

Baseline data (Part 2)

7. Climatic factors

Table 52: Temperature and rainfall data

	Max temperature (°C)			Min temperature (°C)			Rainfall (mm)		
	1961- 1990	1971 - 2000	1981- 2010	1961- 1990	1971- 2000	1981- 2010	1961- 1990	1971- 2000	1981 - 2010
Tenby (Jan)	8.1	8.5	8.7	2.9	3.1	3.2	110.2	115.4	113.5
Tenby (July)	19.1	19.5	19.6	11.7	12	12.3	53.9	52.7	68.8
Aberporth (Jan)	7	7.3	7.6	2.7	2.9	3.1	85.7	88.5	83.7
Aberporth (July)	17.6	18	18.2	11.9	12.2	12.3	51	49.5	61.4

Source: The Meteorological Office, 2018 <https://www.metoffice.gov.uk/climate/uk/data>

Carbon dioxide emissions

Table 53: Local Authority CO2 emissions estimates 2005-2016 (kt CO2)

Year	Industry and Commercial Total	Domestic Total	Transport Total	LULUCF Net Emissions	Grand Total	Population (‘000s, mid-year estimate)	Per Capita Emissions (t)
2005	617.0	351.7	232.6	27.5	1,228.8	117.2	10.5
2006	618.5	358.8	238.4	20.7	1,236.3	118.3	10.5
2007	623.3	336.0	238.4	12.8	1,210.5	119.6	10.1
2008	606.7	348.4	232.7	10.6	1,198.4	121.1	9.9
2009	641.7	322.4	227.2	1.3	1,192.6	121.6	9.8
2010	612.0	349.5	225.2	-4.6	1,182.1	122.0	9.7
2011	600.8	297.2	219.2	-9.2	1,108.1	122.6	9.0
2012	578.0	313.1	214.6	-10.8	1,094.9	123.1	8.9

2013	560.0	304.3	217.2	-15.2	1,066.2	123.4	8.6
2014	486.7	262.2	221.8	-21.5	949.1	123.8	7.7
2015	443.8	251.8	224.7	-27.4	892.9	123.7	7.2
2016	375.9	237.1	230.2	-29.1	814.1	124.2	6.6

LULUCF – Land use, Land use change & forestry

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/720677/2005-16_UK_local_and_regional_CO2_emissions.xlsx

Sources: <https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-2016>

Targets

The UK is bound to meeting specific emission targets as part of the Kyoto Agreement, which is to reduce emissions 8% below the 1990 baseline levels. By 2050, the target is to have cut carbon emissions by 60%, with 25% cut by 2020. The UK government is actively promoting Carbon Capture and Storage schemes, which could reduce emissions from fossil fuel power stations by as much as 90%.

The Environment (Wales) Act places a duty on the Welsh Ministers to ensure that in 2050 net emissions are at least 80% lower than the baseline set in legislation. This will be achieved through the setting of interim targets for 2020, 2030 and 2040 and 5 yearly carbon budgets up until to 2050.

There is a duty on Welsh Ministers to prepare and publish a set of policies and proposals for the budgetary period. Welsh Ministers are also required to publish a statement of progress after each budgetary period. The UK Committee on Climate Change (UKCCC) will provide advice on the latest scientific evidence and report progress made against budget targets. The Welsh Government will be responding to the advice on the Targets and Budgets in the summer of 2018.

Issues, constraints and gaps

Reliance on cars for transport

Efficiency of homes

LNG and Pembroke Power Station may contribute to an increase in CO₂ in the County.

Public buildings carbon reduction 7.46% by April 2007 – CHECK this

PCC duty to reduce the amount of CO₂ that is emitted by 3% each year

Sources:

http://www.pembrokeshire.gov.uk/content.asp?Parent_Directory_id=104&nav=993,1005

PCC Annual Improvement Review 2017 https://www.pembrokeshire.gov.uk/objview.asp?object_id=1624&language=

Resource efficiency – with CO₂

The figure below is an indicator of resource efficiency. It shows, at current prices, the ratio of CO₂ emissions (tonnes) to Gross Value Added (GVA) (£ million), 2005-2012. These data are no longer updated.

Table 54: Resource efficiency - The ratio of carbon dioxide emissions to GVA at current prices

		2005	2006	2007	2008	2009	2010	2011	2012
Wales		778	749	709	685	597	647	559	533
Wales	Swansea	486	474	441	435	379	396	340	363
	South West Wales	775	741	688	720	662	663	583	566
	Powys	504	527	455	479	466	489	393	413
	Monmouthshire and Newport	690	642	625	592	514	560	495	473
	Isle of Anglesey	1127	1107	1044	959	849	743	636	640
	Gwynedd	483	468	447	425	390	431	353	367
	Gwent Valleys	662	603	575	559	502	489	428	446
	Flintshire and Wrexham	813	827	791	780	656	644	542	581
	Conwy and	564	570	522	486	455	467	405	419

	Denbighshire								
	Central Valleys	611	584	548	517	450	435	405	417
	Cardiff and Vale of Glamorgan	482	430	384	376	350	361	310	324
	Bridgend and Neath Port Talbot	2553	2486	2406	2192	1816	2248	1939	1566

*South West Wales = Pembrokeshire, Ceredigion & Carmarthenshire CCs.

Source: StatsWales <https://statswales.gov.wales/Catalogue/Sustainable-Development/Sustainable-Development-Indicators/ratioofcarbondioxidetogva>

Climate change scenarios

The UK climate is changing as a result human influences through emissions of greenhouse gases such as carbon dioxide and methane. Possible climate change scenarios have been developed by the Defra funded UK Climate Impacts Programme (UKCIP). In general terms, the UK climate will become warmer, sea levels will rise. The temperature of coastal waters will also increase, although not as rapidly as over land. High summer temperatures will become more frequent, whilst very cold winters will become increasingly rare. There will be wetter winters, drier summers, decrease in snowfall and heavy winter precipitation will become more frequent. This means increased flow into estuaries, and also increased storminess of coasts. Relative sea level will continue to rise around most of the UK's shoreline, and there will be a higher risk of flooding of low lying areas. Extreme sea levels will be experienced more frequently.

Modelled sea level rises for the South West and Wales as 3.5mm per year in 1990-2025 (Defra). Technical Advice Note 15 suggests projections for sea level rises around the Welsh coast of between 25 to 30cm by 2050, slightly more in the south than the north.

Table 55

Region	Assumed vertical land movement (mm/yr)	Net sea-level rise (mm/yr)				Previous allowances PPG25 TAN15
		1990-2025	2026-2055	2056-2085	2086-2115	
Wales	-0.5	3.5	8.0	11.5	14.5	5mm/yr constant

Table 56: Peak river flow allowances by river basin district*

	Total potential change anticipated by the 2020s	Total potential change anticipated by the 2050s	Total potential change anticipated by the 2080s
West Wales			
Upper end estimate	25%	40%	75%
Change factor / central estimate	15%	25%	30%
Lower end estimate	5%	10%	15%

*Source: UK Climate Projections 2009, published June 2009 by the UK Government Department for Environment, Food and Rural Affairs.

Estimates of peak flow increases in rivers are provided to represent future risk.

Sea level rise allowances

Projections of relative mean sea level rise for each epoch (period of time) is provided for the Welsh coastline in Table 2. These projections are consistent with the latest global predictions for sea level rise. The rate of change is projected to increase in each epoch.

Table 57: sea level allowance for each epoch in millimetres (mm) per year and cumulative sea level rise for each epoch (using sea levels published in 2008 as the baseline)*

Period	2009-2025	2026-2055	2056-2085	2086-2116	Cumulative rise to 2116
Annual change (mm/yr)	3.5	8.0	11.5	14.5	
Total increase	59.5 mm	240mm	345mm	449.5mm	1094mm

* Source: adapted from FCDPAG3 Economic Appraisal. Supplementary note to Operating authorities – Climate Change Impacts (Oct 2006) (figures calculated & published in 2008 - applicable for use from 1 Jan 2009).

Source: WG <https://gov.wales/docs/desh/publications/160831guidance-for-flood-consequence-assessments-climate-change-allowances-en.pdf>

Adapting to Climate Change, UK Climate Projections 2009

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69257/pb13274-uk-climate-projections-090617.pdf

Trend

Increase in temperature

Frequency of storm events.

Climate Issues/constraints/gaps

Impacts of climate change on agriculture, infrastructure (sewers), flooding, erosion, storm damage and subsidence, drought in summer, low flows in rivers, thermal discomfort in buildings, increased health risks in summer, but reduced cold weather illness, effects on biodiversity and habitats.

The LDP should seek to support commitments to reduce greenhouse gas emissions, and encourage more sustainable forms of transport, heating, and encourage general energy efficiency, to ensure that new development responds and adapts to climate change.

Planning can help to mitigate Pembrokeshire's contributions to climate change through measures such as energy efficient building design, efficient transport infrastructure and appropriate management of biodegradable waste. Planning can also help the County

adapt to the impacts of climate change through prevention of inappropriate development in flood risk areas and managing surface water run-off. Climate change will also have impacts on shoreline management planning and climate change preparedness. There may be impacts on key transport routes throughout the County from sea-level rise and flooding events.

