

Climate Change

Measures need to be taken at international, national and local levels to address the issue of global climate change. Cornwall Council has declared a climate emergency and introduced many initiatives, measures and policies in response to deal with the perceived risks in Cornwall

The measures are far reaching and aimed at dealing with the perceived risk throughout Cornwall. Whilst these measures are comprehensive the NDP provides the opportunity to address any localised issues.

Following the flooding incidence in 2019 and 2020 the Chairman of the Environment Agency Sir James Bevan has stated on 25/02/2020 that building new homes on flood plains should be resisted if at all possible and should only be built there if there is no real alternative and if they are designed to be more resilient to flooding.

There are two areas of low-lying Land in the parish and both of these have their boundary with open valley landscape. This undulating rural landscape is drained by two main watercourses, the River Hayle which drains from south to north into the Hayle Estuary and the Tregilliowe/Trevarthian stream which drains southward into the marshes at Marazion. (see LLCA) <https://www.sthilarypc.org.uk/wp-content/uploads/2018/05/CRCC-St-Hilary-Parish-Questionnaire-feedback.pdf>

Both areas of low lying land contain areas of flood zone 2a, 3 and 3a as assessed by the Environment Agency. (see Flood Zone map overleaf)

Incidents of flooding have occurred over the years in both areas of low-lying land (see Cornwall Council Chronology of severe floods covering period 1880-2010). <https://www.cornwall.gov.uk/media/1fylvuf0/cornwall-pfra-annex5-june-2011.pdf>

The annual reports for the Section 19 (major flood events to more than 5 properties, roads involving closure and risk to life) for 2011 onwards can be found at: <https://www.cornwall.gov.uk/environment/countryside/flood-risk/flood-investigation-reports/>



The parish has two areas of low lying land with watercourses . The land along the River Hayle that flows northward and into St Ives Bay at Hayle and streams that are tributaries to the Red River from Tregilliowe and Trevarthian/Tregurtha Downs.

The low-lying valley areas are at risk of fluvial flooding and noted as such on the Environment Agency flood mapping. The River Hayle at Relubbus has overflowed its banks and flooded areas of Relubbus on a number of occasions. Some of these have been classified as major flooding events by the local authorities in January 2003, August 2004 and March 2013.

The Tregilliowe/Trevarthian stream continues to overflow and flood fields along its banks in the Trenewjack area after prolonged periods of heavy rain and caused a major flooding event there in November 2002. <https://www.cornwall.gov.uk/media/1fyltuf0/cornwall-pfra-annex5-june-2011.pdf>

On 13 November 2002 heavy rainfall resulted in fluvial flooding in West Cornwall at Gwithian, St Erth, Lelant, Carbis Bay and St Ives, Nancledra, Newlyn, Penzance and Heamoor and at Marazion, Ludgvan and Crowlas. At Crowlas 20 properties flooded and 6 at Chyandour. 39 properties flooded at St Ives and 9 at St Erth.

Heavy rainfall on New Year's Eve/Day 2002-2003 resulted in fluvial and surface water flooding, mainly centred on West Cornwall. Affected locations include Fexbury/Bude, Redruth, Lanner and the Portreath Valley, Carnkie, Cam Brea, Illogan and Camborne, Angarrack and Hayle, Relubbus and St Erth, Sennen Cove, Lamorna and Mousehole, Marazion, Praa Sands, Breage and Porthleven, Helston, Gweek, Constantine, Porkellis, Burras and Wendron on the Cober, Budock Water and Falmouth, Tresillian, Goran Haven, St Austell, Par and Luxulyan, Herodsfoot, Pilaton and Lowley Bridge near Launceston. In Helston 20 properties flooded and 8 flooded at Gweek. 7 flooded in Redruth and 10 in Lanner.

A few days later, on 16 August 2004 the well known Boscastle event occurred. Though less well documented than for Boscastle, flash floods also hit Crackington Haven at the same time. From 16 to 18 August, flooding impacted on Bude, Canworthy Water and Ottersham, Slaughterbridge, Camelford and Tintagel, in North East Cornwall, and also Perranporth, Redruth and Portreath, Camborne and Praze-an-Beeble, Hayle, St Erth, Carbis Bay and St Ives, Crowlas, Marazion, Relubbus and Goldsithney, Helston, Mullion, and Penryn in the west of Cornwall. In Boscastle 60 properties flooded, 5 in Helebridge and many also flooded in

Cornwall Council Flood Investigation Report

Date:	21 March 2013
Location:	Relubbus

Details of the flood event

Did five or more properties flood internally?	Yes
Did at least one property flood internally that has also flooded internally within the last five years?	No

If the answer to either question above is Yes then this Report will form part of a Section 19 Flood Investigation Report and will need to be published.

