these international finance institutions (IFIs), it must abide by stringent environmental and social standards, such as the International Finance Corporation (IFC) Performance Standards or the EBRD Performance Requirements. As with the EU environmental directives, these standards provide a formalised method of assessing environmental and social implications of industrial projects and require the projects to comply with all relevant national legislation, policy and guidance. Where there is a difference between the Performance Standards and national equivalent the most stringent environmental and/or social standards apply.
- 2.3.2 Whilst the application of the IFC Performance Standards, or equivalent, are not a legislative requirement in Welsh coal projects, they are considered international best practice in applied environmental and social due diligence.

2.3.3 The IFC Performance standards (2012)<sup>6</sup> cover the following aspects:

- PS1: Assessment and Management of Environmental and Social Risks Impacts
- PS2: Labour and Working Conditions
- PS3: Resource Efficiency and Pollution Prevention
- PS4: Community, Health, Safety and Security
- PS5: Land Acquisition and Resettlement
- PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
- PS7: Indigenous Peoples
- PS8: Cultural Heritage

2.3.4 The IFC has further additional Industry Sector EHS guidelines<sup>6</sup>; the following are relevant to the Welsh Coal Industry:

- Integrated Steel Mills;
- Cement and Lime Manufacturing;
- Thermal Power Plants; and
- Mining.

2.3.5 Since 2017, EBRD does not allow coal-fired project investment and, excludes the financing of thermal coal mining and coal-fired electricity generation<sup>7</sup> while promoting renewable energy generation to address climate goals and air quality concerns<sup>8</sup>. The energy strategy provides a cross linkage to other sectors, including:

- Transport – no new funding of infrastructure such as rail or at ports principally dedicated to carrying of thermal coals.
- Municipal and environmental – no new funding of coal-fired projects for district heating that use coal for the whole or part of the fuel supply'
- Infrastructure, manufacturing, agribusiness and mining – no new funding for:
  - industrial processes that use coal as a fuel for heating and drying process;
  - electricity generating asset that uses thermal coal (except for modifications that would utilise waste heat from existing installations);

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<sup>6</sup>[https://www.ifc.org/wps/wcm/connect/Topics\\_Ext\\_Content/IFC\\_External\\_Corporate\\_Site/Sustainability-At-IFC/Policies-Standards/Performance-Standards](https://www.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/Sustainability-At-IFC/Policies-Standards/Performance-Standards)

<sup>7</sup> Extractive Mining Industries Strategy, 2018-2022, EBRD. 2017

<sup>8</sup> Energy Sector Strategy, EBRD 2019 – 2016, 2019



- 2.3.6 EBRD will continue to finance use of metallurgical coal used in the ferrous metal industry and other non-thermal coal used for feedstock for specified building materials processes, if compliant with Best Available Techniques under the EU Industrial Emission Directive. The use of thermal coal in production processes will be considered on a case by case basis, in order to take account of the use of low carbon technologies and methodologies.
- 2.3.7 Whilst the IFC banned direct financing for coal in 2013, indirect investments made by IFC funded commercial banks are not constrained by the same rules. Thus, IFC indirectly funded coal projects still exist, and have undergone much scrutiny<sup>9</sup>.
- 2.3.8 A review of international best practice, to mitigate impacts from coal extraction, has been provided in the relevant sections, where the requirements are more stringent or additional to those currently assessed in planning and licensing for Welsh coal projects.

### **3 REVIEW OF KEY COMPONENTS**

#### **3.1 Economic Baseline**

- 3.1.1 Wales has a population density of 148 persons per km<sup>2</sup> with a total area of c. 21,000 km<sup>2</sup> and a population of c. 3,125,000, 50% of whom are concentrated in the south east. In 2017, an estimated 61% of the population were of working age (16-64)<sup>10</sup>.
- 3.1.2 Across the UK, there are currently 2,500 to 3,000 direct employees within the coal and energy generation sectors<sup>11</sup>. Following the downturn in coal mining (deep and surface), the population of traditional coal mining areas, namely the Valleys, has generally continuously decreased<sup>10</sup> though this has stabilised in recent years. The proportion in Wales is now between 500-1000 direct employees working in the coal industry. Historically, the coal industry primarily supported the energy sector and several key industrial processes, such as steel making at Port Talbot works.
- 3.1.3 In Wales, coal production dropped significantly from 2.4M tonnes in 2016 to 1.2M tonnes in 2017. Surface mine coal output also reduced by 27%, and many sites are now nearing the end of coal extraction operations. In England, 2017 coal production

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<sup>9</sup> Digging Deeper: Can the IFC's Green Equity Strategy Help End Indonesia's Dirty Coal Mines, Inclusive Development International, April 2019.

<sup>10</sup> <https://gov.wales/sites/default/files/statistics-and-research/2019-08/summary-statistics-for-welsh-economic-regions-wales.pdf>

<sup>11</sup> The future of coal generation in Great Britain. Impact Assessment BEIS. 2017



reduced to an all-time low (3M tonnes) with the closure of three deep mines (Hatfield, Thoresby and Kellingley) and coal extracted from deep mines is now less than 1% of total production. Overall demand at 14.2M tonnes in 2017 is also reducing, with coal imported from Russia, USA, Australia and Columbia making up the shortfall in indigenous production.

3.1.4 The decline in coal production in South Wales is mirrored in other EU countries, most notably, Germany. New German policy looks to phase out coal-fired power to ensure 2050 climate change targets are met. These targets aim to reduce CO<sub>2</sub>e emissions by over 50% from the 385M tonnes observed in 2014, to approximately 175-183M tonnes<sup>12</sup>. The German Coal Commission was established, and a preliminary study conducted to inform this process. From a macro-economic level, the study considered the following:

- the context of the ambitious national target to address climate change and the impact on the coal industry;
- safeguarding employment opportunities within the four main coalfields;
- securing long term investment within the regions to define binding long-term financial measures;
- maintaining a security of supply for energy generation with the decline of indigenous coal production; and
- developing a holistic strategy to deliver a socially equitable distribution of the advantages and burdens associated with decarbonising the power sector.

## 3.2 Climate Change and Energy

3.2.1 The Paris Agreement commits signatories to *fight against **climate change** to limit the increase in world temperature to 2 °C, from the pre-industrial era, before the end of the century. To achieve this goal, greenhouse gas emissions must be reduced, those that come from fossil fuels, until their total eradication*<sup>13</sup>.

3.2.2 On the 11<sup>th</sup> June 2019, the Welsh Government published their acceptance of the recommendations published by the Committee on Climate Change<sup>14</sup>, requiring a 95% emissions reduction target by 2050. Additionally, the Welsh Government announced

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<sup>12</sup> Commission on Growth, Structural Change and Employment, Federal Commission on Economic Affairs and Energy, 2019

<sup>13</sup> <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>

<sup>14</sup> Net Zero. The UK's contribution to stopping global warming. Committee on Climate Change. 2019

their ambition to reach net-zero carbon by 2050. Two key policy statements outlining initial actions are Planning Policy Wales edition 10 [PPW 10] and the 100 policies and proposals described in Prosperity for all: A Low Carbon Wales.

- 3.2.3 PPW 10, published 5 December 2018, identifies that fossil fuels as the least favoured energy fuel in the energy hierarchy. PPW 10 sets the framework against which all planning applications will be determined, including for existing licences. Welsh Ministers have instructed Chief Planning Officers in a Notification Direction; stating where a planning authority does not propose to refuse a planning application for coal and petroleum development they must be referred to Welsh Ministers.
- 3.2.4 Prosperity for All: A Low Carbon Wales, published March 2019, stipulates both policy and further proposals for reducing carbon emissions from energy. Over the period from 1990 to 2016 the emissions associated with the Welsh power sector have increased 44%. Over the same period, overall UK emissions were reduced by 60%<sup>15</sup>.
- 3.2.5 Welsh renewable electricity generation is required to achieve a contribution equivalent to 70% of consumption by 2030<sup>16</sup>. During the most recent reporting period (2018), significant progress had been made with electricity generation equivalent to 50% of consumption coming from renewable sources<sup>16</sup>. Overall, generation of power from coal in Wales has decreased since the closure of Uskmouth B power station in 2013. Aberthaw B is the only remaining coal-fired power plant in Wales and in 2016 accounted for 12% of total Welsh GHG emissions and 37% of Welsh power generation emissions. At peak production, the plant consumed up to 3.5M tonnes of hard thermal coal. More recently, this has been co-fired with biomass, though this has now ceased and the power plant is now generating energy, from coal, at peak periods during winter months. In August 2019, RWE announced the proposed closure for the end of March 2020. Following its closure there will be no coal-fired power in Wales<sup>17</sup>.
- 3.2.6 Estimates of the conversion factors for the UK electricity grid show the continuous trend towards decarbonisation. Modelling projects that carbon emissions from the power sector will reduce from 0.256 kgCO<sub>2</sub>e/KWh and plateau at 0.025 kgCO<sub>2</sub>e/KWh in the early 2050s<sup>18</sup>. This anticipated reduction until 2025 is largely due to the Government's commitment to phasing out unabated coal generation by 2025. A

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<sup>15</sup> <https://gweddiill.gov.wales/docs/desh/publications/190321-prosperity-for-all-a-low-carbon-wales-en.pdf>

<sup>16</sup> Energy generation in Wales, Regen (for the Welsh Government). 2018

<sup>17</sup> <https://www.group.rwe/en/our-portfolio/our-sites/aberthaw-power-plant>

<sup>18</sup> UK Government Department for Business, Energy & Industrial Strategy, Greenhouse gas reporting: conversion factors 2019.

current list of coal-fired power station in the UK is given in Appendix 3.

3.2.7 The speed at which the UK has reduced its reliance on coal is attributable to the switch to gas by utilising existing capacity, whilst developing new combined cycle gas plants in combination with renewables<sup>19</sup>. Four factors have been necessary to achieve this rapid fuel switch:

- Existing Gas generation plants had spare capacity that could be utilised;
- Existing infrastructure could cope with increased power sector demand;
- Political will through effective carbon pricing that penalised coal in comparison to gas generation; and
- Coal and carbon prices were sufficiently close in value to that of gas, which allowed switching from coal fired plant to gas whilst maintaining price comparability for consumers.

