

Geopark Management Plan 2023 - 2033

Part I



English Riviera



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Global Geopark

www.englishrivierageopark.org.uk

Geopark Management Plan 2023 - 2033

Part I



Stand up Paddle Boarding with Geopark Partner © Reach Outdoors

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Mission Statement



**English Riviera
UNESCO Global Geopark
Mission Statement**

The English Riviera UNESCO Global Geopark is one of Earth's extraordinary places covering the whole of the unitary authority of Torbay. The Geopark, incorporating the three towns of Torquay, Paignton and Brixham, celebrates, conserves, enhances, and protects the unique and diverse natural and cultural heritage of this naturally inspiring area of South Devon. Working with multiple partners it is a driver for education, expansion of the tourism offer, and sympathetic regeneration through sustainable social and economic development. The Geopark aims to reconnect human society at all levels to the local area, to the wider environment and to celebrate how Torbay's 400-million-year long history has shaped every aspect of our lives and our societies and informs the future. Mindful of the climate and ecological emergencies it raises awareness, enriches the lives and supports the development and well-being of the local community whilst leading by example and encouraging all to protect the environment.

Executive Summary

In September 2007, the English Riviera received international recognition for its rich geological and interrelated environmental, historical and cultural heritage when it became one of just 57 areas around the world to be endorsed and welcomed into both the European and Global Geopark Networks (GGN). Since then, the Global Geopark Network has grown and in November 2015, UNESCO fully recognised the ground-breaking achievements and success of all of the Geoparks around the world through the introduction of the first new UNESCO Programme in 40 years .i.e., the International Geoscience and Geoparks Programme (IGGP). At its initiation, all existing members of the GGN became UNESCO Global Geoparks (UGGp's) bringing them on a par with all other programmes of UNESCO such as World Heritage Sites and Biosphere Reserves.

The purpose of a Geopark is to explore, develop and celebrate the links between their geological heritage

and all other aspects of the area's natural, cultural and intangible heritage. It is about enhancing and enriching lives and reconnecting human society at all levels to the local area, to the wider environment and to celebrate how our planet and its 4,600 million year long history has shaped every aspect of the world around us and our societies. Following the Covid pandemic, and with the climate and ecological emergency all too apparent in our daily lives, that awareness and understanding becomes even more valuable and required to influence and engender the desperately needed collective change for the future sustainability of humans and planet.

As of April 2022, there are 177 UNESCO Global Geoparks, recognised across 46 countries, with 8 of those being in the UK and all must follow the UGGp Statutes and Guidelines to retain the status. UGGp's also align their work with the principles of the United Nations Sustainable Development Goals (SDGs). The SDGs are at the heart of the 2030 Agenda for Sustainable Development adopted by United Nations in 2015. As an urgent call for action, the SDGs recognise that ending poverty and other

deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth - all while tackling climate change and working to preserve our oceans and forests.

Overall, the UNESCO Global Geopark model is a driver for education, community benefits, expansion of the tourism offer and sympathetic regeneration.

All UGGp's are required to undergo a detailed UNESCO revalidation inspection every four years at which point the status will be renewed for the next four years. It will only be renewed for two years if there are matters of concern to be addressed and then re-inspected, or the status will be removed. The English Riviera UNESCO Global Geopark (ERUGGp) has undergone this process in 2011, 2015 and 2019 and successfully retained the status.

The ERUGGp incorporates the whole of Torbay including the three towns of Torquay, Paignton and Brixham, and as such follows the Torbay Council Unitary Authority boundary (64.2km² of land and 42.5km² of marine environment). The ERUGGp is not a standalone organisation but since 2007, following a grassroots/ bottom-up approach, the operations, and activities of the ERUGGp are delivered collaboratively and proactively by its Core Partners (see ERUGGp Management Plan, Part 2, Fig.2) and supported by Associate Partners (see ERUGGp Management Plan, Part 2, Fig.3) which are a mix of public, private and voluntary organisations. To meet UNESCO requirements, the ERUGGp has a registered legal entity which is the English Riviera Geopark Organisation Ltd (ERGO). ERGO is the over-arching legal and financial entity responsible for the management of the Geopark. However, in addition to their operational and delivery remit, the Core Partners all have a seat on the Geopark Management Group (GMG) (see ERUGGp Management Plan, Part 2, Fig.6 for the Geopark Operational Organogram) which is the decision-making body for the Geopark.

This management plan is divided into two parts. The first shares the ERUGGp vision, objectives of the plan and evidences the justification for our UNESCO Global Geopark recognition. The second part covers the ERUGGp organisation, governance and management, strategic approach and an action plan to take the ERUGGp to a sustainable and resilient position for the long-term future.

Management Plan Objectives

The key objectives of this management plan are to:

1. Ensure compliance with UGGp Statutes and Guidelines for the retention of the UNESCO recognition for Torbay
2. Review and act to focus the effectiveness of operations, partnerships, and programs to meet the vision
3. Broaden the reach of the ERUGGp in order to maximise the benefit of the designation to the local area socially, economically and environmentally
4. Increase opportunities for public awareness and involvement
5. Embed the principals of the Sustainable Development Goals and support Torbay's ambition to be Carbon Neutral by 2030