Description of weather conditions:

The event was preceded with some heavy but intermittent rainfall on Wednesday 20 March. The main rainfall started late at night on Wednesday and increased throughout the morning of 21 March. The rain eased slightly through the evening of 21 March in most parts of Cornwall but then continued and was sustained through Friday 22 March, clearing in West Cornwall in the morning and East Cornwall in the evening.

Description of flood event:

The River Hayle broke out of bank by the road bridge flooding 6 properties.

No of properties flooded:	6
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<https://www.cornwall.gov.uk/environment/countryside/flood-risk/flood-investigation-reports/>

In the Objectives Survey undertaken in 2021 residents were asked to identify any incidents of flooding in their areas. Besides the major events mentioned above the other identified flood incidences are mostly on roads and lanes after heavy rain and appear to be due to inadequate drainage or drain maintenance. Increases in incidents of such flooding are attributed by a number of respondents to changes in farming practices with the increase in acreage used for arable crops and flower production where hedges have been removed from between fields to enlarge them, heavily ploughed and left as bare earth for long periods.


Consequently, during heavy rainfall, top soil is washed off the fields and onto the roads in torrents of brown, muddy water. Respondents mention such pluvial flooding on Relubbus Lane and the junction with New Road and Lukes Lane with individual mentions of flooding at Carbows, Plain-an-Gwarry, Trehwella Lane, Chynoweth Lane, Halamanning, Churchtown, Highernoe, Colenso, Woodstock, Greenberry, Tye Lane and Prussia Cove Road.



There is some evidence of the incidence and intensity of precipitation (rainfall) increasing in the UK due to climate change and it is predicted by some climate researchers that the incidence of high intensity precipitation will be increased further in the future due to changes in the climate.

To avoid any further increase in the flood risk in the low-lying land in view of forecasts of increased incidence and intensity of rainfall due to climate change it is proposed that there should be no new development permitted that increases hard impermeable surfaces in the low-lying land and the adjacent areas of open valley land that are the natural catchment areas for drainage of surface water for the watercourses in the low lying land unless there is evidence presented that there is no alternative site for such development available.

In the low-lying land and catchment area in the open valley sides support would be given for Natural Flood Management (NFM) schemes through Working with Natural Processes (WWNP) to reduce flood risk involving implementing measures that help to protect, restore and emulate the natural functions of catchments, floodplains, rivers and the coast.



Working with Natural Processes to reduce flood risk

The evidence behind Natural Flood Management


Introduction

What is it?
Working with Natural Processes (WWNP) to reduce flood and coastal erosion risk (FCRM) involves implementing measures that help to protect, restore and emulate the natural functions of catchments, floodplains, rivers and the coast. WWNP takes many different forms and can be applied in urban and rural areas, and on rivers, estuaries and coasts. It is also referred to as Natural Flood Management (NFM).

What did we do?
There has been much research on WWNP, but it has never been synthesised into one location. This has meant that it has been hard for flood risk managers to access up-to-date information on WWNP measures and to understand their potential benefits.

We have developed a WWNP [Evidence Directory](#), which looks in detail at the effectiveness of different measures at reducing flood risk. This is supported by maps which help practitioners think about the types of measure that may work in a catchment.

These 1 page summaries provide a high level summary of key findings from the Evidence Directory and point you to where you can find more information.



What did we find?

We found that WWNP...

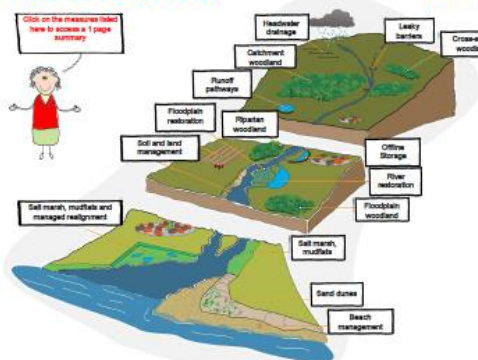
- ✓ Is not new, there are many examples of its application across the UK.
- ✓ It works. It can reduce flood risk, by slowing, storing and filtering water.
- ✓ It complements rather than replaces traditional engineering.
- ✓ Typically reduces flood risk for smaller magnitude floods, across small to medium catchment scales.
- ✓ Almost always achieves multiple environmental benefits.
- ✓ Is currently reliant on modelled data, more observed data is needed to help validate model findings.