The SA objective can incorporate:

- Reducing greenhouse gas emissions
- Supporting energy conservation and energy efficient design
- Promoting renewable energy generation and cleaner technologies
- Efficient land use patterns to minimise travel
- Sustainable transport methods
- New developments have regard to risk, causes and consequences of flooding
- Promote sustainable drainage systems
- Reduce vulnerability of the built environment to the effects of climate change.

Sources:

UKCIP <http://www.ukcip.org.uk>

WG Flood Consequences Assessments: Climate Change Allowances <https://gov.wales/docs/desh/publications/160831guidance-for-flood-consequence-assessments-climate-change-allowances-en.pdf>

8. Air quality

Summary of baseline

Pembrokeshire has two designated Air Quality Management Areas (AQMA) for Nitrogen Dioxide (NO₂). AQMA area No.1 covers Picton Place to Albert Street in Haverfordwest, whilst area No.2 covers the entrance to Pembroke Castle on Westgate Hill to properties 49 and 54 on Main Street Pembroke. There are also other pollutants which are sampled in the County include benzene, nitrogen oxides (NO_x), sulphur dioxide (SO₂), particulate matter (PM₁₀) and ozone.

Other pollutants are also measured at a national scale:

Lead, volatile organic compounds, sulphur dioxide, nitrogen oxides, carbon monoxide, benzene, 1,3-butadiene, fine particles*. Fine particles can be both primary and secondary pollutants. These pollutants can reduce local air quality - affecting human health and vegetation growth, and causing damage to materials.

Sulphur dioxide, nitrogen oxides, hydrochloric acid contribute to acid deposition which leads to degradation of the terrestrial environment.

Ozone is primarily formed by a complicated series of chemical reactions initiated by sunlight. These reactions can be summarised as the sunlight-initiated oxidation of volatile organic compounds (VOCs) in the presence of nitrogen oxides (NO_x). Traffic exhausts, power plants and factories are the main sources of VOCs and NO_x.

Benzene is a VOC which is a minor constituent of petrol. The main sources of benzene in the atmosphere in Europe are the distribution and combustion of petrol. Of these, combustion by petrol vehicles is the single biggest source (70% of total emissions).

Benzene

There have been no exceedances for benzene in Haverfordwest or Pembroke for many years. As a result monitoring has ceased, and no further monitoring is proposed for future years.

Table 58: Annual mean benzene concentrations 2002-2006

Location	Annual mean benzene concentrations 2002-2006 $\mu\text{g}/\text{m}^3$ (Number of months monitoring in brackets)			
	2002-2006 average	2007-2011 average	2012-2015 average	2015
Dark St., H'west	1.89	1.03	0.83	0.4
Main St., Pembroke	2.51	1.28	0.8	0.8

UK Air Quality Strategy objective (200) for benzene = 16.25 $\mu\text{g}/\text{m}^3$ running annual mean and 5 $\mu\text{g}/\text{m}^3$ annual average

Source: PCC Air Quality Review 2007, 2008, 2010, 2013, 2014, 2016, 2017

Nitrogen dioxide (NO₂)

Bias adjusted figures indicate the Air Quality Strategy objectives were exceeded at High Street, Dark Street and Albert Street in Haverfordwest between 2007 and 2013.

Table 59: Bias adjusted annual mean nitrogen dioxide levels 2007-2013

Location	Bias A adjusted annual mean NO ₂ level $\mu\text{g}/\text{m}^3$ (Bias A x Mean)						
	2007 Bias A = 0.759	2008 Bias A = 0.870	2009 Bias A = 0.870*		2011 Bias A = 0.83	2012 Bias A = 0.79	2013 Bias A = 0.80*
High St Haverfordwest		28.1	39		0.2 *	36.2	40.2 *
Dark St Haverfordwest	34.8	41	31		24.7	23.5	25.1
Dark St 2 Haverfordwest		46	23.3		18.7	18.4	18.5
Merlins Bridge Haverfordwest	30.4	36.9	36.8		34.3	32.3	31.2
Merlins Bridge 2 Haverfordwest		31.7	42		37.9	34.8	33.1
Haroldston Terrace Haverfordwest		19.5	28.4		25.2	23	24.9
Albert St Haverfordwest	40.5	47.2	52.6		3.9 *	41.9 *	40.4 *

Albert St 2 Haverfordwest		23	25.5		21.9	21.2	25.3
Barn St 1 Haverfordwest		23.4	32.1		28.1	24.8	25.2
Barn St 2 Haverfordwest		21	23.7		20.4	18.5	19.8
Shipmans Lane Haverfordwest		20.7	25.5		22.4	20	19.5
St Thomas Green Haverfordwest	17.4	20.6	21				
Portfield Haverfordwest	24.2	26.3	25.2				
Miford Rd Haverfordwest	18	21.3	22.9				
Scarrowscant Lane Haverfordwest	14.6	16.1	14.2				
High St Narberth					23.5	23.4	24.6
Main St Pembroke					0.4 *	37.7	37
Main St 2 Pembroke					28.5	27	24.6
Main St 3 Pembroke					14.3	14	15.6
A40 Robeston Wathan					9	8.9	9.9
Salutation Square Haverfordwest					22.6	21.2	22.2
Prendergast Haverfordwest					23.1	22.3	22.8
Main St, Solva							11.9
Nun St, St Davids							9.9
New St, St Davids							9.3
Main St, Newport 1							15.4
Main St, Newport 2							23.2
Quay St, Haverfordwest 1							34.9
Quay St, Haverfordwest 2							19.9

Table 60: Bias adjusted annual mean nitrogen dioxide levels 2014-2016

Location	Bias A adjusted annual mean NO ₂ level µg/m ³ (Bias A x Mean)		
	2014 Bias A = 0.81	2015 Bias A = 0.91	2016 Bias A = 0.92
PCC1 Salutation Square Haverfordwest	19.7	22.8	21.2
PCC2 Picton Place Haverfordwest	29.2	25.5	26.8
PCC3 Victoria Place Haverfordwest	25.8	26.7	24.3
PCC4 High St Haverfordwest	30.7	33.8	33.2
PCC5 High St Haverfordwest	38.5	39.5	38.9
PCC6 High St Haverfordwest	36.9	34.3	34
PCC7 High St Haverfordwest	37.7	39.1	38.5
PCC8 High St Haverfordwest	34.3	31.5	31.1
PCC9 Dark St Haverfordwest	23.3	25.4	22.3
PCC10 Dark St Haverfordwest	17.6	18.5	17.2
PCC11 Dew St Haverfordwest	31.1	31.1	30.4
PCC12 Dew St Haverfordwest	33.8	30.9	28.9
PCC13 Dew St Haverfordwest	30.1	30.8	29.3

PCC14 Dew St Haverfordwest	25.4	25.7	24.6
PCC15 Dew St Haverfordwest	30.8	30.1	29.5
PCC 16 Shipmans Lane Haverfordwest	17.5	20.4	20.2
PCC17 Albert St Haverfordwest	25.3	30.3	30.8
PCC18 Albert St Haverfordwest	39.4	35.1	39.1
PCC19 Albert St Haverfordwest	18	24.8	26.3
PCC20 Albert St Haverfordwest	27.7	38.7	40.3
PCC21 Albert St Haverfordwest	26.8	18.3	17.8
PCC22 Albert St Haverfordwest	25.2	36.6	38.7
PCC23 Albert St Haverfordwest	39.8	29.2	25.7
PCC24 Albert St Haverfordwest	37	39.1	38.2
PCC25 Albert St Haverfordwest	40.2	28.1	24.6
PCC 26 Albert St Haverfordwest	43.7	37.8	38.6

Source: PCC Air Quality Review 2010, 2014, 2017

Narberth AURN

There were no exceedances of nitrogen dioxide levels at Narberth Automated Urban Rural Network (AURN) and RWE npower (RWE) Pembroke Power Station (at Pennar Cants ceased 2016).

Table 61: Nitrogen dioxide levels ($\mu\text{g}/\text{m}^3$) monitored at AURN sites Narberth 2004-2016, and RWE 2011-2016

	2004	2005	2006	2007	2008	2009	2011		2012		2013		2014		2015		2016
	Narberth AURN						AURN	RWE	AURN	RWE	AURN	RWE	AURN	RWE	AURN	RWE	AURN
Annual Mean	5.3	5.1	5.3	5.5	5.75	5.17	4.93	11.6	6	7	6	11.6	4	7	3	5	3
Max Hourly Mean	55.6	57.7	61.9	60.7	84.8	114.8	183.9	81	77	39.5	152	61	70	63	52	52	61
Data capture (%)	94	95	94	88	95	93	99	97	76	99	99	98	98	98	99	99	93
UK Air Quality Strategy objective by 31.12.2005: $\text{NO}_2 = 200 \mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times per year (one hour mean) and $40 \mu\text{g}/\text{m}^3$ annual mean.																	

Source PCC Air Quality Review 2008, 2010, 2014, 2017.

Sulphur dioxide (SO_2)

The UK Air Quality Strategy objectives (2007) for SO_2 are:

- $350 \mu\text{g}/\text{m}^3$ not to be exceeded more than 24 times per year (one hour mean);
- 24-hour mean of $125 \mu\text{g}/\text{m}^3$ to be exceeded no more than 3 times per year;
- $266 \mu\text{g}/\text{m}^3$ not to be exceeded more than 35 times per year (15 minute mean measured as the 99.9th percentile).