3.2.8 From a UK perspective, the ability to rapidly switch from coal to gas combined with an excellent source of renewable energy, particularly onshore and offshore wind, provided the policy platform to enable the UK to be a founder member of the Powering Past Coal Alliance (PPCA). The UK is currently co-chair with Canada<sup>20</sup>, a coalition of national and sub-national governments, businesses and organisations working to advance the transition of unabated coal power generation to clean energy. The Welsh Government signed as a member in 2018.

3.2.9 During Scotland's most recent reporting period (2018)<sup>21</sup>, renewables generated an estimated 50% of electrical consumption, with coal generation at 1.1%. Gas consumption for electrical generation has also declined by 64% in the period 2000 to 2016, compared to an 87% decline in coal over the same period. Following the closure of the Longannet Power Station coal production reduced by over 40%, and no coal fired plants remain in Scotland.

3.2.10 Internationally, to meet the emissions reductions in the Paris Agreement (to limit global warming to 1.5°C), the EU and the OECD countries must close all unabated coal-fired power plants by 2030, China by 2040 and the remainder of world by 2050<sup>22</sup>. Because the technology is available to phase out coal for power production, this is

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<sup>19</sup> Wilson, I.A. and Staffell, I Rapid fuel switching from coal to natural gas through effective carbon pricing. Nature Energy. 2018.

<sup>20</sup> <https://poweringpastcoal.org>

<sup>21</sup> Energy generation in Scotland, The Scottish Government. 2018

<sup>22</sup> <https://climateanalytics.org>

likely to be the most effective method for reducing GHG emissions.

3.2.11 IFC Performance Standards require that any project with direct emissions of >25,000 tonnes CO<sub>2</sub>e per annum to provide annual reporting of these emissions. Whilst this requirement does not pertain to the end use of the mined product, and instead accounts for any direct emissions within the boundary of the site, it should be considered during any climate change assessment. With an overall aim to become net zero-carbon, the direct emissions associated with opencast extraction must be taken into account. In addition, the PPCA commits members to the phasing out of coal fired power plant and investing in clean forms of energy and provides the following commitments with reference to coal:

- No project specific finance for unabated coal-fired power plant
- No new financial services to companies that would result in the construction of coal fired power-plant
- Where finance is already in place, provide leadership and public commitment to the phase-out of unabated coal fired plant<sup>20</sup>.

### 3.3 Industry

3.3.1 The need for sustainable industries to operate in the Valleys continues to be a fundamental challenge for the local economy. The Economic Action Plan (published December 2017) sets out the Welsh Governments approach to grow the economy and support business. Strategically this aims to raise levels of wealth and well-being across Wales, whilst reducing inequalities in both.

3.3.2 Despite the anticipated continued reduction of emissions from the Welsh Energy sector, Wales has been identified as having a higher share of 'hard-to-reduce' sectors when compared with the rest of the UK. The proposals in Prosperity for all: A Low Carbon Wales identify pathways for reducing these emissions by 2050. The hard-to-reduce sectors include the industrial sector which may use domestic or imported coal. In 2017 business and industry accounted for 35% (14.7Mt CO<sub>2</sub>e) of Welsh carbon emissions with the largest sectors being the production of iron and steel, and petroleum refining. The Electricity generation sector emitted a further 25% (10.4 MtCO<sub>2</sub>e) of Welsh carbon emissions

3.3.3 According to the World Coal Association, the majority of coal production is consumed in the countries that have natural reserves. In 2014, approximately 25% of coal produced globally was traded internationally, with the UK as the 7<sup>th</sup> largest importer

of coal globally with coal imports of 41Mt<sup>29</sup>. In 2018, approximately 43% (or 5.1M tonnes, compared to 11.9M tonnes in total) of coal was consumed for industrial purposes in the UK. Steel and cement production were the predominant users of coal.

### ***Steel***

- 3.3.4 Coking coal is a key commodity in steel manufacturing, with multiple purposes across the process. Coal for steel production must meet certain specifications in terms of its quality, making it a distinct product from other industrial or thermal coals. In the UK, the quantities of coking coal being used in the iron and steel industry has been in decline since 2014 with a drop in coke fine sized breeze from 620 thousand tonnes in 2014 to 269 thousand tonnes in 2018 and a drop in coke oven coke from 14 thousand tonnes in 2014 to 2 thousand tonnes in 2018<sup>23</sup>.
- 3.3.5 Steel is manufactured in the EU, including Port Talbot works in South Wales. The total greenhouse gas emissions in Wales were circa 45Mt of CO<sub>2</sub> in 2018 as compared to 37Mt of CO<sub>2</sub> in 2017. The emissions associated with Port Talbot Steelworks is circa 7-8Mt. However, the current principal sources of coking coal in the UK are primarily the eastern United States, Russia and Australia. The Committee on Climate Change have identified the need to monitor the potential movement of emissions offshore, potentially resulting from decarbonisation targets in the UK. Whilst the ongoing closure of coal-fired power generation is beneficial to the reduction of UK territorial and consumption emissions, steel and cement are imported to the UK in substantial volumes, with the production and transport emissions not accounted for in UK reporting. The Welsh Government's statutory obligations will account for all emissions in Wales and include all direct emissions including the Welsh share of International Aviation and International Shipping emissions. Therefore goods arriving via, for example, Avonmouth, Bristol will have different accounting to Welsh ports. The CCC's Net Zero Call for Evidence published in April 2019 reported that respondents believe the UK needs to account for consumption emissions. This view was based on a variety of reasons, including the belief that territorial accounting is inequitable and will move UK business offshore, and will have an adverse effect on global emissions.
- 3.3.6 In recent planning applications for surface coal mines in the north east of England, the reduction in CO<sub>2</sub> emissions from just the transportation of coal (from the mine to the steel or power plant) was calculated to be at least 47% less compared to freight

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<sup>23</sup> Department for Business, Energy and Industrial Strategy – Historical Coke and breeze data

emissions from transportation of imported coal (from the main importing countries of Russia, USA, Australia and Columbia<sup>24</sup>). In this case the analysis was for the use of coal at Port Talbot steel works, as the final destination, because this was the furthest distance for transporting coal from the mine to end-user<sup>25</sup>. This application is currently under consultation, awaiting determination. The Secretary of State is also considering an earlier application for the extraction of coal at Highthorn surface mine in Northumberland, for which the original appeal was dismissed by the Secretary of State but was upheld in the High Court in favour of the applicant. The Secretary of State has yet to make a decision on this case.

- 3.3.7 To maintain an indigenous manufacturing capacity for the production of steel from iron, there will be a continuing demand for good quality coking coal for the foreseeable future. In 2014, iron and crude steel production reached a peak in Wales, at a combined 9.6 Mt, since a trough in production in 2000. However, by 2018, production of steel had reduced to a provisional 6.9 Mt, which accounts for 54% of UK production<sup>26</sup>. Despite the drop in production, the associated employment within the steel and iron industries has remained stable, with a small increase from 6,630 to 6,640 during 2018<sup>26</sup>.
- 3.3.8 In 2019, planning permission for Woodhouse Colliery in Cumbria was granted, subject to conditions and legal agreement. This new deep mine is projected to supply, up to 2.4M tonnes of good quality coking coals annually by the mid 2020's for a period in excess of 40 years<sup>27</sup>. The market for coking coal would be the UK and Europe, with primary UK markets being Tata Steel in Port Talbot and British Steel in Scunthorpe (currently subject to purchase). Work has yet to commence on the mine, however it would provide all the coking coal required for UK markets, including domestic and manufactured fuels, following closure of coal fired power stations in the period up to 2025.
- 3.3.9 The steel sector is globally a highly competitive sector and this autumn Tata steel announced the potential part closure of its steelmaking factory in Newport, which could result in up to 400 job losses<sup>28</sup>.

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<sup>24</sup> Dewley Hill – Proposed Mineral Extraction Environmental Statement, 2019 (Planning application ref: 2019/0300/01/DET)

<sup>25</sup> Cutting the climate cost of coal, RICS journal, 2019 Page 18

<https://www.rics.org/globalassets/rics-website/media/news/journals/land/land-journal-july-august-2019.pdf>

<sup>26</sup> StatsWales, Iron and Steel Production by year, measure and area.

<sup>27</sup> Joseph, S. An insight into West Cumbria mine's Woodhouse Colliery project, Materials World, 2019.

<sup>28</sup> Tata Steel to close Newport factory, putting 400 jobs at risk. The Guardian. 2019

## ***Cement***

- 3.3.10 Globally, coal is used to supply approximately 90% of all energy consumed by cement plants<sup>29</sup>. However, substitute fuels within the cement sector are replacing the use of coal. Within the UK there are a total 18 cement manufacturing works<sup>30</sup> (Appendix 4). In 2008, 13 of these are known to have trialled or are currently using substitute fuels, namely tyres, secondary liquid fuel, biofuels and waste derived biofuels<sup>31</sup>. Public concerns regarding the use of substitute fuels have commonly been received during the process. These pertain to environmental impacts, public health concerns, odour nuisance, effects on food chain and safety issues. The current consumption of coal by the UK cement industry is not publicly reported. However, bituminous coal required for cement manufacturing has been supplied from the South Wales Coalfields.
- 3.3.11 There are two cement works located in Wales: Aberthaw in the south east and Padeswood in the north east. It is understood that both works rely on the supply of coal and solid recovered fuels<sup>32</sup> & <sup>33</sup>. In 2018, the Aberthaw Cement works accounted for 2.04Mt of CO<sub>2</sub>e emissions in 2018 (up by 19.7% as compared to 2017) whereas the Padeswood Cement accounted for 2.95Mt of CO<sub>2</sub>e emissions (up by 23% as compared to 2017), However the information available is not sufficient to calculate the emissions associated with the coal use at these cement works.

## ***Heritage Railways and Locomotives***

- 3.3.12 It is evident throughout literature that the cultural and heritage association of an industry or project is influential in both project success and in community satisfaction and wellbeing. The locomotive industry has a long-lasting history in the UK with a large network of stakeholders accumulated into the National Traction Engine Trust.
- 3.3.13 The heritage railway industry has long been aligned with the UK coal mining industry. However, more recently there has been an increase in imports from international mines<sup>34</sup>. Whilst the quantity of coal required for the heritage sector is negligible compared to the demand from the steel sector, the desire by the industry to keep this supply within the UK is dominant, be this for climate change or heritage reasons. An alliance has been formed calling on the UK Government to protect domestic supplies

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<sup>29</sup> Coal for Cement: present and future trends

<sup>30</sup> <https://www.cemnet.com/global-cement-report/country/united-kingdom>

<sup>31</sup> The Use of substitute fuels in the UK cement and lime industries, Environment Agency, 2008

<sup>32</sup> <https://www.tarmac.com/aberthaw-plant/fuels/>

<sup>33</sup> Hanson Cement, Padeswood Works, Annual Report for environmental Permit, 2015

<sup>34</sup> <https://www.heritagerailway.co.uk/2015/from-our-archives-coal-fear-is-no-smoke-screen/>



of coal for use in locomotives.