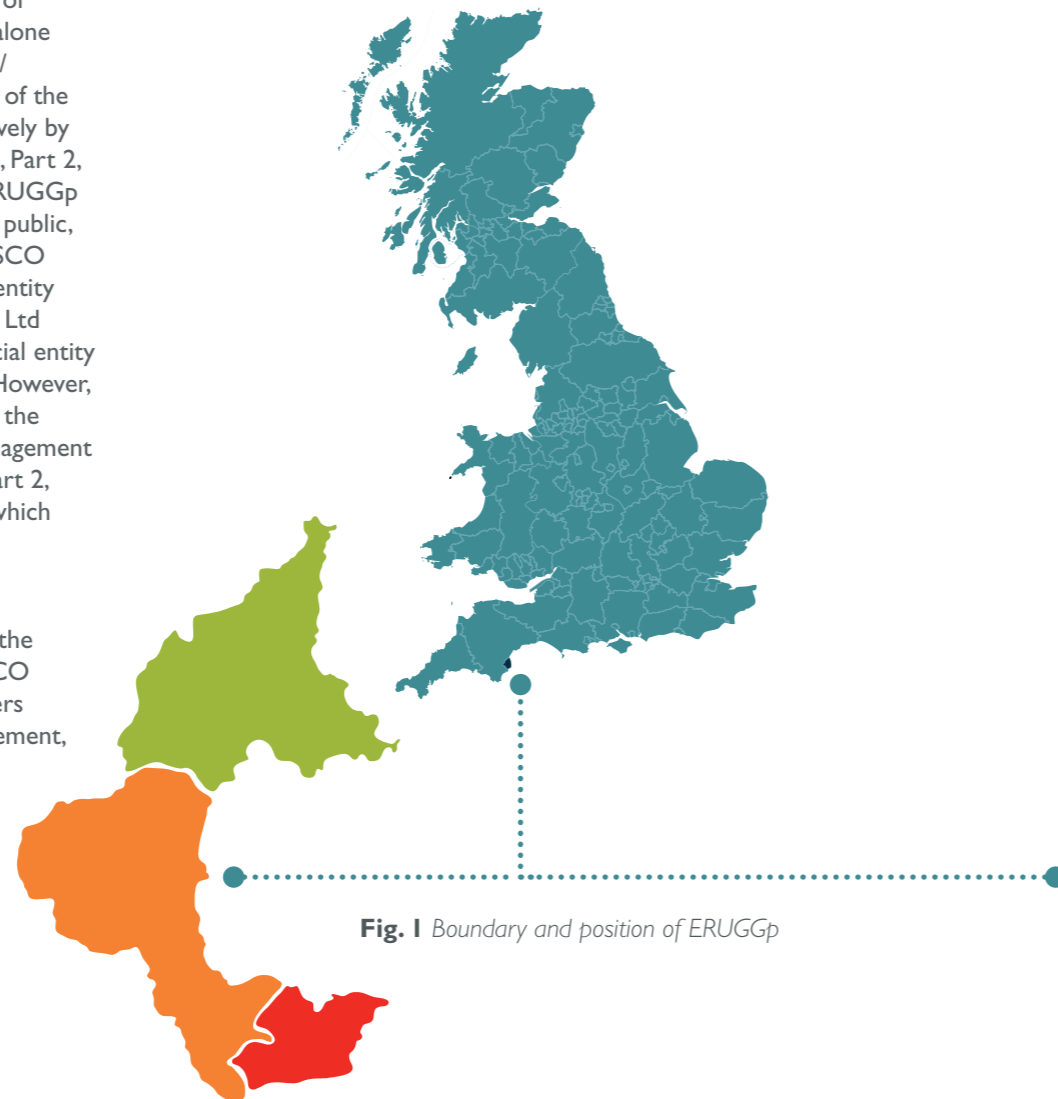


Fig. 1 Boundary and position of ERUGGp



ERUGGp Vision

By the end of this management plan term the Geopark will have significantly contributed to the environmental, social and economic well-being of Torbay through the following:

Constitution

- 1 Will have evidence for the value of UNESCO to Torbay
- 2 Will have strengthened and improved the effectiveness of the Geopark Management Group
- 3 Will have strengthened and improved the overseeing board structure (selection and election of trustees/directors, succession planning)
- 4 Will continue to have Torbay Council as a lead and core operational partner
- 5 Will continue to support the Global Geopark Network, the European Geopark Network and the UK Committee of UGGp
- 6 Will have a seat/presence on the board of other core strategic groups across the region and at national level (eg Torbay Leadership Board, LEP, DMOs)
- 7 Will play a key role in lobbying for UGGp policy at national level.

Public engagement

- 1 Will have a public facing Geopark hub/visitor centre
- 2 Will have an effective and self-managing Geopark Ambassador Programme
- 3 Will have developed Geopark Experience products with trade partners, focused on:
 - a. **Emotional Impact** - awe, inspire, amaze, astonish
 - b. **Different Experiences** - spiritually enriching, intellectually nourishing
 - c. **Immersion** - not just a spectator, genuine, authentic
- 4 Will have a series of annual events (eg Geopark festival)
- 5 Will have in place an innovative sustainable-tourism scheme

Sustainable operating model

- 1 Will have in place an effective and sustainable income generation model
- 2 Will have a 10-year vision, management plan, marketing strategy and sustainable budget
- 3 Will have assigned officers with responsibility for the following:
 - a. Overall Geopark Coordination
 - b. Fund raising
 - c. Education and awareness programmes
 - d. Science, research, and conservation activities
 - e. Creative engagement
 - f. Marketing
 - g. Tourism and sustainable development
- 4 Will have aligned its ways of working to the SDGs
- 5 Will have aligned its operations and those of its partners to Torbay's 2030 Carbon Neutral ambitions
- 6 Will have ensured that all international, national and local geological sites are managed, conserved and enhanced as appropriate

Visibility

- 1 Will properly reflect, promote, and value the UNESCO status
- 2 Will have strengthened the ERUGGp brand to encourage partners to use the name to promote events
- 3 Will have a strengthened and enhanced marketing strategy
- 4 Will have a new engaging website

Background

UNESCO - An Introduction

UNESCO was established in 1945 in the wake of the Second World War with a clear and inspirational mission – *that since wars begin in the minds of men and women, it is in the minds of men and women that the defences of peace must be constructed.*

UNESCO's founders recognised that a peace based exclusively on the political and economic arrangements of governments would not secure the lasting support of the peoples of the world, but that a lasting peace would need to be built on mutual respect and understanding – what UNESCO's constitution calls “the intellectual and moral solidarity of mankind.”

The founders recognised the need to increase communication between their peoples and tasked UNESCO with fostering intercultural dialogue and international cooperation in the fields of education, science and culture.

UNESCO's global networks – World Heritage Sites, Biosphere Reserves, Creative Cities, Global Geoparks, university chairs – create powerful mechanisms for collaborating with colleagues across borders and helping friends around the world – especially in the developing world – to tackle the challenges they face. They are a vital link in developing the dialogue and cooperation which underpin UNESCO's mission of building genuine and lasting peace.

UNESCO Global Geoparks - An Introduction

UNESCO Global Geoparks are single, unified geographical areas where sites and landscapes of international geological significance are managed with a holistic concept of protection, education, and sustainable development. A UNESCO Global Geopark uses its geological heritage, in connection with all other aspects of the area's natural and cultural heritage, to enhance awareness and understanding of key issues facing society, such as using our Earth's resources sustainably, mitigating the effects of climate change and reducing the impact of natural disasters. By raising awareness of the importance of the area's geological heritage in history and society today, UNESCO Global Geoparks give local people a sense of pride in their region and strengthen their identification with the area. The creation of innovative local enterprises, new jobs

and high-quality training courses are stimulated as new sources of revenue are generated through geotourism, while the geological resources of the area are protected.

UNESCO Global Geoparks (UGGp's) are landscapes of scientific, geological, social and cultural importance. As of April 2022 there are 177 UNESCO Global Geoparks across 46 countries including eight in the UK.

The English Riviera became a Global Geopark in 2007. In November 2015, UNESCO formally recognised the work of all of the existing Global Geoparks, when they initiated the International Geoscience and Geoparks Programme and all Global Geoparks became UNESCO Global Geoparks.

Evaluation

To become a UNESCO Global Geopark all areas have to submit an application and undergo a rigorous desktop and on-site field inspection mission. All applications and the field evaluation reports are then considered by the UNESCO Global Geopark Council and the UGGp Council decisions are then ratified by the UNESCO Executive Board.