Sulphur dioxide levels at Narberth AURN & RWEpower

Both monitoring sites did not exceed the 24 hour mean or the 15 minute mean objectives in 2017 (PCC Air Quality Review, 2017).

Source: PCC Air Quality Review 2017

Particulate matter (PM10)

Table 62: PM₁₀ level (µg/m³ gravimetric) measured at Narberth AURN site and RWE

	2003	2004	2005	2006	2007	2008	2009	2011		2012		2013		2014		2015		2016
	Narberth AURN							AURN	RWE	AURN	RWE	AURN	RWE	AURN	RWE	AURN	RWE	AURN
Max 24 hr mean	66.5	34.6	35.9	42.9	179	113	118	71	76	59	73.7	64	37.8	10	46	47	57	50
Annual mean	17.42	12.9	15.9	13.4	17.6	27.5	11.5	23	23	9	17	16	18.7	3	19.7	12	17	12
Data capture (%)	73	94	95	94	88	95	93	73	99	97	99	87	94	98	64	87	94	95

Source PCC Air Quality Review 2007, 2010, 2014, 2017

Air Quality Strategy objective for PM₁₀ to be met by the 31/12/2004 are:

- 50µg/m³ not to be exceeded more than 35 times a year (24 hour mean);
- 40µg/m³ annual mean.

The results indicate that there have been exceedances of the PM₁₀ for the 24hour mean in 2007 to 2013 at the AURN site and in 2011, 2012 and 2015 at the RWE site. The annual mean has not exceeded 40µg/m³ at either site.

Pembrokeshire County Council does not monitor PM_{2.5}, carbon monoxide, 1,3-butadiene and lead as previous monitoring has indicated that it is highly unlikely that these Air Quality Objectives would be breached (PCC Air Quality Review and Assessment Progress Report, 2017).

Number of days of moderate or high air pollution in Narberth (rural)

Concentrations of pollutants are analysed to determine the number of days which the pollution was moderate or higher. This is when concentrations for at least one of the pollutants exceed the National Air Quality Standards. The variation in ozone levels which is the main cause of pollution in rural areas is affected by weather conditions such as higher temperature.

Table 63: Number of days of moderate or high air pollution in Narberth 1997-2017

1997	1998	1999	2000	2001	2002	2003	2004	2005	2012	2013	2014	2015	2016	2017
41	25	41	25	33	28	41	*	*	7	19	3	8	11	8

*Narberth was excluded for giving incorrect measurements during 2004 and failing data capture rules in 2005 (Key Environmental Statistics for Wales, 2007)

Source: Narberth AURN da (gov.uk, 2017)

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/702081/APE_site_data_tables.ods

Ozone

Ozone is measured at Narberth AURN.

Table 64: Annual mean of the ozone daily maximum 8 hour running mean (average of $\mu\text{g}/\text{m}^3$)

	2007	2008	2009	2011		2012		2013		2014		2015		2016
Annual Mean $\mu\text{g}/\text{m}^3$	Narberth AURN			AURN	RWE	AURN	RWE	AURN	RWE	AURN	RWE	AURN	RWE	AURN
		60	61.7	60.3	60.1	60	60	62.6	64	65.5	62	69	63	68
Max Daily Mean $\mu\text{g}/\text{m}^3$	73.6	120	106	109.5	143	112	104	105	108	93	100	93	104	104
Data capture (%)	10	72	94	95	83	97	98	99	94	98	71	99	95	99

The Air Quality Strategy objective for Ozone is:

- $100\mu\text{g}/\text{m}^3$ not to be exceeded more than 10 times a year (8 hour mean);

The results indicate that there have been small exceedances of the ozone objectives at Narberth since 2008, with the exception of 2014 and 2015. The RWE site exceeded the objective in 2011 and has also been slightly above from 2012 to 2015.

Air Quality Issues/constraints/gaps

The main sources of air pollutants in Pembrokeshire are road traffic, power generation and other heavy industries. Air Quality Strategy objectives are not all being met and future developments may further impact localised air quality. Increased traffic in particular hotspots (Pembroke and Haverfordwest AQMAs) can have an impact on localised air quality. There have been issues with dust (PM₁₀) from quarries and dust suppression takes place. Number of days moderate or high air pollution per year has generally decreased.

The LDP should support policies and strategies to improve air quality and maintain current good air quality. Air quality impacts should be taken into account when considering developments.

The air quality SA objective is closely related to the climatic factors objectives and incorporates the need to reduce greenhouse gas emissions, and also to reduce the impacts from transport, industry and power generation on air quality. The objective also takes account of the health impacts of air quality.

Sources:

Air quality strategy

PCC Progress Reports 2008, 2010, 2014, 2017

http://old.pembrokeshire.gov.uk/content.asp?nav=1626,2380,110,935&parent_directory_id=646&id=5634

<https://www.pembrokeshire.gov.uk/pollution-control/air-quality>

Pembrokeshire Air Quality Management Areas Action Plan

https://www.pembrokeshire.gov.uk/objview.asp?object_id=4204&language=

9. Material Assets

Waste

Table 65: PCC total collected waste arisings, 2006/07 to 2014/15 (Tonnes)

Year	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15
Tonnes	78,054	74,148	70,915	69,132	68,907	65,308	64,516	67,729	68,074
Percentage Change		-5.00%	-4.36%	-2.51%	-0.33%	-5.22%	-1.21%	4.98%	0.51%

Source: South West Wales Region Waste Planning Monitoring Report 2016

<https://gov.wales/docs/desh/publications/170223wpmr-south-west-wales-region-en.pdf>

There has been a decline in the total amount of waste being produced in Pembrokeshire, but since 2013 the figure has returned to 2010/11 levels of waste. These figures do not take into account the amounts being re-used, recycled or composted, but they do indicate an overall trend in reducing in the amount of waste being produced overall.

Target: Stabilisation and reduction of household waste

- By 2009/10 (and to apply beyond) waste arisings per household should be no greater than those (for Wales) in 1997/98;
- By 2020 waste arisings per person should be less than 300kg per annum.

Target Type: Secondary.

Source: South West Wales Regional Waste Group, Annual Monitoring Report 2007

http://www.walesregionalwastepans.gov.uk/pdfs/sw_pdf/Annual_Monitoring_Report_April_2007.pdf

PCC municipal waste reuse/recycling/composting rates

Table 66: Total Recycling and composting figures as a percentage of arisings, 2006/07 to 2014/15

Year	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17
%	26.5	30.3	38.9	44.3	48.9	50.0	53.1	60.3	65.4	64.9	65.3

Note: Includes household and non-household sources. The data excludes abandoned vehicles / incinerator bottom ash / beach cleansing wastes / rubble. The use of this data source avoids any potential for the skewing of data and gives a more accurate impression of each local authority's performance against the respective targets.

Source: WG - Local authority municipal waste management 2016-17

<https://gov.wales/statistics-and-research/local-authority-municipal-waste-management/?lang=en>

Future trend

Since LDP1, the rate for re-use, recycling and composting have overtaken the percentage of waste being sent to landfill. However, the year on year increase has started to stabilise at 65% since 2014/15 which has prompted Pembrokeshire County Council to divide the collection streams in order to meet targets set in '*Towards Zero Waste*'.

Source: PCC – Waste and Recycling Proposals

<https://www.pembrokeshire.gov.uk/newsroom/find-out-more-about-waste-and-recycling-proposals>

Targets

Target – Reuse, Recycling and Composting of Local Authority Collected Waste:

- By 2012/13 achieve at least 52% of preparing for reuse and recycling/composting (or Anaerobic Digestion (AD));
- By 2015/16 achieve at least 58% of preparing for reuse and recycling/composting (or AD);
- By 2019/20 achieve at least 64% of preparing for reuse and recycling/composting (or AD);
- By 2024/25 achieve at least 70% of preparing for reuse and recycling/composting (or AD)

Target Type: WG.

Comparators

The South West Wales Region Waste Planning Monitoring Report indicates that Pembrokeshire was above the regional average of 59.8% for reuse, recycling and compost with 64.9%. However, the figures have stabilised in recent years and new strategies will need to be developed to guarantee that the 2019/20 target of 64% is met in order to avoid financial penalties.

Landfills

Table 67: Annual Landfilled waste figures for Pembrokeshire County Council, 2006 to 2015

Years	06/ 07	07/08	08/09	2009-2012	12/13	13/14	14/15
Total tonnage of municipal wastes sent to landfill	54,109	48,904	43,356	No Data	29,182	20,004	10,465

Withyhedge Landfill is Pembrokeshire's only putrescible and Materials Recycling Facility landfill and is the destination for the orange and black bag weekly collections from around the County. The site also processes residual waste for transport to a Pembroke Dockyard in order to ship the material to an energy from waste facility in Sweden.