3.3.14 A survey conducted by the Heritage Railway Association confirmed operators had concerns regarding the future of coal supply and potential impact to the industry. High quality steam coal for heritage railways is the sector's preferred fuel. Stakeholders are concerned that Welsh supplies will be diminished, should high consuming coal sectors such as energy and steel, phase-out coal use. Multiple steam operators were contacted, commenting on their current supply and future concerns.

3.3.15 As part of the research for this Report, the Welsh heritage locomotive companies were approached and asked to provide comments on the following questions;

- a) Where they source their steam coal?
- b) Approximate coal tonnage used per annum?
- c) Number of employees?
- d) Potential revenue? and
- e) comment on their concern for security of future supplies.

3.3.16 The following Welsh heritage railways were contacted and only four failed to respond. Of those who did respond, cumulatively total steam coal amounts to c.2,100 tonnes per annum all sourced from Ffos y Fran. The heritage railways provide a total of 171 full time and 189 seasonal jobs generating c. £6.5m of revenue per annum.

- Bala Lake Railway;
- Brecon Mountain Railway;
- Fairbourne Miniature Railway;
- Ffestiniog & Welsh Highland Railways;
- Llyn Padarn, Llanberis Lake Railway;
- Snowdon Mountain Railway;
- Talyllyn Railway;
- Vale of Rheidol Railway;
- Welshpool and Llanfair Light Railway;
- Corris Railway;
- Welsh Highland Heritage Railway;

3.3.17 The reliance on Welsh coal across the heritage railway industry is prevalent and the



following locomotive companies also procure their coal from Ffos-y-fran<sup>34</sup>:

- South Devon Railway;
- Bluebell Railway;
- Gloucestershire Warwickshire Railway;
- Isle of Wight Steam Railway;
- Dartmouth Steam Railway and River Boat Company;
- Mid-Suffolk Light Railway;
- Great Central Railway;
- Bodmin & Wenford Railway; and
- Didcot Railway.

3.3.18 The Welsh heritage railway sector have expressed very serious concern about the continued viability for UK supplied coal if the major markets on which the suppliers depend are unable to use the fuel. Ideally steam coal is needed for heritage railway engines, as it burns efficiently whilst generating minimal amount of smoke. In the absence of Welsh Steam Coal, these companies would be forced to seek supplies from abroad. Prior to Ffos y Fran resuming production, coal from Russia, Columbia, Poland and Coventry was used none of which burned as cleanly. If there is a reliance on imported coal, there will likely be a minimum quantity to make it viable to import. The sector is concerned that this will either mean it becomes more difficult to import and/or result in an escalation in price having a hugely detrimental effect on the viability of the sector. Tourism spending in Wales was almost £6 billion in 2019 and the heritage railways contribute to the tourism sector, particularly in north Wales.

3.3.19 The chief mechanical engineer on the West Somerset Railway is quoted as saying *“South Wales opencast coal, from where most of the railways in the South obtain their coal, is only viable so long as Aberthaw power station and Tata Steel at Port Talbot continue in operation”*<sup>34</sup>. The Ffos-y-fran mine is also known to export coal for Swiss, German, Dutch and French locomotives.

3.3.20 Planning applications and the coal licensing procedure do not specifically consider the demand of heritage railways. Welsh mines supply steam coal to many heritage railways in England and the steam grade of coal, favoured in the heritage steam sector, has been supplied from mines located in the centre of the south Wales coal field. The coal mines in north west and east England granted planning permission in recent years

may not have reserves of the preferred grade of coal. A decline in heritage railways could lead to potential adverse impacts to socioeconomics and cultural heritage aspects, both within Wales and further afield. The Ffestiniog Railway forecast<sup>35</sup> prices increasing three to four fold when UK steam coal mines close. This cumulative downstream impact should therefore be acknowledged when reviewing coal abstraction licences.

### ***Domestic and industrial coals used for heating***

3.3.21 There is no official data on the number of properties that rely on coal for space and water heating, however, there are approximately 13,800 domestic properties in Wales that depend on solid fuels. This is similar to the number of properties in Scotland that depend on solid fuels for space heating and hot water<sup>36</sup>. The majority of these properties are located in remote areas and off the gas grid. This represents approximately 0.5% of the housing stock. The opportunity to convert to renewable energy is supported through the Renewable Heat Incentive, which is open until March 2021.

3.3.22 There are three types of coal used for space heating, subdivided into the following:

- House coal (or bituminous coal) – a naturally occurring mined product;
- Smokeless coal (or anthracite) also naturally occurring, mined, high-purity coal, which is authorised for use in smoke control areas; and
- Manufactured solid fuels and briquettes, which are fuels manufactured from coal products with other ingredients that have low smoke emissions, suitable for use in smoke control areas and for outdoor use on BBQs and patio heaters etc.

3.3.23 Defra has been consulting on the use of house coal and wet wood for domestic use<sup>37</sup>, with the aim of improving air quality (specifically PMs and NOx) from domestic burners. A similar consultation has commenced in Scotland for properties that are not on the gas grid<sup>38</sup>. Both consultations consider the phasing out of bituminous coals for domestic use in the period after 2022 and this could potentially increase the demand for anthracite and manufactured solid fuels, although there is little published data on the total quantity used for domestic purposes. The use of anthracite and

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<sup>35</sup><https://www.banksigroup.co.uk/core/uploads/Steam-Railway-mag-special-report-re-coal-crisis-20-Sept-2019.pdf>

<sup>36</sup> Freeman, T Analysis: Scotland still relies on fossil fuels. Holyrood 2018

<sup>37</sup> Air quality: using cleaner fuels for domestic use, <http://consult.defra.gov.uk>. 2018

<sup>38</sup> Energy Efficient Scotland: The future of low carbon heat for off gas buildings. A call for evidence. Scottish Government. 2019

manufactured solid fuel may increase in future, but overall this would be relatively small, in comparison with the total production in Wales.

***Other industrial uses<sup>39</sup>***

3.3.24 Coal can be used as a raw commodity for carbon black (pure carbon) in activated carbon products, carbon fibre (used in construction, sporting and electronic equipment and silicon metal) and as an additive for lubricants, water repellents, resins, cosmetics, hair shampoos and toothpaste. At the TATA steel plant at Port Talbot, coal is blended on site to form a coal mix and taken by conveyor to the Coke Ovens. Gas driven off the coal during the coking cycle is cooled, cleaned and any by-products are removed either for re-use or sale. Clean gas is recycled within the site as fuel for heat or electricity production. Excess gas is burned off at the Coke Ovens flare stack.

3.3.25 Gas, from coking ovens and coal gasification provide the hydrogen and carbon for a virtually limitless production process in the chemical industry. The use of coal as a platform for chemical manufacture is of greater interest to nations that have limited access to oil and gas but have high coal reserves. The majority of the interest in coal as raw commodity in the chemical industry is in China and India.

3.3.26 A waste product from the power industry, pulverised fuel ash (or pfa), is commonly used in the manufacture of concrete (substituting for lime), building products and for ground stabilisation, in grouting mixes. Both techniques are commonly used throughout the UK. As the availability of pfa is reducing with the closure of coal-fired power station, there is a renewed interest in the extraction of this material from the lagoons formed to dispose of the material when it was produced in excess<sup>40</sup>.

***Review of Climate Change, Energy and Industry***

3.3.27 There is a large degree of unity in the approach to policy provisions for coal, based on Climate Change. This is not surprising due to the commitments arising from the Paris Agreement and the Powering Past Coal Alliance with the commitment to phase out coal-fired power generation by 2025.

3.3.28 For industrial coal, not including coal as fuel used to generate electricity, the continued manufacture of steel at Port Talbot depends on the supply of good quality coking

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<sup>39</sup> Non-fuel uses of coal; Nalbandian, H, IEA Clean Coal Centre. 2014

<sup>40</sup>As fly ash supplies dwindle what should the construction industry do?' NCE: <https://www.ice.org.uk/news-and-insight/the-civil-engineer/may-2018/fly-ash-supplied-dwindle>

coals. The contribution of imported and indigenously supplied coal is not known for specific sites, however for the UK 63% of coking coal utilised in 2018 was indigenous, with the remaining 37% being imported<sup>41</sup>. To support the continued supply of UK coking coal, applications for coal mine operations in the UK have submitted evidence that the transportation of coal from international sources results in higher GHG emissions than the equivalent mined in the UK. However, the evidence base for this is limited and does not include the emissions from the mining of coal, or the emissions from the production of steel.

- 3.3.29 If UK and Welsh coal production displaces imported coal, that displaced coal can still be consumed elsewhere in the world, and the combined effect would be to increase global coal consumption. The evidence as to whether new extraction of fossil fuels in Wales would add to, rather than displace, existing production in other countries has not been assessed further in this study, although the potential effects of the transport of imported coal on climate change has been considered in Section 3.4.
- 3.3.30 Following the closure of Aberthaw B, there will be no coal fired electricity generation in Wales and there is an opportunity to increase the supply from renewable energy, to reduce the reliance on gas fired power generation, with approximately 50% less associated CO<sub>2</sub> emissions<sup>42</sup>. England will continue to require fuel for coal fired power stations in the immediate future, although the remaining coal fired generation capacity is due to close well before 2025 (see Appendix 3). The policy framework to encourage development of renewables has been influenced in England by the restriction on height for onshore wind generation (NPPF), whereas in Scotland, in particular there continues to be a pipeline of onshore wind development to promote future onshore wind generation capacity<sup>36</sup>. In Wales, a significant contribution comes from onshore and offshore installed capacity; in 2018 a total of 726 MW from offshore and an additional 1,106 MW from onshore wind was recorded<sup>43</sup>.
- 3.3.31 The supply of coal as metallurgical coal and coal as fuel to the steel and cement industries is particularly important to the South Wales economy, with Tata's steelworks at Port Talbot and Tarmac's cement works at Aberthaw. Further analysis of fuel supply would enable a comprehensive understanding of the potential future should there be a fall in indigenous supply, compared to imports (see Section 3.2). This

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<sup>41</sup>[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/822305/DUKES\\_2019\\_MASTER\\_CO\\_PY.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/822305/DUKES_2019_MASTER_CO_PY.pdf)

<sup>42</sup> <https://www.eia.gov/tools/faqs/faq.php?id=73&t=11>

<sup>43</sup> <https://gov.wales/sites/default/files/publications/2019-07/future-potential-for-offshore-wind.pdf>

information gap could be addressed through structured interviews with the main industrial users for coal, to provide a database that would require updating on an annual basis, given the change taking place in this market with respect to suppliers and users of industrial coal.