Revalidation

UGGp status is not awarded for an indefinite period. To maintain quality standards, and the reputation of the network, all UGGp's must undergo revalidation every four years. At revalidation each Geopark must submit a progress report and self-assessment documents in advance of undergoing an on-site inspection called a field mission. During the mission all aspects of the UGGp and progress are reviewed against the UGGp criteria including management structure and financial status, educational activities, marketing and promotional activities, infrastructure, conservation, sustainable economic development etc. The field mission is undertaken by two experienced evaluators who represent UNESCO to assess the quality of the UNESCO Global Geopark. The three potential outcomes at revalidation are:

- The area continues to fulfil the criteria and will continue as a UNESCO Global Geopark for a further four-year period - so-called “green card”
- The area no longer fulfils the criteria, the management body will be informed to take appropriate steps within a two-year period - so-called “yellow card”
- No longer fulfils the criteria and has failed to address the issues raised within two years after receiving a “yellow card”, the area will lose its status as a UNESCO Global Geopark - so-called “red card”



Map of the UNESCO Global Geoparks To explore the expandable, online version of this up to date map showing all UNESCO Global Geoparks on the UNESCO website [click here](#).



1.



2.



3.

Photos: 1. UNESCO Headquarters Paris / **2.** Working Group meeting UNESCO Paris to discuss the formation of the new UGGp Programme 2014 / **3.** Meeting of the European Geopark Network

United Nations 2030 Agenda for Sustainable Development and the Sustainable Development Goals

The 2030 Agenda for Sustainable Development was adopted by all United Nations Member States in 2015, the same year that the UGGp Programme was agreed by acclimation. It shared a blueprint for peace and prosperity for people and the planet, now and into the future and at its heart are found the 17 Sustainable Development Goals (SDGs) for 2030 that aim to end hunger and poverty, offer comprehensive protection for the planet and facilitate environmentally friendly progress. The SDGs are an urgent call for action by all countries – developed and developing – in global partnership to promote prosperity while protecting the planet. Fundamentally, UNESCO recognise that ending poverty must go hand-in-hand with strategies that build economic growth and address a range of social needs including education, health, social protection and job opportunities, while tackling climate change and environmental protection. More important than ever,

the goals provide a critical framework for COVID-19 recovery.

All 193 member states of the United Nations are committed to implementing these SDGs by 2030 from the level of national government, right down to the smallest communities.

For more than a decade now and all over the world, UNESCO Global Geoparks have campaigned for a holistic understanding of our planet and its evolution. Their environmental education and awareness programmes place a special emphasis on conveying these natural interrelationships and the impact humans have on these. UGGp's create their initiatives and projects together with the people of the region and their international activities are an opportunity for exchanging ideas with partners around the world. In this context, UGGp's transform the SDGs, which focus on a better coexistence of all people and our planet in a social, economic and environmental context, into hands-on activities and projects. In this way, Geoparks contribute to raising awareness about these goals in a clear and understandable manner to the people who live in them. Thus the UNESCO Global Geoparks provide an ideal platform for implementing and supporting the philosophy and aims of the SDGs.



Fig. 2 UNESCO Sustainable Development Goals

Territory Overview

The English Riviera encompasses the entire area of Torbay. Situated on the south coast of Devon UK, this area combines the three towns of Torquay, Paignton and Brixham. It is a east facing bay sheltered from the prevailing south westerly winds. Torbay became a Victorian sea-side resort of great style and refinement and acquired the name of 'The English Riviera'.

Torbays administrative boundaries include 62.4km² land and 41.5km² marine environment. The terrestrial area is mainly urban or sub-urban in character with approximately 45% of the land remaining undeveloped, as either farmland, woodland, or other open space. The coastline is dramatic, thanks to the area's geology, and has played a significant part in the development of the territory.

Tourism is the areas dominant industry and it is estimated that the English Riviera attracted 3.4 million staying and day visitor numbers during 2021. This was an increase of around 55% on the 2.2 million in 2020. However, it should be noted that both 2020 and 2021 were both severely impacted by restrictions related to Covid 19 and whilst visitor numbers increased in 2021, they were still approximately 25% below 2019 pre-Covid levels which stood at 4.5 million.

The three towns have complex populations. High levels of deprivation, significant health inequalities, an ageing population and limited opportunities for employment and education compound barriers to accessing the natural and historic environment. However, our communities are also resilient and connected.

Geology

Geology is the study of the Earth, which includes its interior and exterior processes, rocks, minerals, fossils, and all the surface processes that have shaped the landscape around us and continue to shape our lives today. These processes take place over different time scales, from hundreds of millions of years to hundreds of thousands of years, a difficult concept to grasp as humans have only been present for a short amount of time in the wide breadth of Earth's history.

Geology and geological processes are crucial for human life providing the foundation upon which plants, animals and humans live. They are also an important source of basic raw materials, a vital part of our cultural and built heritage and are a unique teaching and scientific resource, providing insight into climate change, sea-level rise and other key societal challenges, both in our distant past and into the future.

Studying geology also tells us how our planet has changed throughout its 4600 million year history, with the surface of the Earth looking very different now than it has in the past. The thin, brittle, outer most layer of the Earth, the crust, consists of around 20 different 'tectonic plates' that all fit together like a giant jigsaw. They rest on top of a semi-molten outer layer of the mantle, that together with the core at the centre, make up the rest of the Earth's inner structure. Over time, the tectonic plates move relative to each other; sometimes away from each other, sometimes towards each other and sometimes side-by-side.

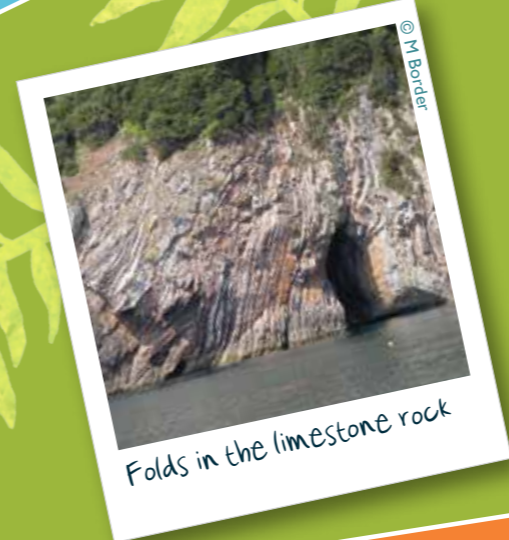
Plate motion occurs at a rate of a couple of centimetres per year and this process is responsible for means that the surface of the Earth has been changing throughout geological time; oceans opening and closing, sea levels dramatically altering and mountains rising, and responsible for millennia of volcanic action, earthquakes and unbelievable pressures contorting the very rock itself. Around the world different UNESCO Global Geoparks can tell different parts of this deep time story and for the English Riviera it all starts in the Devonian Period.

Devonian

This is the time when our grey limestone rocks were formed in tropical seas south of the Equator. When creatures that lived there died they sank to the sea floor and layer upon layer they were changed into rock.