Future waste figures

Table 68: Article 5 (1) of the EC Landfill Directive insists:

Year	Target	BMW Landfill Allowance
2010	No more than 75% of the BMW produced in 1995 can be landfilled	29,481
2013	No more than 50% of the BMW produced in 1995 can be landfilled	19,516
2020	No more than 35% of the BMW produced in 1995 can be landfilled	13,702

(BMW = Biodegradable Municipal Waste)

Table 69: BMW Landfill allowances and actual landfill amount

	04/05	05/06	06/ 07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15
Total landfill	550,000	1,022,000	944,000	866,000	788,000	710,000	630,000	550,000	470,000	450,000	430,000

allowance in Wales (Tonnes)											
Pembrokeshire Landfill Allowance (Tonnes)	20,736	39,074	36,676	34,278	31,879	29,481	26,134	22,815	19,497	18,667	17,837
Pembrokeshire Actual Landfilled (Tonnes)	N/A	N/A	N/A	30,892	27,030	23,786	20,325	18,681	17,786	13,430	6,873
Pembrokeshire Actual Landfilled as a percentage of the allowance	N/A	N/A	N/A	90.1	84.8	80.7	77.8	81.9	91.2	71.9	38.5

Source: WG - Local authority municipal waste management 2016-17

<https://gov.wales/statistics-and-research/local-authority-municipal-waste-management/?lang=en>

Civic Amenity sites / Bring sites

In areas of Pembrokeshire under County Council's authority:

6 Civic Amenity sites: Crane Cross near Saundersfoot, Goodwick/Fishguard, Haverfordwest, Hermon, Pembroke Dock and St. Davids (National Park).

Future trend

The kerbside collection scheme should further reduce the amount of waste going to landfill after a recent stagnation in recycling/reuse rates.

Hazardous Waste

Table 70: Hazardous waste arisings by EWC chapter for SW Wales, 2007 to 2013

Year	2007	2008	2009	2010	2011	2012	2013
Tonnes	58,517	39,504	43,606	35,517	35,152	28,166	38,919

Source: WG - Local authority municipal waste management 2016-17

<https://gov.wales/statistics-and-research/local-authority-municipal-waste-management/?lang=en>

Waste Licences

Pembrokeshire County Council has an arrangement with various organisations for collection, recycling and disposal of the following wastes:

Service provided	Reference	Organisation	Contract start date	Contact expiry date	Extension Date
Collection, Treatment And Environmentally Sound DisposalL Of WEEE From DCF Sites In Pembrokeshire	PROC/0708/023	Repic Ltd	30/06/2007	31/12/2018	N/A
Provision of a Facility(s) to Receive, Shred and Compost Quantities of Green Waste	PROC/1011/067	CWM Environmental Limited	31/03/2011	30/04/2018	N/A
Provision of a Facility (s) for the Receipt and Reuse/Recycling of All Types of Wood	PROC/1314/083	Griffiths Waste Management Ltd	08/04/2014	30/04/2018	N/A
Provision of a Licensed Facility of the Receipt and Reuse/Recycling of Gypsum Waste	PROC/1314/084	D.I.Evans cyf	01/04/2014	31/03/2019	N/A
Provision of a Materials Recycling Facility	PROC/1516/004	A J Recycling Limited	01/10/2015	31/03/2019	18

Provision of a Bulky Waste Collection & Secondary Processing Service	PROC/1213/093	Pembrokeshire FRAME Limited	01/04/2013	31/03/2019	36
Textile Collection Service for SE Wales Waste Management Group	PROC/1617/010	JMP Wilcox and Company Ltd	01/05/2016	30/04/2019	24
Provision of a Facility to Receive and Recycle Street Sweepings and Gully Waste	PROC/1314/075	Lawrence Landfill Ltd	28/05/2014	30/04/2019	24

Sources:

PCC Tenders and Contracts – Current Waste & Environment Contracts

<https://www.pembrokeshire.gov.uk/tenders-and-contracts/current-contract-list>

Waste Transfer Stations

Table 71: Pembrokeshire has a number of operational and non-operational (*) waste transfer stations

Station	Location	Facility Type
Waterston Car Breakers	Waterston	End of life vehicle facility
Plot 9 Enviroventure	Waterston Ind. Estate	End of life vehicle facility
Plot 10 TBS	Waterston Ind. Estate	Household, Commercial and Industrial Transfer Stations (including treatment)
LAS Waste Ltd	Waterloo, Pembroke Dock	Household, Commercial and Industrial Transfer Stations (including treatment)
Jensons Metals	Pembroke Dockyard	Metal Recycling Site
Unit 41, Sundorne Products (Ilanidloes) Ltd	Pembroke Dockyard	Household, Commercial and Industrial Transfer Stations (including treatment)
Carew Car Dismantlers	Carew	End of life vehicle facility
Hughes & John Haulage Contractors & Aggregates Recycling	Whitehill	C&D MRF
Jay Metals	Nr. Llanfyrnach	End of life vehicle facility
Glogue Quarry	Llanfyrnach	Hazardous Waste Transfer Stations (including treatment)
A J Recycling	Boncath	I&C MRF
Withyhedge Material Recycling Facility	Rudbaxton	I&C MRF; Household Waste Recycling Centres

Griffiths Waste Solutions	Haverfordwest	Household, Commercial and Industrial Transfer Stations (including treatment)
Western Power Distribution	Haverfordwest	Hazardous Waste Transfer Stations (including treatment)
Lawrence Landfill Ltd	Haverfordwest	Inert Waste Transfer Stations (including treatment); Household, Commercial and Industrial Transfer Stations (including treatment); Household, Commercial and Industrial Transfer Stations (including treatment); Open Windrow Composting; Use/treatment of inert waste for land reclamation or construction
Withybush Hospital	Haverfordwest	
Transco	Haverfordwest	

Data gaps and uncertainties

Many operators have licenses for waste transfer but don't use them, clouding the picture significantly.

Sources:

Natural Resources Wales (NRW) – Permitted Waste Sites

<https://naturalresources.wales/evidence-and-data/maps/find-details-of-permitted-waste-sites/?lang=en>

Fly-tipping

Pembrokeshire County Council Corporate Plan 2017/18: Page 28 – Ref LSS24:

The time taken to remove fly tips improved last year from 3.9 days to 2.5 days. The number of incidents reported also reduced significantly between 2004/05 and last year, from 1633 to 1067.

Table 72:

Ref: LWM 8	2006/07	2007/08	2008/09	2009/10	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Number of reported incidents	1272												
Target Collection time	3 days												
Actual Collection time	3 days												5

Source: Pembrokeshire Corporate Plan 2017/18 <https://www.pembrokeshire.gov.uk/improvement-planning/corporate-plan>

Future trend

Continued reduction of reported cases due to effective policing and greater educating of societal costs of fly-tipping, along with a gradual reduction in collection times – partly due to reduction in occurrences but primarily due to an appreciation of the importance of quick collection. Future targets should be more ambitious and aim to provide the most rapid response in Wales.

Owners of vehicles regularly caught fly-tipping will face tougher punishment “in an extension to the Clean Neighbourhoods and Environment Act 2005”

Comparators

Recommended targets set by WG are to:

- Reduce reported incidents by 20% over the next 10 years
- Removal of fly tipped material within 14 days for large incidents and 5 days for smaller incidents.

Sources:

<https://www.pembrokeshire.gov.uk/improvement-planning/corporate-plan>

<https://naturalresources.wales/evidence-and-data/maps/find-details-of-permitted-waste-sites/?lang=en>

<https://www.pembrokeshire.gov.uk/tenders-and-contracts/current-contract-list>

<https://gov.wales/statistics-and-research/local-authority-municipal-waste-management/?lang=en>

<https://www.pembrokeshire.gov.uk/newsroom/find-out-more-about-waste-and-recycling-proposals>

<https://gov.wales/statistics-and-research/local-authority-municipal-waste-management/?lang=en>

<https://gov.wales/docs/desh/publications/170223wpmr-south-west-wales-region-en.pdf>

Minerals and Aggregates

Active quarries

The quarries in the area of Pembrokeshire under the jurisdiction of Pembrokeshire County Council are:

1. Blaencilgoed / Gellihalog – limestone
2. Bolton Hill – igneous
3. Slade Hall – shale
4. Glogue – slate waste
5. Cotts Lane – shale
6. Penlan – shale
7. Cefn – sandstone
8. Plascwrt – igneous
9. Popehill – shale
10. Tangiers Farm – shale
11. Cronllwyn Quarry – slate waste
12. Treffgarne – igneous
13. Gilfach – shale
14. Rushacre Farm – shale

Note that Treffgarne and Gilfach are dormant. The council is in the process of issuing a prohibition order at Treffgarne to ensure that further extraction cannot take place without further planning permission being granted. Gilfach may also require a prohibition order for a similar reason, but this is not being progressed at this stage.

Source: Pembrokeshire County Council Replacement Local Development Plan (Evidence Base) - Minerals Background Paper (June 2018)

PCNPA Quarries

A. Carew - Limestone

- B. Rhyndaston - Igneous
- C. Pantgwyn – Sand & Gravel
- D. Trefigin Sand & Gravel

Penberry was issued with a prohibition order in June 2015 to restore the quarry to its natural state, whilst Syke is currently inactive.

Source: Pembrokeshire Coast National Park Replacement Local Development Plan (Evidence Base) – Minerals Background Paper (March 2018) <http://www.pembrokeshirecoast.wales/default.asp?PID=761>

Data Gaps and uncertainties

A long-standing ‘three company confidentiality rule’ means that detailed figures of production for individual quarries are kept in confidence, for competition reasons.