- 3.3.32 A recent development that could influence the overall reduction of coal production and consumption, more generally in the UK, is likely to result from the recent planning consent determined by Cumbria County Council for Woodhouse Colliery, as this is the most significant new coal reserve, consented during 2019. The planned development of the mine demonstrates that there continues to be a need to develop new coal reserves, subject to conditions specified on the planning consent. The written statement prepared by the applicant and submitted with the planning application specifies that the coal extracted will supply industrial users of coal for the steel industry and would not be used for power generation. The steam grade coals, suitable for power stations, would be retained underground and used to backfill worked out seams within the mine. The application for the development at Woodhouse Colliery was submitted in accordance with the EIA Regulations 2011, as amended; the assessment of climate change and health impacts were not included in the scope. The requirement for these assessments, within the EIA process have been considered in Sections 3.2 and 3.4 as a consequence of EIA Regulations, 2017 coming into force.

### 3.4 Transport

- 3.4.1 Coal is a commodity, which is transported from operational surface coal mines to markets in South Wales, nationally and to other UK markets by a combination of road and rail. International markets can be accessed through several ports, although in recent years the net balance is importation of coal to the UK. The importation of coal by ship to South Wales is generally through the docks at Port Talbot and further east at Avonmouth. There are no examples of coal transport from active coal extraction sites using inland water ways either in the South Wales coalfield or from other operational surface coal mines in the UK.
- 3.4.2 Policy and guidance promote sustainable transport, which for coal requires applicants for new operations to *demonstrate that actions to reduce emissions from the extraction and transport of coal are included in the proposals*<sup>44</sup>.

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<sup>44</sup> Mineral Technical Advice Note 2: Coal, 2009 [<https://gov.wales/sites/default/files/publications/2018-11/minerals-technical-advice-note-mtan-wales-2-coal.pdf>]

3.4.3 For current operational sites in South Wales, there are railhead facilities for coal disposal located at:

- Cwmbargoed Disposal Point, adjacent to the Ffos-y-fran coal site. The DP has the capacity to process 150,000 tonnes per year of coal, of which up to 50,000 tonnes is permitted to leave by road and the remainder by rail (including the supply of coal to Aberthaw B power station which ceased in 2017); and
- Onllwyn Distribution Centre operated by Celtic Energy and processes coal from the operational site at Nant Helen and formerly from East Pit and Selar.

3.4.4 Until recently there were two operational railhead facilities in South Wales linked to coal sites, namely:

- Tower Colliery railhead, Rhigos, Hirwaun, which serviced the former Tower Colliery deep mine and more recently the Tower Colliery surface opencast mine which transported coal down the Cynon Valley to Aberthaw B power station; and
- Glyncastle Mine railhead, Cwmgwrach, Glynneath which served the former Unity Mine and transported coal down the Vale of Neath and onward to Aberthaw. This railhead has been identified for potential use by Aberpergwm Mine, which would reduce road transportation accordingly.

3.4.5 At remaining active coal sites in South Wales, coal is taken from the site by road direct to market. Where coal is to be transported by road there is a requirement to<sup>44</sup>:

- Consult with the Local Planning Authority at all stages of the design of the scheme;
- Consider freight quality partnerships, to reduce HGVs movements and the distance travelled;
- Assess the capacity of the local road network to accommodate additional HGV traffic, generated by the development (through a Transport Assessment);
- Assess the impacts of additional traffic on other road users, local amenity and environmental factors such as noise, air quality, vibration and health; and
- Enter into a voluntary transport management plan that delivers a sustainable transport solution during site operations and provides for the maintenance of the local road network.

3.4.6 In addition, sustainable transport requires a developer to conform to the guidance in

MTAN2<sup>45</sup> in conjunction with the applicable policies in the relevant Local Development Plans.

- 3.4.7 Haulage of coal by road can impact on road safety, lead to increased congestion and result in environmental and health impacts. In addition, the use of road haulage for bulk materials such as coal increases greenhouse gas emissions and should be assessed with MTAN2 to demonstrate action taken to reduce CO<sub>2</sub> emissions.
- 3.4.8 At the Aberpergwm Mine near Glynneath, planning permission allows for the transportation of up to 480,000 tonnes of coal from the site by HGV per annum. The operator of the mine, Energybuild Limited, are seeking the necessary permissions to utilise the existing railhead at the Glyncastle Mine to transport coal by rail. If secured, then the planning permission requires that all future sales of coal be transported by rail.
- 3.4.9 In England, sustainable transport is promoted through National Planning Policy Framework (NPPF)<sup>46</sup> in particular, to assess the potential impacts of new development on transport networks and the environment and consider opportunities to promote sustainable methods of transport. The methodology for assessing impacts on the road network includes advice on when Transport Assessments and Transport Statements are required and the approach to developing Travel Plans for development<sup>47</sup>. With specific reference to mineral development including for coal<sup>48</sup>, developers are encouraged to follow the transport specific guidance<sup>47</sup>.
- 3.4.10 Recent decisions for new coal operations include the deep mine at Woodhouse Colliery, Cumbria<sup>49</sup> and Highthorn Surface Mine, Northumberland<sup>50</sup> [note this application was called in by the Secretary of State and not upheld by the Minister in 2018, which has been subject to a successful appeal to the High Court, in 2018]. For both developments existing and proposed rail infrastructure was identified as the primary transport for coal to markets elsewhere in the UK (and in the case of Woodhouse Colliery, to export markets via docks at Redcar). Both applications were subject to Transport Assessments and associated Travel Plans that identified transport

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<sup>45</sup> <https://gov.wales/sites/default/files/publications/2018-11/minerals-technical-advice-note-mtan-wales-2-coal.pdf>

<sup>46</sup> National Planning Policy Framework, 2019

<sup>47</sup> Guidance on Travel Plans, Transport Assessments and Statements. Ministry of Housing, Communities & Local Government. 2014.

<sup>48</sup> Guidance on the planning for mineral extraction in plan making and the application process. Ministry of Housing, Communities & Local Government. 2014.

<sup>49</sup> Offices report to Development Control and Regulation Committee, Cumbria County Council. 2019 (planning ref: 4/17/9007).

<sup>50</sup> Officers report to Planning and Building Control Committee, 2016 (planning ref:15/03410/CCMEIA)

links and opportunities for sustainable travel for employees.

- 3.4.11 There have been no recent applications for coal extraction in Scotland, however the relevant planning advice provides for similar methods of assessment, to promote sustainable transport<sup>51</sup> to that in England and Wales.

### ***Review of Transport***

- 3.4.12 Transport of minerals on the public highways is a sensitive operation, particularly on the rural road network, potentially impacting small communities and villages before joining the strategic road network. Operational sites in South Wales have generally been serviced by railhead infrastructure that reduce the requirement for road haulage of heavy coal goods. However, operators will require some flexibility to serve local markets not accessible by rail and therefore there can be associated conditions that enable the road transportation of a proportion of the coal produced. This is not dissimilar to the recent planning decisions in England for surface mines, however the recently approved surface mine (Woodhouse Colliery, in Cumbria) has consent for rail export only, with poor quality coals being backfilled within the mine.
- 3.4.13 For future applications in Wales, the provisions of MTAN2 provide the requirement for appropriate transport assessment and dialogue with the LPA and local communities. However, there is also a legacy of rail infrastructure that should be utilised for any future development, subject to PPW 10. Consideration should be given to whether it would be appropriate to safeguard this existing infrastructure, because of the sustainable method of transport and improved highways links to access the railhead.
- 3.4.14 There are no critical gaps in the existing evidence, particularly since reduction in operational surface and deep mine coal sites has reduced the potential for cumulative effects on the road network.
- 3.4.15 The presumption is that all coal extraction, processing, storage and delivery operations must develop a sustainable approach to transport. In future, particularly following closure of coal-fired power stations in the UK, there may be a demand for smaller sites extracting coal for specific industrial & domestic markets. Where these existing licenced sites continue extraction under the licence terms, these are unlikely

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<sup>51</sup> Scottish Planning Policy 4: Planning for Minerals, 2006 and PAN 50 Annex C.



to support rail infrastructure, on their own, and may in consequence result in increased road haulage of coal locally. As indicated previously, there is potential for existing rail infrastructure to be retained, however, these smaller uses of coal are unlikely to be easily served by rail. This aspect should be considered to understand where future markets for coal continue and the opportunities to improve sustainable modes of supplying these markets.

### 3.5 Decommissioning & Restoration

- 3.5.1 The historical perspective of restoration in the coal fields has been mixed<sup>52</sup>. The industrial legacy through the post war years of a declining deep mining sector, resulted in derelict areas comprising mine spoil heaps, pit head buildings, shafts and head gear, lagoons and the infrastructure required to service the mines. Opencast coal and the extraction of incidental coal have been used as a method of reclamation and restoration without recourse to public funding, as the economic value of the coal provides sufficient return to reclaim previously despoiled land.
- 3.5.2 Following privatisation of the coal industry, surface mining has continued to provide an economically viable method of reclamation whilst maintaining an indigenous supply of coal. However, the proximity of settlements to areas of shallow coal workings, suitable for extraction by surface mining has led to tension between the perceived economic benefits from surface extraction with the potential environmental and social impacts on affected communities, namely noise, dust, visual and health impacts<sup>52</sup>.
- 3.5.3 The coal industry in the UK has developed an approach to reclamation and restoration based on extensive academic, government sponsored and industry-based research. A range of challenges were presented as a consequence of surface mining. Although the research provides evidence on effectiveness of reclamation and restoration, its application is specific to individual coalfields<sup>53</sup>. This research has led to the development of techniques that have informed the design of open pit coal mining and the interrelationship with reclamation of residual legacy of former mining (both deep and surface).
- 3.5.4 Modern restoration techniques have continued to be informed by research that is

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<sup>52</sup> Merrill, T & Kitson, L. The End of Coal Mining in South Wales: Lessons learned from industrial transformation, GSI Report. 2017.