Devonian coral fossils



Folds in the limestone rock

Carboniferous

In the time when giant dragonflies took to the air our limestone rocks were folded, crumpled and crushed as they were caught in the middle of a collision of continents.



Permian deposits at Preston Beach

Permian

All of our red rocks were formed during this time in a desert, roughly where the Sahara desert is today.



Human jawbone discovered in Kents Cavern is the oldest evidence of modern humans in north west Europe

Quaternary

A time when mammoth, wooly rhinoceroses and early man roamed here.



Fig. 3 ERUGGp Time Spiral

ERUGGp in the Devonian

Due to plate tectonics, 390 million years ago, Torbay was nowhere near its current position but was located south of the equator. Bathed in shallow tropical seas teeming with exotic marine life, massive coral reefs developed but not quite like those of today. These were built of hard coral-like sponges known as stromatoporoids, with true corals growing in clumps in between. Sheltered lagoons behind the reefs were often full of clam-like brachiopod shells and woodlice-like trilobites scurried by looking for a meal. Fish had yet to take over the seas, their place occupied by shelled relatives of modern squids, including some of the first coiled ammonoids.

The deposits of these tropical seas and the animals and plants that thrived in them accumulated to form the pale, hard limestones which dominate Torquay and Brixham today - they even dictate the very shape of Torbay itself as they form the headlands of both Hope's Nose and Berry Head.

In the early 18th century when scientists were developing a system of naming the principal periods of geological time, fossils found in the limestones at sites in Torbay, such as Lummaton Quarry, made an important contribution to understanding what was happening on Earth from around 409-363 million years ago. As a result, a period of geological time named the Devonian was proposed and was soon used globally to identify rocks and fossils with a similar age. Massively quarried, much of the fossilised stone can be seen in local buildings and the seawalls.

ERUGGp in the Carboniferous

Around 300 million years ago plate tectonic movements caused areas of land (now known as Africa and Europe) to crash into one another. Intense pressures squeezed all the sediments that had been laid down in the seas that once separated the two continents, piling them up, during a time known as the Variscan Orogeny, to form a vast mountain chain. These mountains stretched from eastern North America (which was joined to Europe at the time), through Cornwall and Devon to Belgium, the Czech Republic and beyond.

Needless to say, caught in the middle, this event had a very fundamental effect on the rocks of Torbay. Sediments were folded and fractured as they were crumpled and pushed northwards by the collision. At Babbacombe they were even turned upside down, and the dark slates at the bottom of the cliff are actually younger than the pale limestones of the Downs at the top!

ERUGGp in the Permian

During the time period known as the Permian, 280 million years ago, Torbay lay only 30° north of the equator and was sweltering in the intense heat of a Sahara-like desert that covered most of Britain and Europe. The deformed limestone rocks were landlocked and exposed to erosion in the extreme desert environment and here in the heartland of Pangaea, these extensional cracks and fissures rapidly filled with windblown desert sands.

Paignton lay in a broad depression with jagged, mountainous ridges of limestone and slates on either side. Extreme, violent storms caused 'flash-floods' in the mountains to sweep stones and rocks down into desert valleys, known as wadis, and then onto the plain where the water rapidly sank into the parched rocky and sandy ground. Very little seemed to have been able to survive in these Permian deserts, although near Goodrington strange burrows up to 10 cm across in stony wadi deposits may indicate a survival strategy for a primitive reptile – dig a hole and wait until the cool of the night time to come out! As they were deposited after the Variscan Orogeny the Permian deposits remain undeformed, gently dipping beds lying on top of the irregular, eroded surface of the folded Devonian rocks. This irregular boundary, an unconformity, represents the time interval of the whole of the Carboniferous, a period of 64 million years between the Devonian and the Permian. All of the rocks laid down during the Carboniferous were removed by erosion before the Permian deposits were laid on top. The unconformity is evident at various sites around the Bay but is easily accessible at Waterside Cove in Paignton.

The end of the Permian saw the largest ever mass extinction; 96% of all marine species and 75% of all land vertebrates families were wiped out! The dinosaurs arose from the remnants of life that survived into the Triassic period, the evidence for which exists eastward along the Jurassic Coast.

During the Permian Triassic low temperature hydrothermal fluids produced a significant deposit of low-grade iron ore in the limestone plateaus at Brixham and Sharkham Point. Discovered in 1842 the ore was commercially mined for smelting and for the use in the manufacture of anti-corrosion paint by the Tor Bay Paint Co established in 1895. Another suite of fluids led to the formation of thin gold and palladium-bearing veins in the Devonian limestones of Hope's Nose, Torquay, the former characteristically forming small, delicate feather-like crystals. Very rare selenium minerals are also present, together making these deposits unique in Britain and possibly within Europe. Later, groundwater oxidised the iron within the sediments explaining the deep red colour of the rocks and of the areas classically recognisable rich red soil.

ERUGGp in the Quaternary

More recently, having moved close to its present position, Britain has been subjected to repeated glaciations divided by warm periods when sea levels fluctuated. This period, known as the Quaternary, started 1.6 million years ago and continues to the present day. The warm periods saw hippopotami munching on abundant vegetation. During the cold periods, whilst most of the rest of the country was locked in ice, Torbay would have experienced tundra conditions.

Relatively high sea levels at this time cut the high-level marine platform of Berry Head, whilst freshwater streams carved out caves in the limestone. Several caves in the district are famous for their rich deposits of ice age and interglacial mammal bones including mammoth, straight tusked elephant, narrow nosed rhinoceros, woolly rhinoceros, hyena, cave lion, European sabre-toothed cat, cave bear, bison, hippopotamus, horse, reindeer and some human remains as well as tools dating back nearly 450,000 years. William Pengelly extensively excavated the caves at Brixham and Torquay in the late nineteenth century. His excavation of Kents Cavern between 1865 and 1880 set new standards in archaeological recording and proved that man had lived with animals that were now extinct. In the late 19th century this conclusion was not widely accepted but the detail of his work proved conclusive.

Evidence of the sequences of past climate change are rich in the form of raised beaches along the coastline. Locally well developed, these formed during periods of high sea level during interglacial periods, including at Hope's Nose and Thatcher Rock, Torquay. Elsewhere, cold stage deposits include periglacial loess and head (soil and stones transported down-slope due to soil movements). Rising sea levels after the end of the last ice age drowned parts of coastal woodlands, the remains of which can occasionally be seen at low tide on certain beaches.

From tropical seas to arid desert, Torbay's past has certainly been varied, its geology creating the beautiful coastline of today.



1.



2.



3.



4.



5.