Reserves in 2016 (including PCNPA):

Crushed Rock Reserves and Landbanks:	27.09 million tonnes
Dormant Aggregate Reserves:	0 tonnes
Land Won Sand & Gravel Sales:	3.31 million tonnes
Marine Dredged Aggregate:	42.911 tonnes
Total Aggregate Reserves:	30.4 million tonnes

Aggregate reserves could be logically expected to decrease annually as minerals are a finite source. Reserves can however increase as a result of a quarry obtaining permission to expand its boundaries, and if quarries are successful in their planning permission applications, active reserves may increase. The distinction between ‘inactive’ and ‘dormant’ is complex and technical, related to the origins of the permissions granted (see para. 47 of MTAN 1). Based on recent shares of production Pembrokeshire

and PCNP would be expected to contribute 10.5 Mt over the next 15 years; on a per capita basis this would equate to 6.0 Mt (Regional Technical Statement, 2007)¹.

Currently there is one active limestone quarry; two active igneous quarries; one active slate quarry; one active sandstone quarry and six active shale quarries. This is one of the most diverse areas in terms of types of aggregate produced in South Wales.

The majority of the area is also within 30 km of an active sand wharf at Pembroke Dock.

The geology and the environmental capacity of the County are extremely varied making generalisation difficult, but resources in most areas apart from the hinterland and east, tend to have lower capacity (i.e. are sensitive to the establishment of mineral operations).

If Pembrokeshire was to be called upon to support demand currently met by PCNP, overall permitted reserves are still well in excess of a 15 year requirement, but the varied mix of materials contained in that overall reserve is far from evenly balanced and may necessitate some extra provision.

The current sand production is obtained from sites within the National Park. This will end in the future because the National Parks are not required to have quarries within them, therefore, a new site must be identified to fulfil the demand.

Although slate waste has been recycled for some years, this has been on a small scale and suitable resources are limited. Sources of CD & EW (construction demolition and excavation waste) are likely to be concentrated in the parts of the County with built up areas.

Data gaps

The report where these figures appeared advised caution when using the figures, as many involved some degree of estimation.

¹ The Pembrokeshire County Council and Pembrokeshire Coast National Park are grouped together for confidentiality reasons in the Draft Technical Statement)

Sources:

South Wales Regional Aggregates Working Party (SWRAWP). Annual Report 2016. <http://www.swrawp-wales.org.uk/Html/SWRAWP%20Annual%20Report%202016.pdf>

Welsh Assembly Government Minerals Technical Advice Note 1:Aggregates. March 2004. (MTAN 1).

Permissions (Table 73)

<i>Site name</i>	<i>Mineral type</i>	<i>Mineral extraction will end:</i>
Blaencilgoed / Gellihalog, near Ludchurch, site M1	Limestone	21 st February 2042
Bolton Hill, Tiers Cross, Site M2	Igneous	10 th February 2053
Slade Hall Farm Quarry, Site M3	Shale	24 th May 2021
Glogue Quarry, site M4	Slate	13 th September 2023
Cotts Lane, Martletwy, site M5	Shale	30 th April 2018
Penlan Farm, site M6	Shale	9 th June 2023
Cefn, Cilgerran, site M7	Sandstone	3 rd July 2027
Plascwrt Farm, Llangolman, site M8	Igneous	12 th November 2024
Pope Hill, site M9	Shale	6 th September 2021
Tangiers Farm, site M10	Shale	1 st October 2023
Cronllwyn, site M11	Slate waste	3 rd November 2019
Treffgarne (2 locations), site M12	Igneous	21 st February 2042 Currently a dormant site
Gilfach, site M13	Shale	21 st February 2042 Currently a dormant site
Rushacre Farm, site M16	Shale	17 th April 2022

Future trend

The large number of permissions expiring in 2042 are a legacy of decisions made during the Second World War to award unlimited permissions and consequent agreements in 1982 to make these last 60-years. The system now is far stricter in awarding

permissions and considers each case on its individual merits, with extensive consultation and surveys undertaken. Lengths of permissions can range from three to 20/30 years.

Sources:

Planning documents, conditions and legislation, Pembrokeshire County Council.

Aggregates (Table 74)

Area	Crushed rock aggregate sales in million tonnes, Reserves in parentheses (million tonnes and years)		
	2014 (Reserves at 31.12.14, Years)	2015 (Reserves at 31.12.15, Years)	2016 (Reserves at 31.12.16, Million Tonnes and Years)
Pembrokeshire (incl PCNPA)	0.53	0.53	0.46 (27.09, 47yrs)
South West Wales	1.84	1.81	1.69 (178.00, >50yrs)
South East Wales	2.81	3.22	3.65 (193.00, >50yrs)
Powys (inc Brecon Beacons)	3.22	3.28	3.07 (203.11, >50yrs)

Data is available for sales, reserves and landbank for each local authority which shows that many authorities have a landbank in excess of 50 years, however, regional planning groups exist across South Wales in order to take account of the minerals available in each area and to spread the landbank requirements across the region.

Table 75

		Land won sand & gravel, total sales (million tonnes) and landbank (million tonnes & years)				
		2014	2015	2016	2016 Landbank	
Powys (inc Brecon Beacons),		0.20	0.27	0.16	3.31	>50yrs
South West Wales	Carmarthenshire					>50yrs
	Ceredigion					6
	PCNP					N/A

The SWRAWP report states that Ceredigion is the largest producer in the region which consequently shows a low landbank for the authority, whereas the remaining producers have relatively low output and small sites in Powys and Carmarthenshire. PCNPA is not required to have a landbank as a result of national park status and should not be relied upon for future production.

This combination means that as a region, new terrestrial sand and gravel resources will need to serve the area in order to meet current demand.

Table 76

		Marine Dredged Aggregates (tonnes)								
Area	Landing Port	2004	2005	2006	2007	2008	N/A	2014	2015	2016
Pembrokeshire County Council	Pembroke Dock	44,509	66,607	54,034	60,267	42,494	N/A	14,462	24,531	42,911
South Wales		1,071,344	1,001,767	951,968	1,070,981	846,458	N/A	632,843	653,756	651,584

Note: The above excludes Bedwyn Sands in Monmouthshire as a result of the site being above low water mark and, therefore, under the jurisdiction of the Local Planning Authority as opposed to the Crown Estate.

Sources:

South Wales Regional Aggregates Working Party – Annual Report 2004; 2005; 2006; 2007; 2008; 2016

<http://www.swrawp-wales.org.uk/Html/publications.html>

Recycling

A number of companies, separate to quarries, recycle material in Pembrokeshire using crushing machinery to make secondary aggregates suitable for road surfacing and concrete and so on.

A target for recycling C&D waste as aggregates was proposed for Wales of at least 40% by 2005 (MTAN1, 2004) and 70% in Towards Zero Waste.

The latest data from the Survey of Construction and Demolition Waste Generated in Wales 2012, shows that across Wales 90% of C&D waste was either re-used or recycled and only 2% was sent to landfill, comfortably beating the above targets.

Future trend

The recycling and re-use of aggregate will continue due to economic viability.

Sources:

South Wales Regional Aggregates Working Party – Annual Report 2006

South Wales Regional Aggregates Working Party – Annual Report 2007

South Wales Regional Aggregates Working Party – Annual Report 2008

South Wales Regional Aggregates Working Party – Annual Report 2016

Welsh Assembly Government Minerals Technical Advice Note – Aggregates. March 2004

Coal Reserves

The Pembrokeshire Coalfield is predominately in a band some 2-6 miles wide from the Tenby to Telpyn Point coast in the east, to the Little Haven to Haroldston West coast in the west. There is also a coastal section between Nolton Haven and Newgale on the same coast of St Brides Bay. There are no accurate records of the quantity, quality or arrangement of remaining coal deposits in Pembrokeshire.

Figure 5: The lightly shaded area on the map below shows the Pembrokeshire Coast National Park, with the yellow area denoting the location of the Pembrokeshire Coalfield.



Future trend

No coal is mined in Pembrokeshire and there are no plans to do so, but Pembrokeshire County Council Local Development Plan does have an element of safeguarding in policies GN.22 & 23 of the Local Development Plan.

Source:

Pembrokeshire County Council Local Development Plan (Adopted 28th February 2013).

Quarry Restoration

When Pembrokeshire County Council gives permission for quarrying it will also provide guidance regarding restoration of the land once operations come to an end. The official reason for these planning conditions is often concerned with “ensuring the satisfactory restoration of the site in the interests of the amenity of the area”, sometimes with reference to “local residents in particular”.

Conditions can include demanding that no topsoil is taken away from the site, that no trees or shrubs are removed from the site and that any intrusions of Japanese Knotweed are eradicated fully. An over-riding aim of such conditions is to allow and promote the colonisation of the site by the natural flora and fauna of the locality. Many disused and restored quarries can provide a local biodiversity and geodiversity resource.

Such conditions have been applied to non-operational quarries in Pembrokeshire, which were listed under the ‘Active Quarries’ section.

Energy

Ecological footprint

Pembrokeshire had an ecological footprint of 5.3 global hectares per capita (gha/cap)² in 2003 which is marginally higher than the Welsh footprint (5.16 gha/cap), but lower than the UK footprint (see Table). The Ecological Footprint is a measure of how much land and sea area we use to support our lifestyles, compared with what is available. The 2011 update in the below table was conducted by the Welsh Government which did not use the same methodology as a result of available data sources and modelling. This means that a direct comparison cannot be made between 2008 and 2011.