<sup>53</sup> For South Wales this includes research by the Forestry Commission and Aberystwyth University.

perceived to be relevant for the UK coalfields. However, within these methods local and cultural value attributed to mining and post mining landscapes by local communities who have long been exposed to the industry, is not necessarily realised<sup>54</sup>. There are however many examples of industry working in partnership with MPAs to protect and enhance existing features of nature conservation. For example, Merthyr Common Central SINC, within the working area of Ffos-y-Fran, together with an Ecological Management Plan has maintained the value of the SINC<sup>55</sup>.

3.5.5 The Town and County Planning Act Wales requires the restoration of mineral workings and the commitment to an aftercare management plan for a period of five years after soil has been reinstated. The detailed guidance is contained in MTAN2 Coal<sup>56</sup>, similar to guidance in England and Scotland, which provides guidance for MPAs and operators as to the requirements of restoration, including:

- **Baseline studies** – the information required to establish the design principles for restoration;
- **Consultation** – statutory, non-statutory consultees, including Welsh Government for agricultural uses and Forestry Commission for commercial forest after-use;
- **Soils** – handling, storage and replacement, together with the treatment of contaminated and derelict land with a short fall of natural soils;
- **Water** – the treatment of Acid Rock Drainage (ARD) and residual Acid Mine Drainage (AMD), the surface drainage and control of run-off, and management of groundwater; and
- **Land use and landscape:** restoration design for the long-term sustainable planning to incorporate the principles of biodiversity, accessible green and open space, flood control, accessible green and open space with commercial uses of the land for agriculture and forestry.

3.5.6 Long-term sustainable use of the land reclaimed after mining is underpinned by:

- **Restoration Conditions** that impose obligations on the mining operator, which are enforced by the MPA; and

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<sup>54</sup> Environmental injustice and post-colonial. Environmentalism: opencast coal mining, landscape and place. Paul Milbourne (Cardiff University) and Kelvin Mason (Independent Researcher)

[<https://orca.cf.ac.uk/94102/3/P%20Milbourne%20%282016%29%20Environmental%20injustice%20postprint.pdf>]

<sup>55</sup> Review of site of importance for nature conservation, Merthyr Tydfil CBC, 2018

<sup>56</sup> <https://gov.wales/sites/default/files/publications/2018-11/minerals-technical-advice-note-mtan-wales-2-coal.pdf>

- **Aftercare Management Conditions** to enforce the rehabilitation of the mine site and establish requirements such as drainage, paths, fencing and all other such details as agreed with the MPA.

3.5.7 Aftercare management can extend beyond the 5-year minimum period, when afteruse includes the planting of woodland, hedgerows and other nature conservation techniques. Guidance for operators, MPAs, design consultants and consultees cover the main aspects required for reclamation, soil handling and management and how these elements should form part of a holistic approach to mine design. Guidance also promotes the inclusion of restoration details in the pre-planning consultation process.

3.5.8 The introduction of MTAN2<sup>57</sup>, required LPAs include extensive and comprehensive schedules of conditions to enforce restoration design of opencast mines permitted post-2009. Typically, the provisions for restoration and aftercare would extend to numerous conditions, with obligations for restoration commencing at the outset of operations by the conservation of soils and soil forming materials. Notwithstanding this comprehensive approach to restoration, research was funded by the Welsh Government<sup>58</sup>, following the collapse of the Scottish Coal industry<sup>59</sup>. This research identified that in 2014, of ten surface mines operating in South Wales, four were identified as not posing a significant risk regarding the completion of provisions for restoration and aftercare, and had funding in place to finance these obligations. However, the remaining six sites were identified as having insufficient funding in place to restore the surface mine and implement all aftercare necessary to achieve a long-term sustainable afteruse.

3.5.9 This research recommended a review of MTAN2<sup>60</sup>, aiming to ensure future robust and sustainable financial provision for restoration and aftercare, taking account of site-specific conditions. The recommendation has been implemented through a best practice guide<sup>61</sup>, published in 2016, that compliments MTAN2. This will be reviewed periodically to maintain best practice. Appendix 5 has a summary of the determinations for coal extraction in Wales, in particular how the guidance has influenced the decisions regarding financial provisions for restoration.

3.5.10 In light of this guidance, future applications for coal extraction should include the

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<sup>57</sup> <https://gov.wales/sites/default/files/publications/2018-11/minerals-technical-advice-note-mtan-wales-2-coal.pdf>

<sup>58</sup> Research into the failure to restore opencast coal site in south Wales, ERM 2014.

<sup>59</sup> Opencast coal site (Restoration), Hansard, 2015

<sup>60</sup> <https://gov.wales/sites/default/files/publications/2018-11/minerals-technical-advice-note-mtan-wales-2-coal.pdf>

<sup>61</sup> Best practice guide on restoration liability assessments for surface coal mines, Coal Authority, 2016

provisions of the best practice guide. When combined with MTAN2, the provisions cover the winning and working of minerals, including surface coal working, recovery of coal from tips and underground coal working. To achieve a high standard of restoration, an independent expert assessor, appointed by the LPA to provide advice on design, operation, costing, risk and liability will prepare a cost profile required to restore the planned workings. The budget for restoration will include the costs associated with restoration planning conditions and Section 106 obligations that pertain to restoration and aftercare.

3.5.11 Internationally, best practice for mine closure is defined by the International Council on Metals and Mining (ICMM), with guidance updated in 2019<sup>62</sup>. As with the Welsh best practice guidance, this promotes a disciplined approach to integrated closure planning. The guidance focuses on the importance of social transitioning, progressive closure and strategies for relinquishment and closure governance. Social transitioning is of particular importance in the Welsh context due to the longevity of the mining legacy in the region. The toolkit provides methods for ensuring a sustainable approach is adopted and should therefore be considered when making informed decisions.

3.5.12 The example in the German coalfield<sup>12</sup> is based on mining area plans, which are also influenced by the close geographic association between the user (power plant) and coal extraction plant. This is now no longer the case in the UK, where coal is transported, generally by rail to coal-fired power plants. For coal extraction sites, the “polluter pays” principles apply for remediation plans, that are passed on long term through rehabilitation planning for the area (that may include several active extraction sites). The report acknowledges that further work is required to determine the financial costs associated with reclamation, taking account of progressive works to date and potential for premature closure of mines. The complex nature of regulation is based on the existing legal framework that applies to the coalfield which authorises the relevant Mineral Planning Authority to request financial bonds for restoration of sites.

### **Review**

3.5.13 Best practice for restoration and aftercare, by nature, is specific to geographic regions of the UK. With a distinct geographic and climatic character this rings true for restoration of coal workings, with a large body of research funded through British Coal

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<sup>62</sup> [http://www.icmm.com/website/publications/pdfs/closure/190107\\_good\\_practice\\_guide\\_web.pdf](http://www.icmm.com/website/publications/pdfs/closure/190107_good_practice_guide_web.pdf)

Opencast Executive. The framework for best practice guidance is developed in MTAN2 and remains specific to South Wales.

- 3.5.14 With the decline in the coal industry across the UK and the demise of surface operations in Scotland it is evident that best practice has been well informed in terms of techniques and management. However, there has been insufficient finance regarding restoration bonds for LPAs to complete the approved restoration design in the event of a default by the operator.
- 3.5.15 The requirement for inclusion of an independent assessor, under Welsh guidance following a review and licence award by the Coal Authority, should assist the Welsh Government to determine whether, or not, the funding for restoration is sufficient before Ministers authorise a licence. The independent expert assessor is to be appointed by the Local Authority and funded by the Site Operator. In particular, the financial provisions for restoration should be reviewed on a regular basis. This includes the commitment to progressive restoration of the surface mines, mirrored in ICMM guidance, such that early dialogue can occur with the Independent Assessor and provide evidence of compliance with approved plans.
- 3.5.16 There is insufficient evidence to assess the effectiveness of the Coal Authority best practice guidance. It should therefore be subject to periodic review, to ensure that it remains applicable to future applications, subject to the policies in PPW 10 and is line with ICMM integrated mine closure guidance. Guidance requires alignment, otherwise a licence can be awarded by the Coal Authority without applying Welsh guidance, and Welsh guidance will need to be considered prior to authorisation.

### 3.6 Health Impacts

- 3.6.1 Assessing the potential impacts on Environmental Health from surface mines has been an integral part of the EIA process since 1998. Environmental aspects that contribute to assessing these potential impacts includes noise, air quality, ground and airborne vibrations (from blasting), contaminated land and water, hours of working and traffic (safety and air pollution). These environmental impacts are discussed in Section 3.7.
- 3.6.2 Health Impact Assessment<sup>63</sup> (HIA) that focuses on assessing the effects of surface coal mining on public health and wellbeing, provides guidance on a methodology specific to the development of surface mines in South Wales. The use of HIA has generally not

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<sup>63</sup> A guide to assessing the health and wellbeing aspects of opencast mining, Chadderton, C, Elliot, E & Williams, G. Wales HIA Support Unit, 2011

been a requirement for assessing surface mine development in other coalfield areas of the UK, although some of the research that culminated in the HIA methodology was undertaken in the English coalfields. MTAN2 advises that HIA should be considered and undertaken as a part of the broader EIA process. The guide to HIA provides the details on the role of the HIA, methods of establishing baseline (using monitoring and community led forums), combined with the assessment techniques to determine significance. By implementing the HIA in conjunction with the EIA there is an opportunity to identify mitigation measures that can be adopted to address a range of environmental health effects. Monitoring and evaluation techniques are identified for the analysis and feedback during the operational phase.