Photos: 1. Variscan Thrust fault © Mark Gilmartin / 2. Marine Devonian Coral Fossils © Mark Gilmartin / 3. Marine Devonian Crinoid Fossils © Mark Gilmartin / 4. Permian Fossil Burrow © Mark Gilmartin / 5. Variscan Age Folding © Mark Gilmartin

Geodiversity

Geodiversity is a relatively recent concept and many of those involved in geoconservation have adopted the definition of geodiversity provided by Gray (2004, p. 8):

'Geodiversity: the natural range (diversity) of geological (rocks, fossils, minerals), geomorphological (landforms, processes) and soil features. It includes their assemblages, relationships, properties interpretation and systems'

With one of the highest concentrations of geological sites in the country the ERUGGp boosts 32 sites of geological importance identified and they represent the following range of geological periods, rock types and geological and geomorphological features:

GEOLOGICAL PERIODS: Devonian, Carboniferous, Permian, Neogene and Quaternary	CLEARLY DEFINED ROCK TYPES	DISTINCT GEOLOGICAL OR GEOMORPHOLOGICAL FEATURES
<p>Devonian - sediments & volcanics</p> <p>Carboniferous / Permian - Variscan structures</p> <p>Permian - sediments</p> <p>Alpine - Miocene faulting</p> <p>Mid-Miocene - erosion surfaces</p> <p>Plio-Pleistocene - erosion surfaces</p> <p>Pleistocene - raised beaches, cave deposits and submerged forests</p>	<p>Limestones (wackestones, packstones, grainstones, bindstones, floatstone)</p> <p>Sandstone</p> <p>Siltstone</p> <p>Mudstone</p> <p>Breccias</p> <p>Conglomerate</p> <p>Shale</p> <p>Slate</p> <p>Dolerite</p> <p>Tuffs</p>	<p>Sea cliffs, wave-cut platform, headland, island, stacks, arch, dry valley, plateau, cave (land and sea), scree, topples, landslides, fault gouge, fault breccias, slickensides, mineralisation, veins, faulting, folding, thrusting, cleavage, igneous intrusion, ash fall deposits, wadi deposits, head deposits, stalagmites, stalactites, invertebrate fossils (brachiopods, gastropods, bivalves, trilobites, crinoids, tabulate and rugose corals, stromatoporoids, ostracods), protists (foraminifera, radiolaria, acritarchs) trace fossils, ripple marks, dessication cracks, cross-stratification</p>

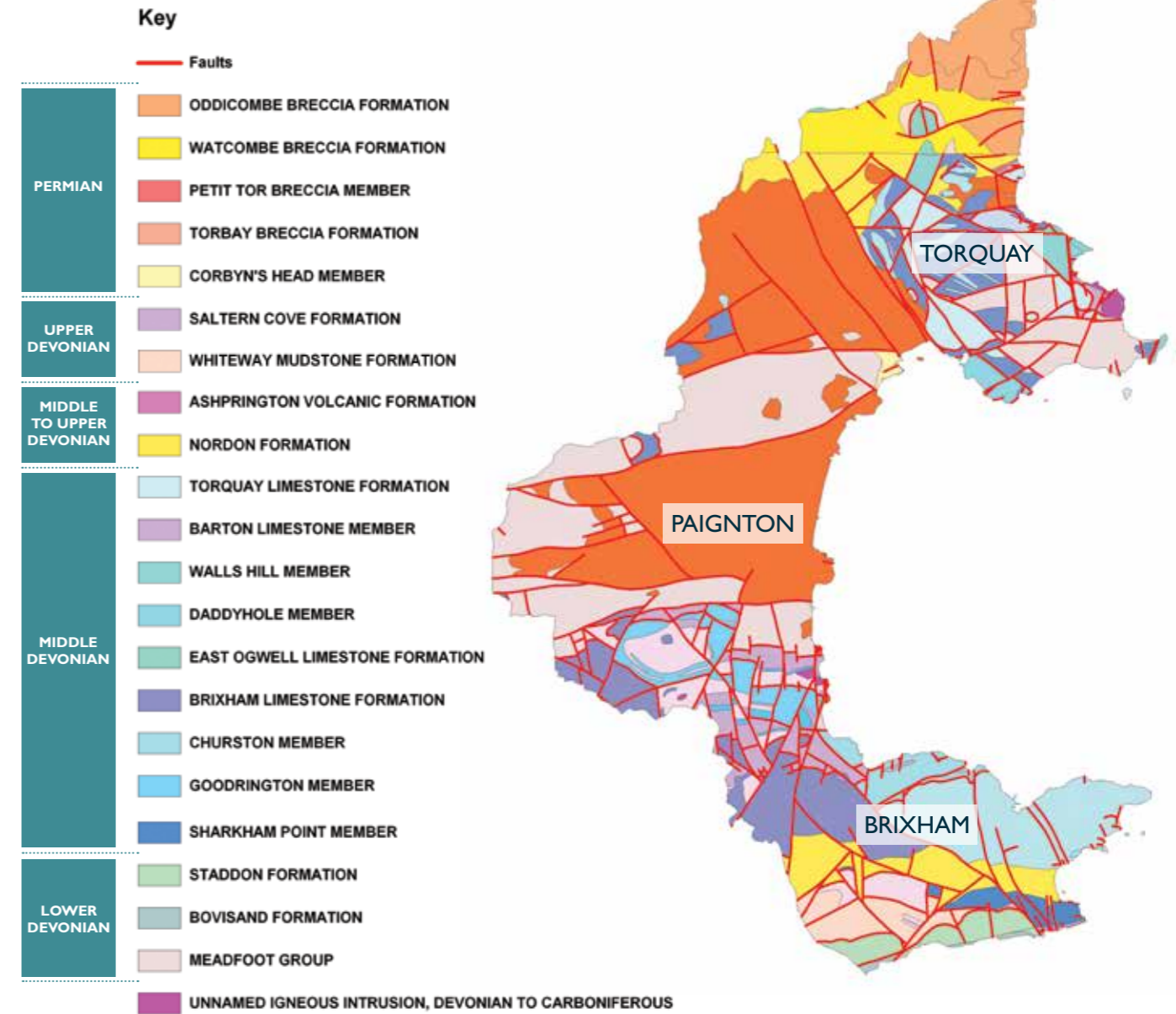


Fig. 4 Geological Map of ERUGGp



Coasteering © Reach Outdoors



Street Art Fossils Event © Torre Abbey



Understanding the geology of Hopes Nose SSSI



University of Plymouth Students

Geological Designations

The most important international sites are Lummaton Quarry (the locality for the Marine Devonian Rocks identified by Sir Rodrick Murchison and Adam Sedgwick in 1840 which contributed to the resolution of 'the Devonian Controversy' and naming of the Devonian Period) and the Quaternary record at Kents Cavern (where human activity by three ancient hominid species can be demonstrated, Homo heidelbergensis, Neanderthal and Homo sapiens).