Table 77: Ecological footprint in global hectares per capita

Area	2008	2011
Pembrokeshire footprint	5.3	3.36
Wales Spatial Plan area: Pembrokeshire Haven	5.26	
Wales footprint	5.16	3.28
UK footprint	4.89	
Global footprint	2.2	
Global capacity (refers to the biological land actually available on a global level)	1.8	

² Dawkins, E., Paul, A., Barrett, J., Minx, J. and Scott, K.: Wales’ ecological footprint – Scenarios to 2020 (2008)

Future trend

Table 78: Potential ecological footprint reductions if waste reduction target is met

Year	Total EF gha / Wales / yr	EF per resident Gha / cap / yr	Reduction
2001	1,722,201	0.59	-
2020	1,089,880	0.37	37%

The above table is based on the assumption that Wales will meet the following waste reduction target:

'By 2020 waste arisings per person should be less than 300 kg per annum' compared to current production of 461 kg per person.

The footprint of Wales has increased at an average rate of 1.5% per year between 1990 and 2003. This closely mirrors the growth in Gross Value Added (GVA) in Wales over the same period. This trend is not unique to Wales and is replicated elsewhere in the UK.

If the historic growth in footprint were to continue at rate of 1.5% a year, this would result in an ecological footprint 20% higher than the 2003 figure (6.19gha/capita) in 2020.

Three broad areas of household consumption contribute 63% of the footprint of Wales; these are housing, food and personal travel. The report Wales' ecological footprint – Scenarios to 2020 (2008) illustrates how consumption in these areas may change over time, modelling scenarios from 2001 to 2020.

Figure 6: Ecological Footprint of Wales – Breakdown of the 5.25gha/cap in 2008 and of the 3.28gha/cap in 2011

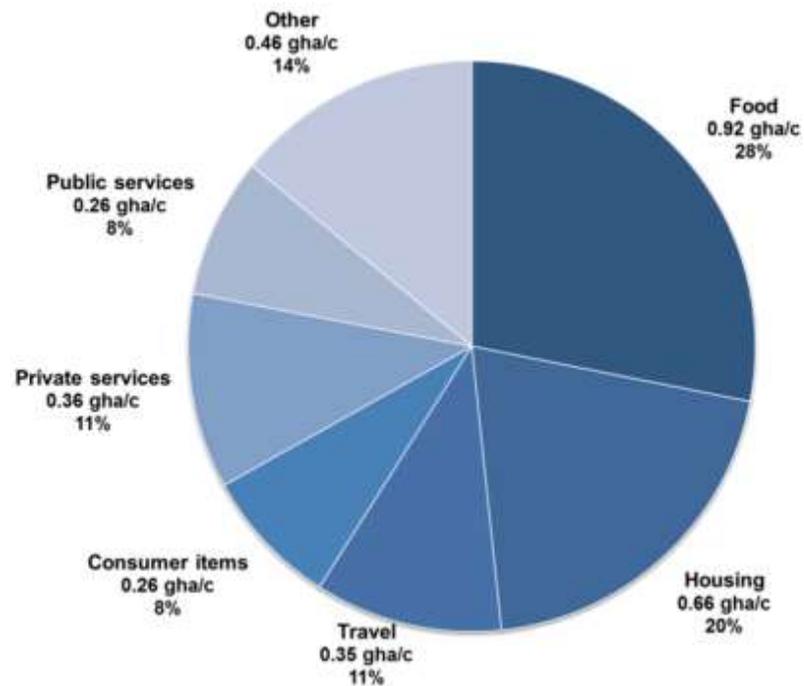
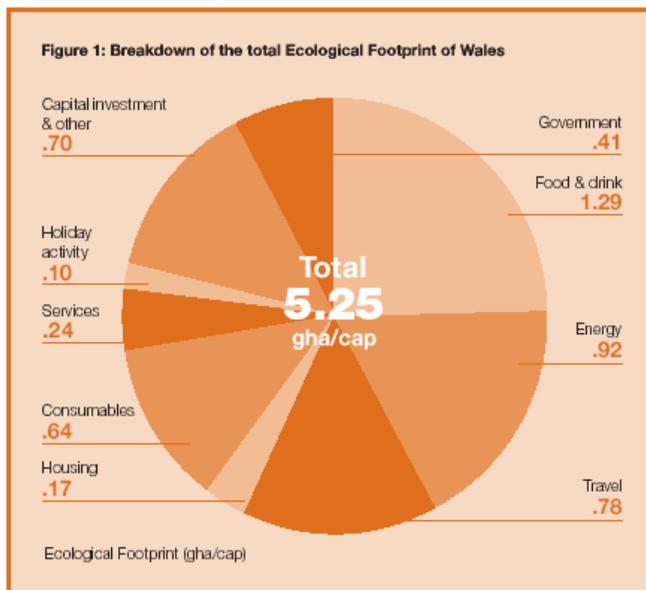
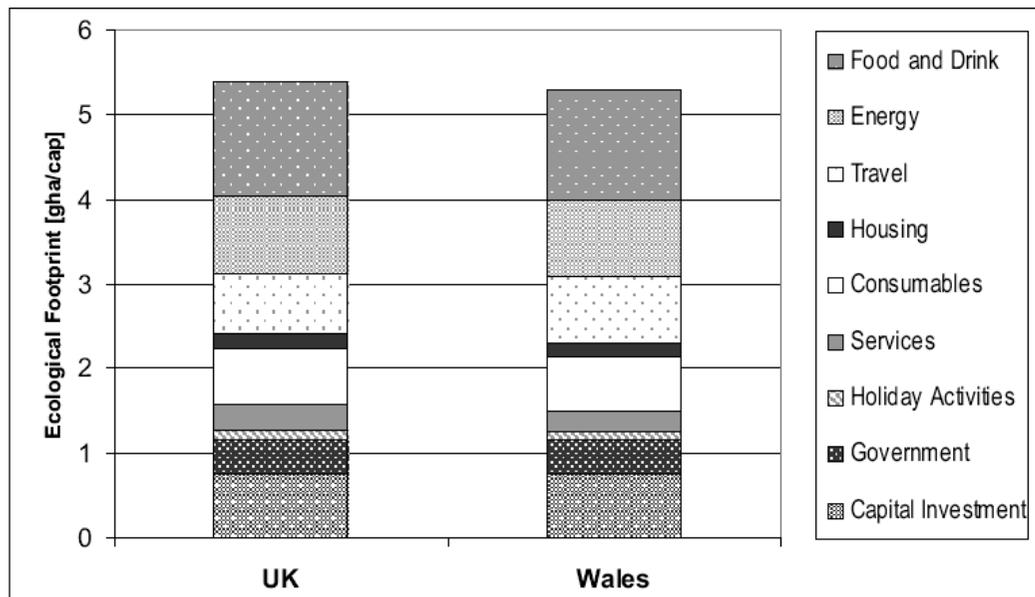
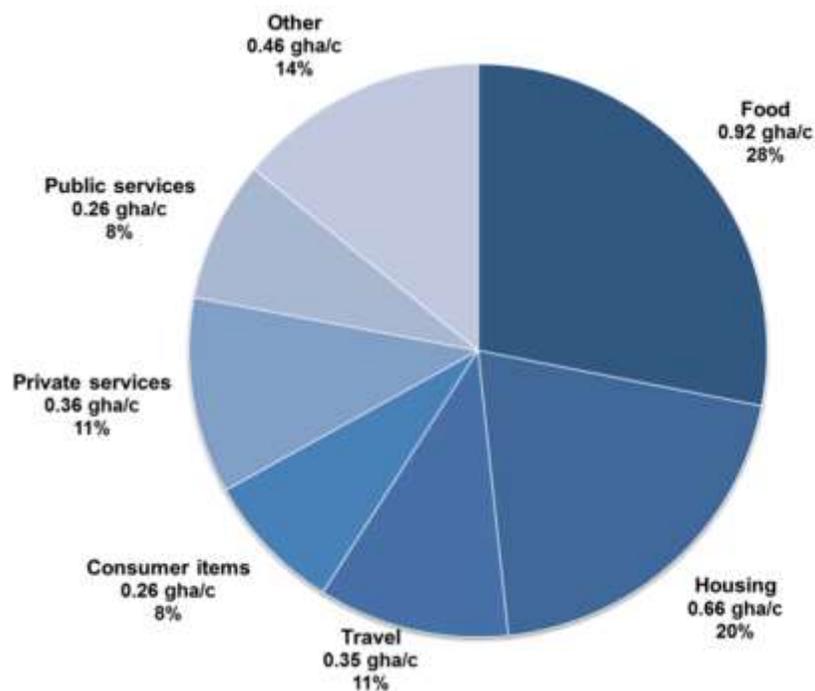


Figure 7: Ecological footprint by sector, Wales & UK, 2001:



Ecological footprint by sector, Wales only, 2011:



Sources:

Reducing Wales' Ecological Footprint, March 2005. Stockholm Environmental Institute & WWF Cymru - <http://www.sei.se/index.php?page=pubs&pubaction=showitem&item=13>

See also 'Report summary' - http://www.wwf.org.uk/filelibrary/pdf/redwalesfoot05_eng.pdf

(5) The Footprint of Wales, A Report to the Welsh Assembly Government, WWf Cymru, 2002.