- 3.6.3 Population and human health are identified as environmental topics included in May 2017 revisions to the EIA legislation (See Section 3.7). These revisions, now incorporated into legislation, provide an opportunity for assessing health effects directly in the EIA process and therefore as a part of the planning determination<sup>64</sup>. In addition, there is an opportunity to define the role and input for public health experts to be directly involved in the EIA process. The EIA Directive<sup>65</sup> does not seek to define the way in which topics are addressed, as this requires differentiation across the many forms of development that are covered by the Directive. In consequence, there is no prescribed EIA definition for ‘population and human health’. The HIA guidance for surface mining includes the WHO definition for health, as the state of complete physical, social, mental and spiritual wellbeing. The HIA is defined as a combination of procedures, methods and tools by which a policy, programme or project may be judged as to its potential effects on the health of a population and the distribution of those effects within the population<sup>66</sup>. In this context the HIA should consider environmental, social and economic aspects, as required by the Well-being Future Generations Act (Wales) 2015.
- 3.6.4 The requirement for an assessment of likely significant effects on the population and human health provides an opportunity for public health specialists to be involved in the EIA process at an early stage of the design process. In England, Local Authorities are encouraged to develop an EIA Engagement Action Plan, specifically for projects

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<sup>64</sup> Cave, B., Fothergill, J., Pyper, R., Gibson, G. and Saunders, P. (2017) Health in Environmental Impact Assessment: A Primer for a Proportionate Approach. Ben Cave Associates Ltd, IEMA and the Faculty of Public Health. Lincoln, England. Available at [www.iema.net](http://www.iema.net)

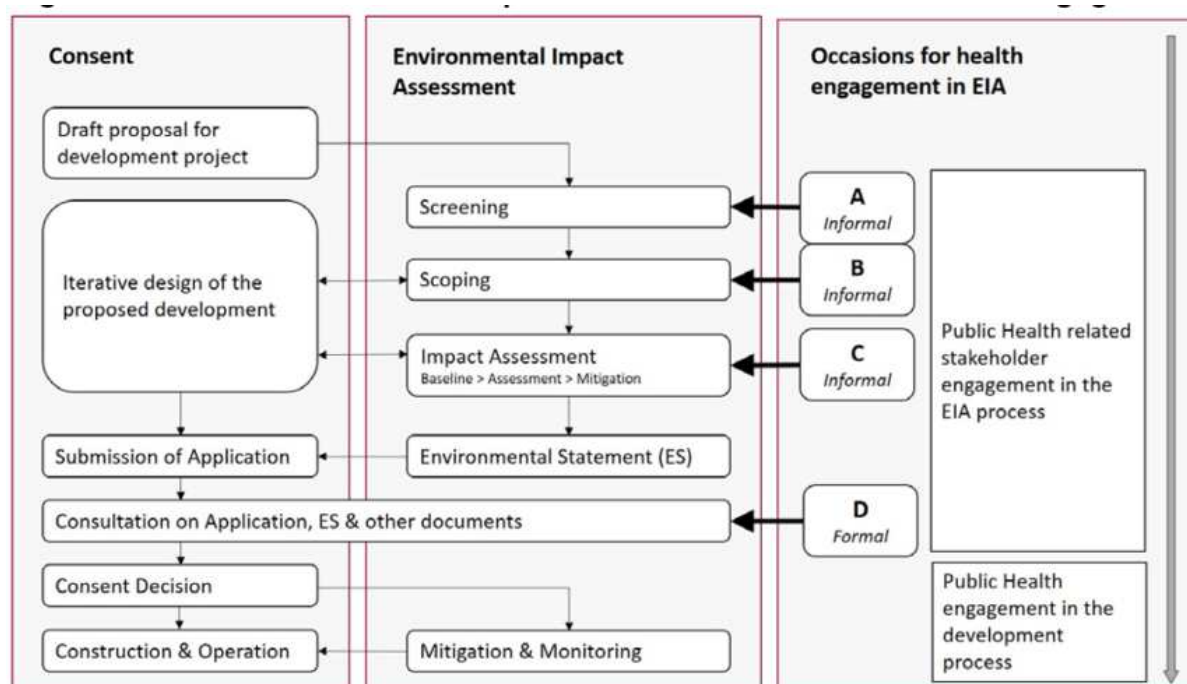
<sup>65</sup> Directive 2014/52/EU of the European Parliament and of the Council amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment.

<sup>66</sup> Gothenburg Consensus Paper, European Centre for Health Policy, WHO. 1999

where population and human health are scoped into the EIA<sup>67</sup>. The NPPF requires that local planning authorities should aim to involve all sections of the community in the development of both Local Plans and development control. The NPPG Minerals<sup>48</sup> refers to the EIA Regulations, but not specifically to the requirement for an assessment of the development on the population and human health. County Councils, such as Nottingham have prepared a HIA on the Minerals Local Plan (MLP), adopted 2017<sup>68</sup>, which considered the effects associated with the policies in the MLP. However, as this assessment was prepared prior to the 2017 EIA Regulations, specific guidance on this matter was not included.

3.6.5 Therefore, the EIA process provides an opportunity to engage in aspect of population and human health at an early stage in the design process of a new (or extension to an existing) surface coal mining project (see Figure 2).

**Figure 2 The consent and the EIA processes and occasions for health engagement**



3.6.6 The objective of the HIA guidance in Wales provides a similar interaction, in terms of early engagement in project design. However, prior to 2017, the MPA was not required to consider these potential effects as integral to the EIA process. Therefore, the HIAs that have been completed for surface mine developments were prepared

<sup>67</sup> Health and Environmental Impact Assessment: A briefing for Public Health Teams in England

<sup>68</sup> Nottinghamshire Minerals Local Plan – Health Impact Assessment, 2016



after the final design of the mine had been completed and the plans submitted to the MPA for determination. In consequence, the potential for developing specific mitigation measures and integrating these into the design philosophy does not appear to have been achieved.

- 3.6.7 There is a requirement for any future development to apply HIA guidance, in the context of the EIA Regulations 2017, providing a mechanism whereby the significant elements of design that may facilitate mitigation (of the potential impacts on the population and human health) can be identified and defined at an early stage of the EIA process. There is an opportunity for developer engagement during screening and scoping and to apply the latest HIA evidence available.
- 3.6.8 The potential impacts of coal extraction on population and human health are of public concern in coalfield areas across the world. Data from 28 studies obtained from USA, Europe and China, identified that communities impacted by coal mining (including deep and surface mines) are potentially subjected to a wide range of health impacts that cover a significantly wider range of diseases than those typically considered in the environmental health assessments for surface mine EIAs in England<sup>69</sup>.
- 3.6.9 The Climate Council have recently issued a joint statement on the potential health effects from use of coal in Australia, against the background of the reliance of coal for electrical generation (>75% in Australia) and therefore significantly greater than that in the UK and Wales<sup>70</sup>. The statement, from the Climate Council, recognises that there is insufficient baseline data on the health effects from both coal mining and the use of coal for power generation. The majority of the available research is from Europe and the US<sup>71</sup>.
- 3.6.10 A study in the Hunter Valley, New South Wales<sup>72</sup> documents the health and social effects from a region that has witnessed an increase in coal production. The study considers health, social and environmental effects in terms of economic costs to society and considers the concept of a gateway approval process for health impact studies. The gateway process is already in place in New South Wales planning process to protect environmental aspects such as loss of agricultural land and conservation of groundwater. The study of health impacts for surface coal mines appears to be closely

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<sup>69</sup> Mortality and morbidity in populations in the vicinity of coal mining: a systemic review; Cortes-Ramirez, J, Naish, S, Sly, P & Jagais, P. BMC Public Health, 2018

<sup>70</sup> Climate Council: Joint Statement on the health effects of coal in Australia

<sup>71</sup> Climate Council briefing paper: Health effects of coal

<sup>72</sup> Coal and health in the Hunter: Lessons from one valley for the world. Climate and Health Alliance, 2015



interrelated with that of environmental health, similar to the approach adopted in England prior to the introduction of the 2017 EIA Regulations<sup>73</sup>.

### ***Review of Health Impact***

- 3.6.11 The Welsh guidance, developed by HIA support team<sup>74</sup>, is at the forefront for integrating environmental effects of coal mining with that of public health and wellbeing. To date, the guidance applies to projects during the actual planning determination, and therefore not at the earlier scoping stages, which can apply relevant planning policy before significant design decisions are locked-in. There is the potential for introducing mitigation measures available during the assessment during the planning process. Although HIA has not been applied to other surface (and the single deep mine) developments throughout the UK, there has been greater interest in environmental health aspects associated with air quality, including continuous PM<sub>10</sub> & PM<sub>2.5</sub> monitoring adjacent to active sites.
- 3.6.12 Some of the evidence in South Wales, where communities have been subjected to cumulative impacts as a consequence of multiple continuous and ongoing surface mining operations that span generations, is exceptional in the UK coalfields, which results in the need for specific HIA guidance. The EIA Regulations, 2017, provides an opportunity to integrate guidance with the EIA process. How the guidance can most effectively be integrated for developer, consultants and decision makers, should be considered.
- 3.6.13 Developing the HIA methodology which could be used alongside the EIA processes and the CA licence approval process requires further consideration, in particular how this would apply to the Welsh Government decision making process.

## **3.7 Environmental Impacts**

- 3.7.1 Surface coal mining is associated with complex direct and indirect environmental impacts owing to the nature of mining activities, the depth of excavations and the aerial extent of surface operations, which include the removal of soils from a large areas for mining, with loss of vegetation and agricultural land, drilling, blasting, transportation of overburden, stockpiling in surface mounds, loading and unloading of materials and the use of a large fleet of heavy plant required to expose coal seams for extraction.

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<sup>73</sup> Technical Notes supporting the Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposals, NSW, 2018.

<sup>74</sup> <http://www.wales.nhs.uk/sites3/Documents/522/OpencastguidanceFinal.pdf>

3.7.2 Environmental Impacts of any potential new operations or extensions to existing surface mines will be assessed within an EIA, as the development falls under Schedule 1 of Annex A of the EIA Regulations. Schedule 1 developments all require that an Environmental Statement be prepared. These are typically large-scale projects with potential significant adverse impacts. Schedule 2 developments would only require an EIA if significant environmental effects were likely. Extensions to a coal extraction project would generally require an EIA. This is mirrored in international best practice, where a coal extraction project would also require the highest level of ESIA under IFC guidance.