But we still need to understand ...

- ✗ The effectiveness of WWNP measures across different catchment scales for a range of return period events (observed and modelled data).
- ✗ How to design and construct different measures so they perform as designed (this includes engineering design standard).
- ✗ How different measures function in different catchment types and different geologies.
- ✗ The role WWNP could play in making catchments more adaptable/resilient to climate change.
- ✗ More fully the ecosystem service benefits of different measures.

How do I access it?

Click on the measure label
New to access a 1 page summary



Are there any top tips?

Top tips

- ✓ Take a catchment-based approach
- ✓ Choose the right tool(s) for the job
- ✓ Think about timescales - it's a marathon rather than a sprint
- ✓ Achieve multiple environmental benefits
- ✓ Work with others
- ✓ Learn through doing

IMPORTANT! - The science of NFM is still evolving and developing. Many of the measures covered in these 1 page summaries have yet to be fully tested during extreme flood events. This means that we are still learning how to design and construct them.

When selecting the types of measures to use and the locations in which to place them care is needed to ensure they do not synchronise flood peaks and inadvertently increase flood risk downstream, or inadvertently create a backwater effect and increase flood risk upstream. As with all FCRM schemes it is incumbent on those who design and construct them to ensure that they are robust and do not pose a public safety risk to downstream communities.

Catchment Based Approach website

<https://catchmentbasedapproach.org/>

Natural Flood Management (NFM) toolbox guide to NFM schemes

<https://catchmentbasedapproach.org/learn/natural-flood-management-toolbox-a-7-step-guide-to-developing-a-nfm-scheme/ea-nfm-toolbox-final-draft-compressed/>

Working With Natural Processes

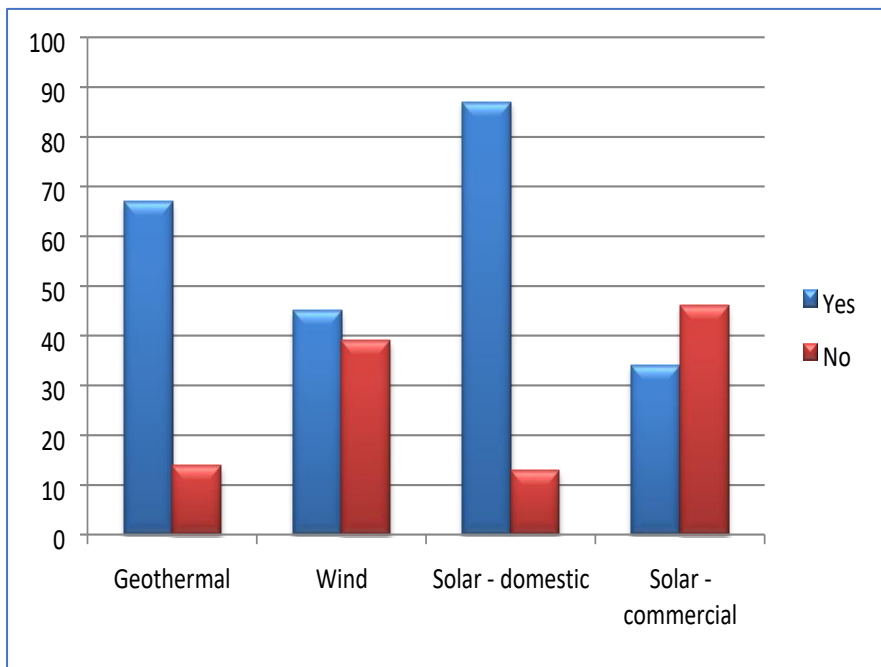
<https://www.gov.uk/flood-and-coastal-erosion-risk-management-research-reports/working-with-natural-processes-to-reduce-flood-risk>

Renewable Energy

The results of the household survey (see CCRC Report) indicated strong support amongst residents for some forms of renewable energy in the parish.

There is a clear preference for the concept of geothermal and domestic solar technologies within the Parish with 67% support for geothermal and 87% support for domestic solar. Wind energy has a very slight level of positive support with 45% in support and 39% not in support. Commercial solar developments demonstrated a higher level of negativity with 46% not in support and 33% in support.