Wales' ecological footprint – Scenarios to 2020 (2008)

http://sei-international.org/mediamanager/documents/Publications/Future/wales_ecological_footprint_report_270508_final.pdf

Ecological footprint of Wales report (2011)

<https://gov.wales/topics/environmentcountryside/climatechange/publications/ecological-footprint-of-wales-report/?lang=en>

Energy consumption per building and per occupant

http://www.pembrokeshire.gov.uk/content.asp?Language=&id=10328&nav=101,154,983&parent_directory_id=646

This page on the Council's website summarises the measures towards reducing energy consumption undertaken throughout the County's public buildings, which include schools, council offices, leisure centres and so on. However, it is short on quantified data.

Comparators

The UK building stock is directly responsible for approximately 50 per cent of UK's energy use and carbon emissions.

Data gaps and uncertainties

Data is available for public buildings over 1000m², but so far there has not been a comprehensive review of energy consumption in all of Pembrokeshire's buildings. It has been suggested that a 'per occupant' measure would be misleading, given that occupancy varies over the time of day, week, year and so on.

Sources:

Pembrokeshire County Council Transportation and Environment department

Parliamentary Select Committee on Science and Technology Memo – October 2004

Welsh European Funding Office. A practical guide to promoting environmental sustainability – Energy

Electricity and gas use

Western Power Distribution is responsible for electricity supplies across South Wales and South West England. Wales & West Utilities is the area's gas supplier. Comprehensive consumption figures for Local Authorities and Regions are provided annually by the Department for Business, Enterprise and Regulatory Reform. Figures for electricity use are higher in Pembrokeshire than Wales and figures for gas are lower than the Wales average.

Table 79

Regional and local electricity consumption statistics (experimental)		2003		2004		2005		2006		2007		2008	
NUTS4 Area and Government Office Region:		Pembs	Wales										
Domestic consumers	Sales – GWh	242	5,196	263	5,602	265	5,656.0	260	5,600	246	5,398	250.6	5,307.2
	Number of MPANs * (thousands)	50.3	1,211.5	54.4	1,305.1	55.2	1,315.1	56.0	1,328	54.1	1,303	57.6	1,338.5
Commercial and Industrial Consumers	Sales – GWh	638	9,961	787	10,970	798	11,910.6	782	11,794	816.7	11,233.7	806.1	10,960.0
	Number of MPANs (thousands)	4.6	99.1	8.0	130.1	8.3	134.5	7.9	125	7.7	124.2	8.0	122.9
All Consumers	Sales – GWh	880	15,158	1,051	16,572	1,063	17,566.1	1,042	17,394	1,063	16,632.6	1,056.8	16,267.1
	Number of MPANs (thousands)	54.9	1,310.6	62.4	1,435.2	63.0	1,449.5	63.9	1,454	61.8	1,427.2	65.6	1,461.4
Sales per consumer	Average domestic consumption kWh	4,824	4,289	4,843	4,293	4,801	4,300.5	4,640	4,215.1	4,556	4,143	4,355	3,965
	Average industrial and commercial consumption kWh	138,189	100,529	97,890	84,315	96,609.0	88,584.2	99,270	94,290.7	105,668	90,462	100,429	89,182
Sales per household	Average domestic consumption kWh	-	-	-	-	-	-	-	-	4,896	4,328	4,829	4,132

Wales electricity consumption statistics		2009	2010	2011	2012	2013	2014	2015	2016
Domestic consumers	Sales – GWh	5322	5,361	5,287	5,229	5,180	5,182	5,164	5,020
	Number of MPANs * (thousands)	1,361	1,369	1,375	1,381	1,386	1,388	1,401	1,409
	Sales – GWh	10,398	10,457	9,939	11,794	10,366	11,644	10,246	9,755

Commercial and Industrial Consumers	Number of MPANs (thousands)	124	124	124	124	124	128	128	129
All Consumers	Sales – GWh	15,720	15,818	15,226	15,267	15,546	16,826	15,410	14,775
	Number of MPANs (thousands)	1,485	1,493	1,499	1,505	1,510	1,516	1,529	1,538
Sales per consumer	Average domestic consumption kWh	3,911	3,916	3,845	3,787	3,736	3,735	3,689	3,562
	Average industrial and commercial consumption kWh	83,594	84,541	80,439	81,024	83,502	88,907	80,278	75,828
Sales per household	Average domestic consumption kWh	4,069	4,066	3,946	N/A	3,928	3,930	3,131	3,223

Pembrokeshire electricity consumption statistics		2009	2010	2011	2012	2013	2014	2015	2016
Domestic consumers	Sales – GWh	248	251	244	243	238	240	238	231
	Number of MPANs * (thousands)	58	59	59	59	60	60	60	61
Commercial and Industrial Consumers	Sales – GWh	962	870	900	803	828	797	817	772
	Number of MPANs (thousands)	8	8	8	8	8	8	8	8
All Consumers	Sales – GWh	1,210	1,121	1,144	1,046	1,067	1,037	1,055	1,003
	Number of MPANs (thousands)	66	67	67	67	68	68	69	69
	Average domestic consumption kWh	4,273	4,283	4,145	4,114	4,006	4,019	3,954	3,809

Sales per consumer	Average industrial and commercial consumption kWh	119,721	108,581	111,280	99,420	103,220	94,449	98,664	92,557
Sales per household	Average domestic consumption kWh	4,736	4,769	4,519	N/A	4,428	4,464	4,150	4,226

MPANs – Meter Point Administration Numbers

Sources:

2003/2004: <http://www.berr.gov.uk/files/file45727.xls>

2005/2006: <http://www.berr.gov.uk/files/file45726.xls>

2007/2008:

http://www.decc.gov.uk/media/viewfile.ashx?filepath=statistics/regional/december09/1_20091222104451_e_@@_subnatelectricity0508.xls&filetype=4

<http://www.decc.gov.uk/en/content/cms/statistics/regional/regional.aspx>

2008-2016: <https://www.gov.uk/government/statistical-data-sets/regional-and-local-authority-electricity-consumption-statistics>

Table 80

Gas Sales and numbers of customers by region and area, 2005		2003		2004		2005		2006		2007		2008	
		Pembs	Wales	Pembs	Wales	Pembs	Wales	Pembs	Wales	Pembs	Wales	Pembs	Wales
NUTS4 Area and Government Office Region:													
Domestic Consumers	Sales – GWh	542	20,278	628	20,735	552	19,889	543	19,599	523.2	18,837.5	503.9	18,254.6
	Number of consumers (thousands)	28.38	992.00	32.11	1,001.02	30.85	1,041.74	31.2	1,060	31.8	1,073.4	32.1	1,079.9
Commercial and Industrial consumers	Sales – GWh	237	21,009	319	22,357	137	14,422	128	12,803	123.1	12,100.2	118.9	11,429.5
	Number of consumers (thousands)	0.50	16.00	0.59	16.45	0.51	16.08	0.5	15	0.5	14.2	0.4	13.0
All Consumers	Sales – GWh	779	41,287	946	43,092	688	34,311	671	32,401	646.3	30,937.7	622.8	29,684.2
	Number of consumers (thousands)	28.88	1,008.00	32.71	1,017.47	31.36	1,057.83	31.7	1,075	32.3	1,087.6	32.6	1,092.9
Sales per Consumer	Domestic-kWh	19,115	20,442	19,540	20,714	17,883	19,092	17,401	18,493	16,447	17,550	15,678	16,905
	Commercial and industrial – kWh	470,651	1,313,063	536,077	1,358,914	265,927	896,725	269,936	827,908	270,566	850,389	289,203	879,465

Gas Sales and numbers of customers by region and area, 2016		2009		2010		2011		2012		2013		2014	
		Pembs	Wales										
NUTS4 Area/ LA Code and Government Office Region:													
Domestic Consumers	Sales – GWh	467	16,587	458	16,142	418	14,997	410	14,905	398	14,477	387	13,851
	Number of consumers (thousands)	33	1,092	33	1,100	33	1,104	33	1,105	33	1,111	34	1,108
Commercial and Industrial consumers	Sales – GWh	116	10,403	108	10,327	97	9,691	109	9,371	106	8,976	138	13,851
	Number of consumers (thousands)	0	12	0	11	0	11	0	11	0	11	0	9
All Consumers	Sales – GWh	583	26,989	566	26,469	515	24,688	519	24,276	504	23,453	524	22,132
	Number of consumers (thousands)	33	1,104	34	1,111	33	1,114	34	1,116	34	1,122	34	1,118
Sales per Consumer	Domestic-kWh	14,279	15,187	13,764	14,674	12,646	13,590	12,359	13,484	11,918	13,029	11,508	12,497
	Commercial and industrial – kWh	313,959	903,327	288,506	918,636	274,750	893,336	314,337	870,658	311,396	833,518	410,150	879,840

Gas Sales and numbers of customers by region and area, 2016		2015		2016	
NUTS4 Area/ LA Code and Government Office Region:		Pembs	Wales	Pembs	Wales
Domestic Consumers	Sales – GWh	384	13,814	386	13,831
	Number of consumers (thousands)	34	1,124	35	1,139
Commercial and Industrial consumers	Sales – GWh	136	9,012	140	10,213
	Number of consumers (thousands)	0	10	0	11
All Consumers	Sales – GWh	520	22,826	526	24,044
	Number of consumers (thousands)	34	1,134	35	1,150
Sales per Consumer	Domestic-kWh	11,297	12,291	11,119	12,142
	Commercial and industrial – kWh	398,320	863,709	400,803	972,616

Sources:

2003 <http://www.berr.gov.uk/files/file11886.xls>

2004 <http://www.berr.gov.uk/files/file18546.xls>

2005/2006/2007/2008

http://www.decc.gov.uk/media/viewfile.ashx?filepath=statistics/regional/december09/1_20091222104505_e_@@_subnatgas0508.xls&filetype=4

<http://www.decc.gov.uk/en/content/cms/statistics/regional/regional.aspx>

2009-2016 <https://www.gov.uk/government/statistical-data-sets/gas-sales-and-numbers-of-customers-by-region-and-local-authority>

Renewable Energy

The Non-Fossil Purchasing Agency Ltd had contracts with six renewable energy providers in Pembrokeshire (excluding Park areas) in 2008.