KEY FOR GEOLOGICAL DESIGNATIONS, GRID REFERENCES AND SITE USE TABLE (SEE PAGE 21)

A = Interpretation

B = Education

C = Tourism

D = Not promoted for tourism and/or restricted access

SITE NO.	SITE NAME AND GCR REFERENCE	SSSI GRID REF	CGS	A	B	C	D
1	Babbacombe Cliffs: Marine Devonian (No.421, SX929655)	SX928662 to SX930655				X	
2	Barcombe Mews Quarry, Shorton		SX86SE1				X
3	Barton Quarry		SX913671				X
4	Berry Head to Sharkham Point	SX937568, SX947565, SX937546	SX930544-SX957566-SX934566 (Marine Devonian), SX943562 (Structural Geology), SX933548 (Mineralisation), SX935567-SX943566 (Quaternary);	X	X	X	
5	Black Head and Anstey's Cove	SX932654 to SX944633 and SX944628	SX935646-SX943642	X			
6	Breakwater Quarry, Brixham		SX95NW1		X		X
7	Brokenbury Quarry, Churston Ferrers		SX85SE1				X
8	Brixham Cavern		SX925560				X
9	Chapel Hill, Torre		SX96NW1		X		
10	Churston Cove / Churston Point		SX920569-SX898574			X	
11	Crystal Cove		SX896580-SX895595			X	
12	Daddyhole: Marine Devonian (No 425, SX928628)	SX927628		X		X	
13	Dyers Quarry: Marine Devonian (No 468, SX921628)	SX922628		X		X	
14	Goodrington Quarry and Road Cutting		SX85NE1				X
15	Hollicombe Head to Corbyns Head		SX898619-SX908633		X	X	
16	Hopes Nose to Wall's Hill: Marine Devonian (No 426, Hopes Nose, SX948635)	SX932654 to SX944633 and SX944628		X	X	X	
17	Hopes Nose: Mineralogy of SW England (No 1725, Hopes Nose, SX949636)	SX932654 to SX944633 and SX944628		X	X	X	
18	Hopes Nose and Thatcher Rock:	SX932654 to SX944633 and SX944628		X	X	X	
19	Hopes Nose South	SX932654 to SX944633 and SX944628	SX947634-SX949637	X	X	X	
20	Kents Cavern: Quaternary of SW England (No 1312, SX935641)	SX934641		X	X	X	
21	Long Quarry: Marine Devonian (No 420, SX937651)	SX932654 to SX944633 and SX944628				X	
22	Lummaton Quarry: Marine Devonian (No 471, SX912665)	SX912665					X
23	Meadfoot Sea Rd: Marine Devonian (No 422, SX934633)	SX934633			X	X	
24	New Cut: Marine Devonian (No 429, SX93526375)	SX9353, SX6575					X
25	Oddicombe: Permian-Triassic (No 1496, SX927660)	SX928662 to SX930655		X	X	X	
26	Petitor, Maidencombe		SX926662-SX927684			X	
27	Quarry Woods Quarry, Cockington		SX96SE1				X
28	Roundham Head: Permian Triassic (No 1504, SX896603, SX894598)	SX898601		X		X	
29	Saltern Cove: Marine Devonian (No 424, SX89555880 to SX89655805)	SX895585		X	X	X	
30	Saltern Cove: Permian Triassic (No 1503, SX894591 to SX896586)	SX895585		X	X	X	
31	Sharkham Iron Mine	SX937568, SX947565, SX937546	SX933548 (integrated in Berry Head to Sharkham Point statement)	X			
32	Shoalstone: Permian-Triassic (No 1494, SX934568, SX939568)	SX937568, SX947565, SX937546			X		

Fig. 5 Geological Site Map plus Geological Designations, Grid References and Site Use Table

International Geological Significance

The ERUGGp contains a number of locations with geology that has been recognised as being of international importance.

In the early 1990s, a number of these sites were included within the Global Indicative List of Geological Sites, or GILGES, established as a collaboration between the International Union of Geological Sciences (IUGS), UNESCO, the International Union for the Conservation of Nature (IUCN) and the International Geological Correlation Programme (IGCP).

A total of 15 sites identified as being internationally important and can have been classified under the following themes:

- Devon (marine) carbonates and clastics
- Permian-Triassic red-bed sequence (Devon coast)
- Late Pleistocene interglacial/glacial, cave/beach sediments (Saalian-Weichselian)
- Late Pleistocene Interglacial (OIS7, 5e) raised beaches (southern England, Cornwall, South Wales)

The GILGES sites provided the foundation of the Geological Conservation Review (GCR), a systematic and comprehensive review and identification of sites on national and international important in the UK. These sites have all made a special contribution to the understanding and appreciation of Earth science and the geological history of the UK, and is an initiative that was the first of its kind in the world (see Appendix 2).

A number of other sites within the ERUGGp have been identified as internationally important within the GCR that were not included as part of the GILGES

- Mineralogy – mineral deposits found at Hopes Nose are so unique they are virtually unknown elsewhere hence the ERUGGp's 16th GCR designation (No.1752: Hopes Nose)
- Caves Fauna – Kents Cavern and Brixham Caves have revealed internationally significant palaeontological, stratigraphical and archaeological information elucidating the environmental and faunal changes during the Quaternary.

The GILGE initiative has evolved over time and has now been replaced with the IUGS Geological Heritage Sites project, that aims to create global standards for the recognition of sites of high international importance.

A set of criteria has now been developed and the first 100 sites were identified in October 2022. It is anticipated that the sites within the ERUGGp will be submitted for inclusion in due course.

National Geological Designations

All of the above GCR's are protected under national conservation legislation as part of a suite of eleven Sites of Special Scientific Interest (SSSI's):

Sites of Special Scientific Interest

- [Babbacombe Cliffs \(1976, amended 1986\)](#)
- [Berry Head to Sharkham Point \(1952, amended 1986, notified National Nature Reserve 2000\)](#)
- [Daddyhole \(1988\)](#)
- [Dyer's Quarry \(1988\)](#)
- [Hope's Nose to Walls Hill \(1952\)](#)
- [Kent's Cavern \(1952, extended 1975 & 1993\)](#)
- [Lummaton Quarry \(1952\)](#)
- [Meadfoot Sea Road \(1987\)](#)
- [New Cut, Torquay \(1996\)](#)
- [Roundham Head \(1974, amended 1986\)](#)
- [Saltern Cove \(1952, extended 1986\)](#)

Regional Geological Designations

There are a further fifteen sites recognised as Regionally Important Geological Sites (RIGS) or County Geological Sites (CGS). The designation nomenclature for CGS and RIGS is interchangeable however for the sake of consistency ERUGGp uses the term RIGS. The ERUGGp RIGS were designated in two tranches with the first five in 1994 followed by a further ten in 2009 following Geopark recognition:

Regionally Important Geological Sites

- [Barcombe Mews Quarry \(1994\)](#)
- [Barton Quarry \(2009\)](#)
- [Black Head and Ansteys Cove \(2009\)](#)
- [Breakwater Quarry \(1994\)](#)
- [Brixham Cavern \(2009\)](#)
- [Brokenbury Quarry \(1994\)](#)
- [Chapel Hill \(2009\)](#)
- [Churston Cove/Point \(2009\)](#)
- [Crystal Cove \(2009\)](#)
- [Goodrington Road Cutting and Quarry \(1994\)](#)

- [Hollicombe Head to Corbyns head \(2009\)](#)
- [Hopes Nose \(2009\)](#)
- [Quarry Wood Quarry \(1994\)](#)
- [Petitor - Maidencombe \(2009\)](#)
- [Sharkham Point to Berry Head \(2009\)](#)

However, it must be noted that due to the nature of the process of the GCR site selection in the 1970's, a review in the early 1990's revealed that some sites of international importance had been omitted from the original GCR list. Subsequently, those sites have been recognised and designated as part of the above listed Regionally Important Geological sites even though they are of international importance.