3.7.3 The nature and extent of potential impacts vary, dependent on the nature of the project and characteristics of the surrounding area. Environmental impacts of surface coal mining include, but are not limited to, the following:

- Visually intrusive on Welsh landscapes, considered to be a valuable asset in environmental, historic, touristic and recreational terms. MTAN2 states that adverse visual impacts must be kept to an 'acceptable level' during the operational and restoration phases;
- Noise emissions from heavy plant, blasting and vibration, maintenance work and occurring at all stages of project life. Distance to sensitive receptors, particularly residential dwellings is vital in minimising noise impacts;
- Artificial light nuisance and light pollution, particularly overnight. The distance to residential properties is vital in minimising potential health impacts. Different forms of light pollution exist, and these have a range of impacts on sensitive receptors including glare, detracting from architectural appearance of a building, impact on wildlife and ecology of an area, waste of energy from unnecessary lighting;
- Surface and groundwaters, including contamination, derogation of flow and residual risks for deep mining such as acid mine drainage;
- Specific impacts associated with coal related operations such as acid rock drainage (from overburden), surface and underground hazards associated with deep coal mining and land contaminated with spoil also from underground workings or other related coal processing activities;
- Vibration impact on workers and nearby residents;
- Loss of agricultural land, green and open space or virgin countryside; and

- Loss of land utilised for ecosystem services, such as footpaths and perceptions of risk from travelling close to the opencast site.

- 3.7.4 Mineral Planning Policy Wales (migrated into PPW Edition 9 and then 10) introduced a requirement for buffer zones to protect local communities from residential amenity impacts associated with mining and mineral extraction. For surface mine operations a buffer safeguarding zone of 500m was required unless exceptional circumstance prevailed, as defined in MTAN2. A similar requirement has been established in Scottish guidance. Although this does not extend to England, some MPAs have introduced a buffer zone through local plan policies. Currently, the use of buffer zones in Wales continue to apply for mineral operations. However, surface, deep and spoil won coal is not permitted in Wales, unless exceptional circumstances are identified in the context of the climate change emissions reductions or for reasons of national energy security (see para 5.10.14 of PPW 10). This requirement overrides that of individual aspects assessed to determine the potential impacts on the environment.
- 3.7.5 Given that the last remaining coal-fired power station will close before March 2020, there is unlikely to be a requirement for coal extraction for reasons of energy security. Therefore, the primary test to be considered within the context of the EIA will be climate change, an aspect included in the Regulations since 2017. Climate change has generally not been considered within the context of EIA prior to 2017, because the emissions were balanced against the need for power generation, using coal for fuel. More recent applications for coal extraction in England have included an assessment of the impact on climate change (see Section 3.2) and there remains some debate on the scope of the assessment, considered against the UK Government's policy to phase out coal-fired power by 2025.
- 3.7.6 The WG planning policy will not allow energy minerals extraction. The continuing requirement for coal used by industry and for domestic use must be able to demonstrate exceptional circumstances if a licence in Wales will be authorised. New evidence that is published in the future might examine total emissions from domestic extraction compared to the importation of coal (see Section 3). In these circumstances there is a need for further guidance to ensure that the methodology to assess climate change impacts are robust and accurate.
- 3.7.7 The German case study<sup>10</sup> predominantly focused on the reduction of the energy sector. Whilst it is stated that environmental considerations will be material to the exit from coal, minimal detail is given at this stage. For example, the commission deems it

desirable that Hambach Forest be preserved, however, limited detail is given as to how this will be achieved. Similarly, the River Spree is to be protected during the cessation of operations, ensuring it does not run dry, again minimal detail is given on how this would be achieved.

- 3.7.8 Under IFC Performance Standards, any proposed coal operation would be required to submit an Environmental and Social Impact Assessment (ESIA), comparable to that developed under the EU EIA Directive (2014/52/EU supported by additional guidance in 2017). An ESIA differs in contents and permissible standards for multiple environmental disciplines. For example, the need for an integrated social impact assessment and alternatives assessment are not present within UK EIAs to the same detail. Further, the ESIA is a suite of documents including operational management plans for numerous disciplines such as waste management, noise, water, biodiversity and stakeholder engagement. These plans are seen as the industry best practice for minimising potential environmental effects of projects. However, UK legislation does not impose requirements to the same quantity and standard. It is recommended that Ministers carefully review proposed mitigation and management measures put forward by developers, ensuring that they align with industry best practice. Publishing a future regulatory road map will be an opportunity to consider whether to apply best available techniques at scoping stage or during the MPA's planning assessment.

#### ***Review of Environmental Impacts***

- 3.7.9 The EIA process is comprehensive and has been applied to the design and development of surface mine sites, based on sector specific guidance that has been published for Wales, Scotland and England. Post 2017, the requirement for climate change has been included in both the EIA Regulations, 2017 and specifically in Welsh Government Planning Policy. The implications of these changes in relation to scope, baseline data and methodology for undertaking climate change assessment for extraction of coal to supply indigenous industrial and domestic markets is unknown.
- 3.7.10 The EIA is undertaken during the planning phase of the licensing processing, preceding the grant of a conditional licence. Whilst a preliminary environmental scoping study would be completed at the start of the planning process, this is not completed at the start of the licensing process. It would be recommended that a scoping of potential environmental and social liabilities is completed at the start of the coal licensing procedure. The intention is not to duplicate the EIA as part of the planning permission. This will ensure Ministers understand the potential effects of the proposed operation

at the initiation point of the project. The developer can present their proposal, based on continuously improving evidence, and therefore reduce the developer's expenditure to prepare and present a planning application.

## **4 CONCLUSION**

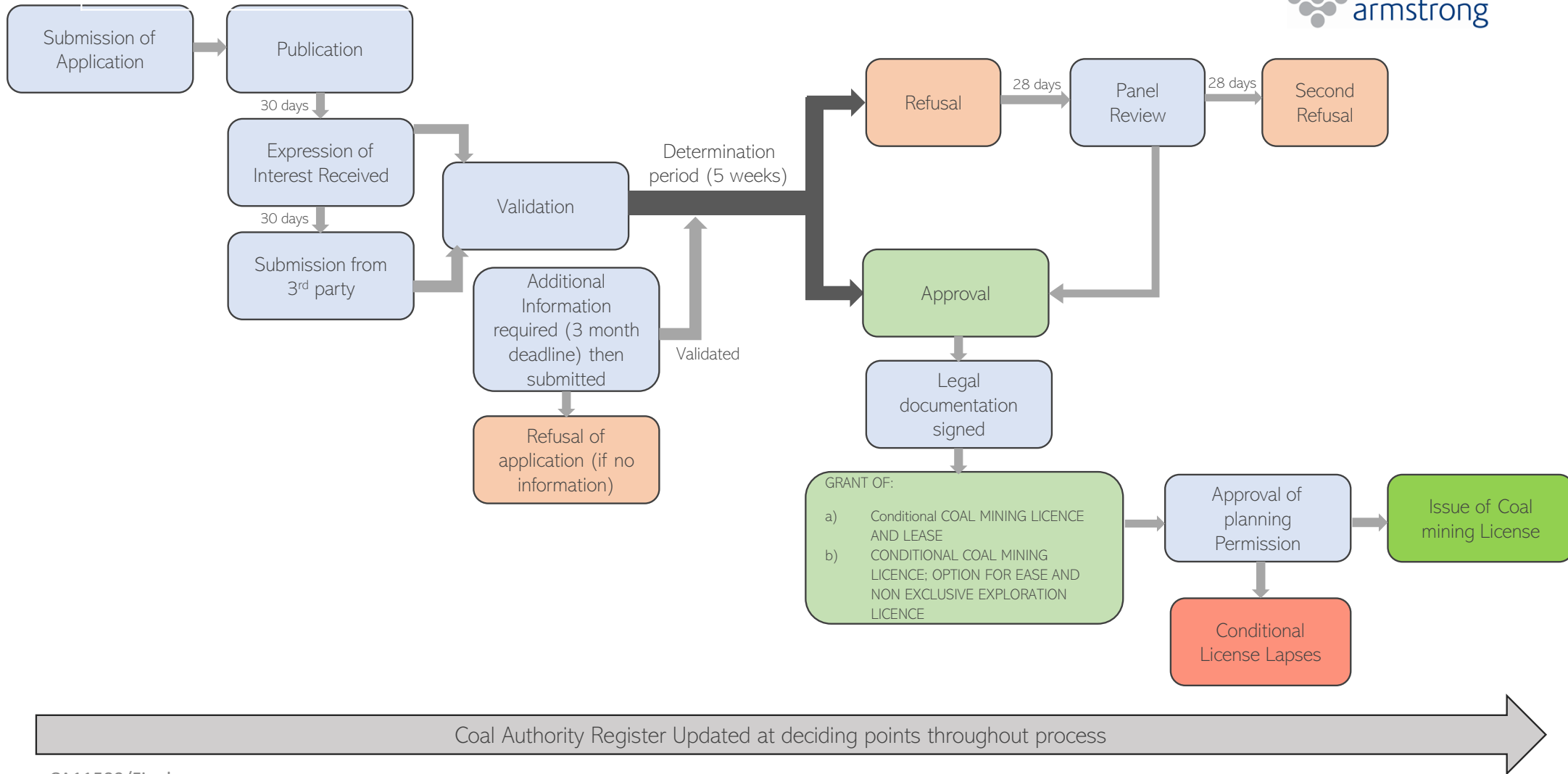
- 4.1 The coal extraction industry will continue to decline, due to the UK's target of phasing out all coal-fired power by 2025. Evidence in this review indicates that coal-fired power plant will close well before 2025, as use of gas and biofuels increase. In Wales, the last remaining coal-fired plant will close before March 2020.
- 4.2 Although the energy market for coal will continue to decrease, there will be an ongoing requirement for supply of coal to industry and domestic markets until suitable substitutes are developed. In South Wales, the supply of good quality coking coal to the steel works at Port Talbot are currently critical to the local economy, together with supply of coal for building materials (cement for concrete products). Electronic goods, filtration products and heritage railways also currently use coal.
- 4.3 Consideration should be given to further studies analysing the interaction between the economics and associated climate change impacts from sourcing indigenous coal for this ongoing demand that is unlikely to reduce in the near term, particularly the emissions associated with bulk haulage of this commodity.
- 4.4 The public and private sector in partnership, need to work with those coal consuming industries, to hasten innovation in order to reduce and eventually eliminate dependence on coal.
- 4.5 The planning regime in Wales is well defined in relation to future coal extraction from surface, deep mining and recovery of coal from spoil. The authorisation of a licence will need to demonstrate a contribution to decarbonisation and to climate change emissions reduction targets or provide National security of supply to the power sector.