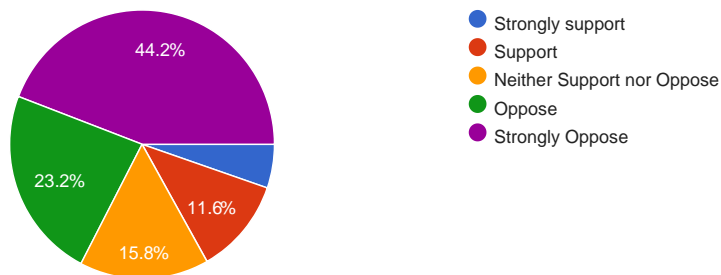
9. a) Do you support the development of Renewable Energy in the Parish?



The views of residents on the question of large scale (non-domestic) solar PV farm developments on greenfield sites in the parish was sought in a question with the Objective Survey of June 2020. <https://www.sthilarypc.org.uk/ndp-consultations/5-objectives-survey-20210806-results/> 67% of respondents (91 responded to the question) were opposed and 16% were in support.

Q12) Regarding large scale (non-domestic) solar PV farms on green field sites in St Hilary Parish, would you:

95 responses



Heating of homes

In St Hilary 95% of homes have some form of central heating. This is lower than the average for Cornwall of 96% and the 98% average for England.

The predominant form of home heating in St Hilary parish is oil-fired central heating with 36% of homes having this form of heating. This is higher than Cornwall as a whole where the average is 14% and in England as a whole where oil is used in only 3% of homes.

In England gas is the predominant form of heating with 75% of homes having this form of heating and in Cornwall 51% of homes have gas central heating. According to the 2021 Census data 17% of the homes in the parish have gas central heating of which only 5% are on mains gas and the other 12% use bottle or tank liquid gas. The Centre for Sustainable Energy has listed the postcodes that are not on the gas grid and according to this list all but one of the postcodes in the parish are on this list. The post code not on the list represents only 3% of the homes in the parish which would indicate that other homes are using liquid gas (LPG).

<https://www.cse.org.uk/projects/view/1259>

In St Hilary Parish mains electricity (10%) is more common than main gas (5%) as the energy for central heating. Having more than one form of central heating in the home is also more common in St Hilary Parish (1 in 5 homes) than in Cornwall and England.

Renewable forms of energy either only (3%) or combined with some other types of central heating (3%) are now used in 6% of the homes in St Hilary Parish. According to the 2021 Census the use of renewable energy for central heating in homes in the parish is well ahead of Cornwall as a whole and in England.

Central Heating in Homes	St Hilary	Cornwall	England
No central heating	5%	4%	2%
Gas central heating	17%	51%	75%
Electric central heating	10%	15%	9%
Oil central heating	36%	14%	3%
Solid fuel (for example wood, coal) central heating	5%	1%	0%
Renewables only and with other types	6%	3%	1%
District, communal and other types of central heating	0%	1%	2%
Two or more types of central heating excl.renewables	21%	11%	8%