A table providing full information on the site designations and geological and geomorphological descriptions can be found in Appendix 3.

Natural and Cultural Heritage

Natural Environment

The ERUGGp is predominantly urban but such a rich geological heritage, sheltered aspect and subsequent micro-climate it created, has provided the right habitats for rare and diverse plant and animal species who find homes on the cliff ledges and farmland fringes, pockets of ancient semi natural woodland and an exceptional marine environment.

Hugging the coast, outcrops of Devonian Limestone support the most extensive stands of calcareous grassland in the region which are of great importance due to the extremely limited areas remaining in the UK as a whole. Areas of broadleaf woodland, mostly oak, ash and hazel exist, small areas of which date back to 1600AD. Despite the built environment, around a quarter of the Geopark area is mixed farmland, with the rich red soil, flower filled hedgerows and hedgerow trees, traditional orchards, meadows and permanent pasture including in-field trees creating a wonderful picture. Meanwhile, amidst the built areas, relatively small woodland areas remain on steep sided valleys acting as urban green lungs. However, being a coastal area the sheltered mix of sandy shores, rocky coves and rugged cliffs provide an incredible environment that teams with rich diversity both above and below the water.

Berry Head for example is home to a nationally important guillemot colony and a cave nursery roost

for the endangered greater horseshoe bats. Whilst underwater, sea horses shelter amongst the sea grass and internationally rare species are found within the multitude of internationally significant reefs and sea caves.

All in all, the ERUGGp is a stunning bay situated on the beautiful coast of South Devon. Stretching from rich rolling hills of farmland and woodland inland down to the sea where the intricate coastline provides a mix of quiet, secluded, rocky and sandy coves to dramatic cliffs, caves, sea stacks and arches through to the bustling seafront proms and harbours.

International Natural Designations

The area has three European designations to protect habitats and species of European value two of which are Special Areas of Conservation (SAC) which are designated to protect habitats and species listed on Annex I and Annex II of the European Habitats Directive:

- The Berry Head to Sharkham Point SSSI is included within the **South Hams Special Area of Conservation (SAC)**. This designation primarily protects the greater horseshoe bats, heathland and calcareous grassland but also offers some protection for caves above water amongst other features.
- The marine area of the ERUGGp is incorporated into **Lyme Bay and Torbay Special Area of Conservation (SAC)** - located between Mackerel Cove and Dartmouth. Designated to protect reefs and 85 sea caves which are of international importance. Surfaces and walls inside the caves are home to a variety of delicate sponges, bryozoan crusts, pink sea fingers, anemones and cup corals. The SAC carries no statutory protection, it is covered by the SSSI national legislation, as well as certain regulations under the Marine Conservation Zone.

The third designation of international significance is that of Marine Conservation Zone. MCZs protect typical, rare or declining habitats and species found in our seas.

- Torbay Marine Conservation Zone (MCZ) was designated in November 2013. It is an inshore site covering the area of coastline between Oddicombe Beach and Sharkham Point, protecting a total area of approximately 20 km². Beginning at the coastline, the boundary extends between 1 to 2.5km out to sea and includes Hope's Nose near Torquay and Berry Head near Brixham. The high level of biodiversity in the area surrounding Torbay MCZ has previously been recognised, with Torbay being described as 'the jewel in South Devon's crown' for marine wildlife. Extending from the shoreline out to a depth of 30 metres the site includes a range of habitats exposed to different

environmental conditions. This variation creates an area that is capable of supporting a rich array of marine wildlife. The inshore areas of Torbay's natural harbour are predominantly soft, muddy sands which are characterised by animals such as heart urchins and brittle stars. The less muddy sand found closer towards the shore holds dense populations of species including razor clams whereas the site's rocky areas support sponges, sea squirts, seaweeds, and seagrasses. Seagrasses are plants with green, long, narrow, ribbon-shaped leaves and are the only flowering plant that can live in seawater and pollinate whilst submerged. Seagrass (*Zostera marina*) beds provide a habitat for a wide range of animals, such as seahorses and pipefish, which shelter amongst the leaves, as well as molluscs and worms which burrow into the roots and surrounding sediments. They also act as nursery areas for a range of animals giving protection to marine species of commercial importance such as bass and cuttlefish. The nationally rare long-snouted seahorse also inhabits seagrass beds and is found within Torbay MCZ. The seagrasses and their associated carbonate-rich epiphytes and associated protists are an important 'sink' for CO₂ and are much quoted as important in controlling climate change.

National Natural Designations

The area has two national designations that recognise natural heritage:

- **National Nature Reserve:** Berry Head, Brixham, which is also a mixed SSSI for both the geology and natural environment
- **SSSI:** [Ocombe](#)

Please note all of the other SSSI's in the Geopark are geological as listed on page 22.

Regional Natural Designations

A further 31 sites are recognised at the regional level as County Wildlife Sites see Appendix 4 Table to show nature conservation sites in the territory.

Local Natural Designations

The ERUGGp has 4 Local Nature Reserves Ocombe Farm, Ocombe Valley Woods, Scadson Woods and Sugar Loaf Hill and 1 underwater Marine Local Nature Reserve at Saltern Cove.

Additionally there are a further 50 Other Wildlife Sites see Appendix 4 Table to show nature conservation sites in the territory.



Dividing under the Orestone © underwaterpics.co.uk

Cultural Heritage

The resonance of the areas truly ancient roots endure in the modern make-up of the intricate coast, its architectures and buildings, its cultural and artistic heritage and its sense of region and place. Without doubt the geology has shaped the areas incredible human history. During the ice ages, lower sea levels allowed both animals and early man to walk freely across what is now the English Channel and it is at this point that the importance of Kents Cavern shines. It is here that an incredible record of human activity covering all three stages of the Palaeolithic can be found stretching back 500,000 years. Artefacts and evidence meticulously excavated were nestled amongst long extinct animals which fundamentally challenged religious teaching and the antiquity of man.

The protective arms of Berry Head, today a National Nature Reserve and Hope's Nose, combined with the rich red soils, created ideal conditions for more recent fishing and farming communities to develop. In Brixham, fishermen used locally sourced iron ochre to help waterproof their sails and over time what began as a natural sheltered harbour developed into the largest fishing port by catch in the country. The wider bay was used as an anchorage for Nelson's fleet during the Napoleonic Wars. Torre Abbey, which witnessed, survived and been part of some epic moments of history, was built using considerable amounts of stone quarried from the very headland it overlooks and was so positioned in the late twelfth century to take advantage of the fertile land and rich pickings from the sea.