## APPENDICES

## APPENDIX 1



WELSH GOVERNMENT - THE EXISTING IMPACT EVIDENCE





REF	Coal site (name)	Category	EASTING	NORTHING	Location	Status	Type / Company name	Other notes
1	Aberpergwm Mine	ACTIVE COALING - DEEP MINE	286455	206014	Glynneath	Drift Mine extracting anthracite coal - recommended operations in 2019 with c. 20+ years of coal reserves available	Energybuild Limited	
2	Ffos-y-Fran Land reclamation Scheme	ACTIVE COALING - OPENCAST	307515	206786	Merthyr Tydfil	Coal extraction continuing to 2022	Miller Argent - now Blackstone South Wales Limited	Concern over restoration
3	Nant Helen Remainder	ACTIVE COALING - OPENCAST	281657	211280	Coelbren, Neath	Site was mothballed in 2016. Planning permission granted in Dec 2018 for an extension of time to complete coaling by 31st December 2021, restoration by 30th June 2023 and removal of all buildings by 30th September 2023.	Celtic Energy	
4	Glyncastle Mine	DORMANT - DEEP MINE	286058	204822	Glynneath	Closed in 2013 when mine went into administration		Formerly known as Unity Mine. Potentially 90mt of anthracite reserves.
5	Bryn Defaid	DORMANT - OPENCAST	300719	206813	Llwydcoed, Aberdare	Rhondda Cynon Taff CBC granted planning permission in April 2014. The site covers an area of 250 acres where it is proposed to extract 1.2mt of dry steam coal over a five year period followed by 1½ years of restoration.	Celtic Energy	Site has yet to commence operations.
6	Bryn Henlllys	RESTORED - OPENCAST	276434	212081	Cwmlllynfell, Neath Port Talbot	Completed in 2003 - pasture for sheep and cattle grazing		Solar farm (20MW)
7	Glan Lash	RESTORED - OPENCAST	261500	213600	Llandybie, Carmarthenshire	2012 - mainly tip washing - with a further 110,000 from a 10ha site adjacent. Restoration due to be completed end of 2017 and aftercare by end 2022.	Bryn Bach Coal Ltd	
8	Nant-y-Mynydd Opencast Site	RESTORED - OPENCAST	284950	207597	Near Glynneath	Opencast coal site now fully restored	Walter Energy	
9	Bwlch Ffos	UNDER RESTORATION - OPENCAST	287131	202370	Resolven, Neath Port Talbot	Planning refused (March 2019)	Horizon Mining Ltd / Tarmac	Aggregate Quarry with incidental coal
10	East Pit East Revised	UNDER RESTORATION - OPENCAST	273259	212965	Gwaun-Cae-Gurwen, Neath Port Talbot	Coaling now completed. Former coaling void filling with water, undergoing restoration.	Celtic Energy	Celtic Energy seeking a developer to take over site.
11	Forest Quarry 2 Extension	UNDER RESTORATION - OPENCAST	283997	207016	Near Glynneath	Coal extraction ceased. Former void being used as a tip for run of mine spoil from Aberpergwm Mine	Energybuild Limited	
12	Selar North	UNDER RESTORATION - OPENCAST	289055	205283	Near Glynneath	Mothballed 2015	Celtic Energy	No indication as to when the site will recommence. WA were aware of discussions between Celtic Energy and Council to leave the final void open to provide a site of geological interest.
13	Tower Colliery Surface Mining	UNDER RESTORATION - OPENCAST	294554	204802	Hirwaun, Rhondda, Cynon Taf.	Coaling commenced in 2012 and southern extension granted in 2016. Site is currently undergoing restoration which is scheduled for completion in 2021.	Tower Regeneration Ltd	
14	Dynant Fawr	UNRESTORED - OPENCAST	252453	211819	Tumble, Carmarthenshire	Abandoned in an unrestored state	Dryant Fach Colliery Company Ltd	closed
15	Margam Surface Pit	UNRESTORED - OPENCAST	285017	183941	Cefn Cribbwr, Bridgend	Closed - minimal restoration and infilled with water	Celtic Energy	
16	Bryncwm opencast site	REFUSED - OPENCAST	286417	204315	Cwmgwrach, Glynneath	Planning application refused Feb 2019	Horizon Mining Ltd	c. 300kt of anthracite and 1.6mt sandstone
17	Nant Llesg	REFUSED - OPENCAST	309931	207985	Rhymney	Original application was refused by Caerphilly CBC in 2015 on the grounds of visual impact. Developer appealed but this was thrown out due to failure to provide additional information for the Environmental Statement.	Blackstone (Merthyr Limited)	If approved the site would have provided additional funding for the restoration of the adjacent Ffos y Fran.
18	Pointhenri	REFUSED - OPENCAST	249157	210128	Pont Henri, Carmarthenshire		Draeth Developments Ltd	
19	Tirpentwys Cut	REFUSED - OPENCAST	323538	201336		Application was refused in 2017 and appealed by developer. Inquiry was heard in early 2019 and was refused by Welsh Government on 29.08.2019.	Peakman's Ltd	No coal extraction proposed - instead was a scheme aimed at recovering aggregate from former opencast spoil.
20	Varteg Hill Opencast Site	REFUSED - OPENCAST	325960	206124		In June 2016 the application to extract 250,000 tonnes was withdrawn by the developer.	Glamorgan Power	Originally refused and appeal not upheld

Ref	Power Station name	Operator	Location	Operating Status	Closure planned	Coal Capacity (MW)	Operational Years	Notes
1	Fiddlers Ferry	SSE	Warrington, Cheshire	Operational - part closure	31-Mar-20	2,132	48	One unit was closed in 2019 reducing capacity to 1,510 MW
2	Aberthaw B	RWE	Valley of Glamorgan, South Wales	Operational - at reduced hours	31-Mar-20	1,586	48	
3	West Burton A	EDF	Nottinghamshire	Operational	30-Sep-19	2,188	51	
4	Cottam	EDF	Nottinghamshire	Operational	30-Sep-19	2,184	50	Conversion to gas peaking proposal
5	Ratcliffe-on-soar	Uniper	Nottinghamshire	Operational	2025	2,000	51	Compliant with emission regulations, plant will close during the late 2020s, date not given
6	Drax (Units 5 & 6)	Drax Powerl plc	Selby, North Yorkshire	Operational - part closures	2023	1,402	33	
7	Kilroot	EPH (Czech Firm)	County Antrim, Northern Ireland	Operational	2024	560	38	
9	Uskmouth	SIMEC Atlantis Energy Limited (current)	Newport, Wales	Closed	2017	360	54	In process of conversion to biomass, to be finished Q4 2020

#### References

\* <http://www.powerstations.uk/coal-countdown/>

\* <https://www.carbonbrief.org/mapped-worlds-coal-power-plants>

\* Coal generation in Great Britain. The pathway to a low-carbon future: consultation document, Uniper

\* <https://simecatlantis.com/2018/11/05/uskmouth-power-station-conversion-project-update-and-epp-contract-award/>

Ref	Plant Name	Operator	Location	Operating Status
<b>Cement Plants</b>				
1	Scunthorpe Works	Francis Flower	Scunthorpe	Operating
2	Derrylin	Aventas Group	Derrylin	Operating
3	Hope Cement Workd	Breedon Group	Hope Valley	Operating
4	Rugby	Cemex	Rugby	Operating
5	South Ferriby	Cemex	Barton-upon-Humber	Operating
6	Tilbury Cement and Ash	Cemex	Tilbury	Operating
7	Aberthaw Works	Tarmac (CRH PLC)	Barry	Operating
8	Barnstone Works	Tarmac (CRH PLC)	Barnstone	Operating
9	Dunbar Works	Tarmac (CRH PLC)	Dunbar	Operating
10	Tunstead	Tarmac (CRH PLC)	Buxton	Operating
11	Ketton Works	Hanson UK	Stamford	Operating
12	Padeswood Works	Hanson UK	Mold	Operating
13	Port Talbot Works	Hanson UK	Port Talbot	Operating
14	Purfleet Works	Hanson UK	London	Operating
15	Ribblesdale Works	Hanson UK	Clitheroe	Operating
16	Teesport	Hanson UK	Middlesbrough	Operating
17	Cauldon Works	Aggregate Industries Ltd	Stoke-on-Trent	Operating
18	Cookstown Works	Aggregate Industries Ltd	Cookstown	Operating

*References*

[\\*https://www.cemnet.com/global-cement-report/country/united-kingdom](https://www.cemnet.com/global-cement-report/country/united-kingdom)

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**Appendix 5:** Review of permission since the publication of the Coal Authority: Best practice guide on restoration liability assessments for surface coal mines, 2016

**Nant Helen, Surface Mine:** Variation of Condition 2 of planning approval P/2011/0217 to allow for an extension of time to allow extraction of all the coal and completion of restoration – approved December, 2018.

Planning Authority: Powys, Neath Port Talbot

Applicant: Celtic Energy

In consenting the extension of time, the MPA did not include provision for the appointment of an independent expert assessor, combined with annual audits to report on the financial level of bond required for restoration and aftercare

The Environmental Statement did not include a commitment to the 2016 guidelines

**Bwlch Ffos, Surface Mine:** Extraction of coal and sandstone by means of surface working, transportation of mine waste from Unity Mine by haul road & it's disposal with progressive restoration of site to forestry.

Planning Authority: Neath Port Talbot

Applicant: Horizon Mining Limited

Application refused, with six reasons given including insufficient information relating to restoration and beneficial afteruse.

The financial provisions for restoration bond were not considered in the committee report.

**Aberpergwm Mine:** Application for extension to and reconfiguration of underground coal workings, creation of a mine waste repository, creation of peat habitat mitigation works, mine surface development.

Planning Authority: Neath Port Talbot

Applicant: Energybuild Ltd

Application granted permission subject to a Section 106 Agreement securing financial Restoration Guarantee to ensure the restoration and aftercare of the entire site.

In his report to the planning committee the planning officer makes reference to government guidance where the MPA will require a financial guarantee to ensure the restoration and aftercare of the various aspects associated with this development.

The S106 required the amalgamation of several existing bonds from previous planning consents and supplemented with additional bond payments over an agreed time period. There does not appear to be any provision for the appointment of an independent expert assessor, combined with annual audits to report on the financial level of bond required for restoration and aftercare.

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