Source: 2021 Census

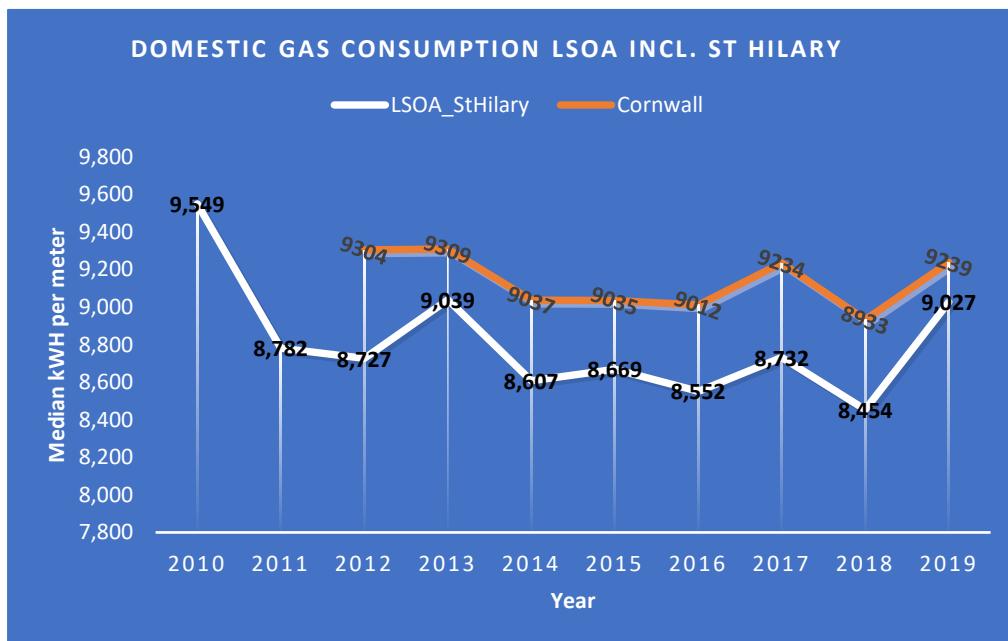
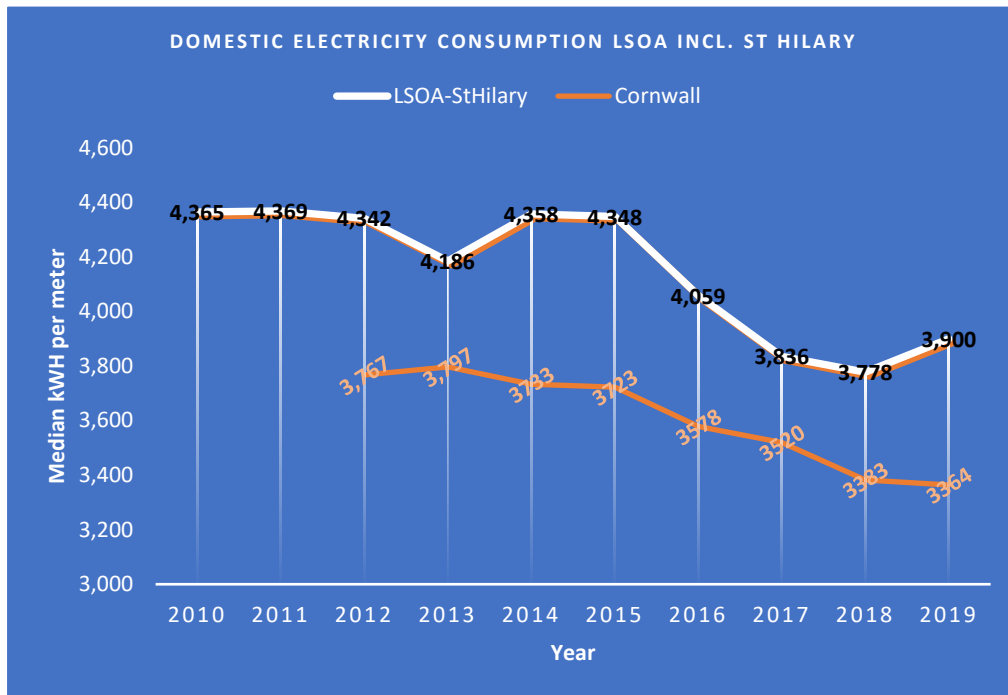
Distance from gas grid	StHilary/StErth LSOA	Cornwall
Within 50m	23%	31%
Within 0.5km	41%	42%
Within 2 km	57%	59%
More than 2 km	43%	41%

Source: www.nongasmap.org.uk

Solid fuel for central heating is used in 5% of homes in St Hilary Parish but has fallen to only 1% of homes in Cornwall and is now in use in less than 1% of all the homes in England.

Access to the gas network is a key determinant of whether gas is used as a form of heating. In the Lower Super Output Area (LSOA) which includes the parishes of St Hilary and St Erth 23% of properties are within 50 metres of the gas network and 57% are within 2km with 43% of properties being over 2km from the gas grid.

Household Energy Consumption



Source: Department for Business, Energy and Industrial Strategy
<https://www.gov.uk/government/organisations/department-for-business-energy-and-industrial-strategy>

The charts above are the median that is the “middle” value of the data set. For the LSOA which includes St Hilary domestic electricity consumption is higher than the median for Cornwall. For gas the LSOA which includes St Hilary the median domestic consumption is lower than for Cornwall.

We do not have data on other forms of energy used for domestic heating such as oil and solid fuel. Consumption of oil for domestic heating would be of particular interest for St Hilary given the predominance of oil-fired central heating for homes in the parish.