Table 81 – Renewable Energy Contracts in 2008

Name of site	Type of energy produced	Contracted capacity (MW)
Llys y fran	Hydro	0.25
Withyhedge	Municipal & Industrial Waste; Landfill Gas	8.073; 2.422
Rhoscrowther, Angle	Wind	0.947
Mynydd Cilciffeth, Puncteston (A & B)	Wind	3.371 x 2
Jordanston	Wind	4.214
Trenewydd, Puncteston	Wind	2.739
		TOTAL = 25.387

Table 82: Renewable Energy in Pembrokeshire

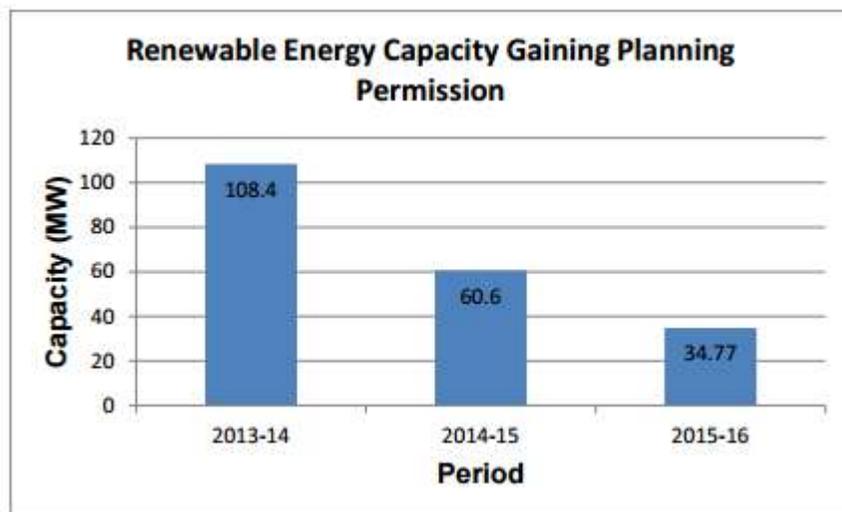
Technology	Capacity [MWe]
Landfill gas	1.4
Sewage gas	1.2
Anaerobic Digestion	2.2
Biomass	25
Hydro	1.08
PV > 1MW	203.79
PV < 1MW	1.181

Wind > 0.1MW	31.72
Wind <0.1MW	1.5018
Total	268.9728

Source: LDP Renewable Energy Assessment 2017

<https://www.pembrokeshire.gov.uk/local-development-plan-review/ldp2-evidence-base>

Table 83 – Renewable energy capacity gaining planning permission from 2013 to 2016



The amount of energy produced from renewable sources in 2008 was negligible at just 25MW, but has since increased by 1000% to 269MW.

Future trend

Between 2008 and 2017 the renewable energy capacity substantially increased, but this is likely to increase at a much reduced rate or stagnant due to a decline in renewable energy projects and gaining planning permission.

Comparators

Table 84 – Energy Statistics for each Local Authority in Wales 2016

Local authority electricity and renewable heat generation totals	Renewable heat and electricity				Fossil fuel electricity		
	Number of projects	Total capacity (MW)	Estimated generation (GWh)	CO ₂ savings (tonnes CO ₂)	Number of projects	Electrical capacity (MWe)	Estimated generation (GWh)*
Blaenau Gwent	1,021	16.0	27	10	2	32.0	-
Bridgend	2,539	104.5	219	89	4	25.2	-
Caerphilly	2,965	59.5	78	30	1	0.1	-
Cardiff	3,494	66.8	253	95	2	10.0	-
Carmarthenshire	5,266	218.0	384	145	1	10.0	-
Ceredigion	3,208	243.2	545	195	2	10.3	-
Conwy	1,799	71.8	154	59	3	2.0	-
Denbighshire	2,229	62.4	157	53	2	1.2	-
Flintshire	3,386	214.6	740	204	3	1,900.5	-
Gwynedd	3,009	111.3	203	75	1	0.1	-
Isle of Anglesey	2,173	78.5	144	57	1	0.1	-
Merthyr Tydfil	734	11.4	41	16	2	41.8	-
Monmouthshire	4,077	64.6	136	47	1	0.0	-
Neath Port Talbot	1,864	264.5	751	300	6	598.5	-
Newport	2,201	37.9	74	27	5	904.7	-
Pembrokeshire	4,703	225.4	275	104	5	2,330.5	-

Powys	6,222	298.9	769	257	4	0.7	-
Rhondda Cynon Taf	3,944	219.7	552	220	8	71.9	-
Swansea	3,097	51.4	68	25	2	44.4	-
Torfaen	2,054	16.8	29	9	2	0.4	-
Vale of Glamorgan	2,172	118.7	478	195	5	1,892.0	-
Wrexham	4,815	73.8	166	50	5	24.5	-
Offshore	3	726.0	2,419	997	-	-	-
Unknown	46	1.8	4	1	5	30	-
Total	67,021	3,357	8,667	3,260	72	7,931	31,892

Sources:

Welsh Government - Energy Generation in Wales 2016

<https://gov.wales/topics/environmentcountryside/energy/renewable/energy-generation-in-wales/?lang=en>

Future trend

The Welsh Government has set a target for 70% of electricity demand to be met by 2030. As of 2016, the figure stood at 43% of demand being met by renewables.

Comparators

In 2016 Pembrokeshire consumed 10,003 GWh of electricity whilst producing 275GWh from renewable sources, equivalent to 2.75% of the total consumed. Based on these figures, Pembrokeshire as a County (including Pembrokeshire Coast National Park) will need to consent more renewable energy to meet the all Wales target of 70%.

As stated above, the target is for Wales as a whole and would not necessarily need to be met by Pembrokeshire due to variations across Wales that would meet the target.

Sources:

Source: LDP Renewable Energy Assessment 2017

<https://www.pembrokeshire.gov.uk/local-development-plan-review/ldp2-evidence-base>

Welsh Government - Energy Generation in Wales 2016

<https://gov.wales/topics/environmentcountryside/energy/renewable/energy-generation-in-wales/?lang=en>

Welsh Assembly Government Technical Advice Note 8. July 2005

Energy from Fossil Fuels

A new gas fired power station was completed in 2012 by RWE n-power at the former oil fired power station in Pembroke. It has a 2200MW capacity

Future trend

The National Grid has capacity for 2,000MW of energy to be generated in Pembrokeshire. This capacity is likely to be taken by renewable sources.

Refineries

In 2015 Milford Haven refinery ceased production due to the operational costs at the site. Murco sold the site to Puma Energy who now use the site as a storage facility rather than a refinery

In Pembroke, the ownership of the refinery has moved from Texaco to Chevron and is currently in the hands of Valero. The site has a capacity of 10.5 million tonnes per year, of which 90% of products produced are distributed by sea.

Sources:

Valero Energy Ltd – Pembroke Refinery

http://www.ukpia.com/industry_information/refining-and-uk-refineries/Valero-pembroke-refinery.aspx

LNG

Two large-scale facilities have been built on the northern shore of the Milford Haven waterway with a pipeline now linking the Haven to destinations in Swansea and Gloucestershire. The Liquefied Natural Gas importation and regassification plant at South

Hook is capable of supplying 20% of the UK's natural gas requirement. The smaller Dragon LNG plant at Waterston is able to meet 10% of demand which it imports from 19 different countries.

Sources:

South Hook LNG - <http://www.southhooklng.co.uk/>

Dragon LNG - <http://www.dragonlng.co.uk/>

Milford Haven port authority - <http://www.mhpa.co.uk/lng.php>

Implications

The LDP policies should be consistent with waste legislation, and ensure sustainable waste and mineral resource management. Planning can also manage the potential adverse effects associated with waste and minerals such as road traffic, odours, noise and health risks. The Plan should also contribute to the wider aims of promoting renewable energy. Planning can also promote energy efficiency in commercial building, homes and transport.

The SA objectives relate to the pollution of air, water, soil, noise, vibration, light. Also to resource efficiency which includes the efficient use of water and incorporating water conservation measures in new developments. Resources also include energy, minerals and aggregate, soils and all other resources. The use of secondary and recycled materials is encouraged. With regards to waste, this objective incorporates waste reduction, re-use, recycling and recovery. Alternatives to landfill such as composting facilities, and energy from waste should also be considered. The restoration and after-care of minerals and aggregate sites is also important. Sites can be an important resource for biodiversity and geology.