Beautiful scenery, clean air and clean waters led to the development of the tourism industry. Tourists began visiting in large numbers in the nineteenth century, starting an explosion of development and a 'golden age' of prosperity that lasted until the Second World War. The architectural heritage from this period includes large numbers of villas, civic buildings, shops, churches, entertainment spaces, public gardens and tourist infrastructure. Both the terracotta industry and limestone quarrying were predominant during this time and the area became a place of creative inspiration. Well known as the birthplace of the world-famous crime writer Agatha Christie, the area provided much inspiration for her and for many other writers over the years including Oscar Wilde, Mary Shelley, Charles Kingsley, George Bernard Shaw, James Joyce.

International Cultural Designations

There are no international designations for culture within the Geopark territory.

National Cultural Designations

Designated Quaternary Cave Collection

In May 2016 Torquay Museum was awarded Designated Status, by the Arts Council for England, for its Quaternary Cave Collection and Archive, which spans the last half million years. The collection includes the 41,000 year old Kents Cavern human jawbone, the oldest human fossil discovered in Britain, placing early modern humans in this part of Britain with Neanderthals.

Scheduled Monuments

Within the ERUGGp there are 13 Scheduled Monuments, and this is the highest level of designation available in the UK, as follows:

- [Prehistoric Field System at Walls Hill](#)
- [Chapel of St Michael](#)
- [Berry Head Fort and battery and Hardy's Head Battery](#)
- [World War II Emergency Coastal Battery and remains of a Victorian practice battery at Battery Gardens](#)
- [Bishop's Palace](#)
- [Torre Abbey](#)
- [Broadsands Chambered Tomb](#)
- [Kents Cavern](#)
- [Windmill Cave](#)
- [Ashhole Cavern](#)
- [Two prehistoric hilltop enclosures, a ditch system and four bowl barrows, Barton Pines](#)
- [Bowl Barrows at Beacon Hill](#)

Regional Cultural Designations

There are no regional designations within the UK for cultural heritage.

Local Cultural Designations

Conservation Areas

The ERUGGp, with its rich urban heritage, contains 24 designated conservation areas including 16 in Torquay, four in Paignton and four in Brixham. Eight of these were designated in the 1970's, thirteen in the 1980's and one in 2001. A number have been revised and extended since their original designation. The areas vary widely in their nature, character, and extent.

Listed Buildings

A 'listed building' is a building, object or structure that has been judged to be of national historical or architectural interest. The listing affords special protection through the local authority planning system.

There are five Grade I and multiple Grade II listed buildings which are recorded and detailed on the [Devon Historic Environment Viewer](#).

Grade I buildings are those of exceptional interest (of all listed buildings in the country only 2% are recognised as Grade I). The five in the Geopark are as follows:

- [Parish Church of All Saints](#)
- [Parish Church of St John the Baptist](#)
- [Parish Church of St John the Evangelist](#)
- [Roman Church of Our Lady, Help of Christians and St Denis](#)
- [The Spanish Barn, Torre Abbey](#)
- [Torre Abbey](#)

Grade II* - more than special interest (which are 5.5% of all listed buildings in the country). The 163 Grade II listed buildings in the Geopark can be view on the [British Listed Buildings website](#).

The Geopark is split into a number of wards and the number of listed buildings per ward can be found below:

- [Blatchcombe Ward](#) (39 buildings)
- [Brixham](#) (208 buildings)
- [Churston-with-Galmpton Ward](#) (39 buildings)
- [Clifton-with-Maidenway Ward](#) (9 buildings)
- [Cockington-with-Chelston Ward](#) (63 buildings)
- [Ellacombe Ward](#) (28 buildings)
- [Goodrington-with-Roselands Ward](#) (3 buildings)
- [Preston Ward](#) (24 buildings)
- [Roundham-with-Hyde Ward](#) (92 buildings)
- [Shiphay-with-the-Willows Ward](#) (19 buildings)
- [St Mary's-with-Summercombe Ward](#) (1 buildings)
- [St Marychurch Ward](#) (54 buildings)
- [Tormohun Ward](#) (134 buildings)
- [Watcombe Ward](#) (9 buildings)
- [Wellswood Ward](#) (143 buildings)



1.



2.



3.

Photos: 1. Geopark Boat Cruise / 2. Vigilance Heritage Vessel © MATT AUSTIN355 / 3. Torre Abbey



Key

Boundary of the English Riviera UNESCO Global Geopark

Geopark Sightseeing Cruises

Babbacombe

Oddicombe Beach

Kents Cavern

Hope's Nose

Triangle Point and Meadfoot Beach

Torquay Museum

Chapel Woods

Torre Abbey

Cockington Court and Country Park

Ocombe Farm

Paignton Geoplay Park

Saltern Cove

Brixham Heritage Museum

Berry Head National Nature Reserve

Geopark Key Sites

1

Babbacombe

From Babbacombe Downs there is a fantastic viewpoint from which to enjoy the sight of both Lyme Bay and across to the Jurassic Coast World Heritage Site. It is also here where the Babbacombe Cliff Railway was opened in 1926 connecting the Downs with Oddicombe Beach. It was built down a fault line between the older Devonian grey limestone and a block of younger Permian red breccia.



Traditional Fish and Chips on Babbacombe Downs



Opening of Babbacombe Cliff Railway, 1926

2

Oddicombe Beach

Popular with both locals and visitors this area of the English Riviera was once described by Queen Victoria in her journal as follows...

"We came to Babbacombe, a small bay, where we remained an hour. It is a beautiful spot which before we had only passed at a distance. Red cliffs and rocks with wooded hills like Italy and reminding one of a ballet or play where nymphs appear – such rocks and grottos, with the deepest sea on which there was no ripple." August, 1846.

Despite its beauty the Bay's geological story is a dramatic one. Here the limestones have been dramatically twisted and turned by geological forces. Around 300 million years ago, when plate tectonic action caused two huge continents to collide, the sedimentary rocks that had been laid down in the seas between the two continents were squeezed and piled up under intense pressure creating a vast mountain chain. This major episode in the Earth's history, known as the "Variscan Orogeny", had a big impact on the rocks of Torbay. Sediments were folded and fractured as they were crumpled and pushed northwards by the collision and here these cliffs contain a geological surprise! The pressure was so great that a large fold turned over on itself so that the sediments are now completely upside down and the dark slates at the bottom of the cliff between Oddicombe and Babbacombe beach are actually younger than the pale limestones of the Downs at the top!

More recently dramatic landslides have hit the headlines when over 100,000 tonnes of rockfall debris fell down across the whole beach at Little Oddicombe and the north end of the beach at Oddicombe, effectively burying the former coastal landscape. It is estimated that the cliff top has regressed by about 30-40m over a length of approximately 140m, leaving a new cliff face about 5-15m in height.



Petit Tor, 1793, by Rev JB Swete



Oddicombe Beach



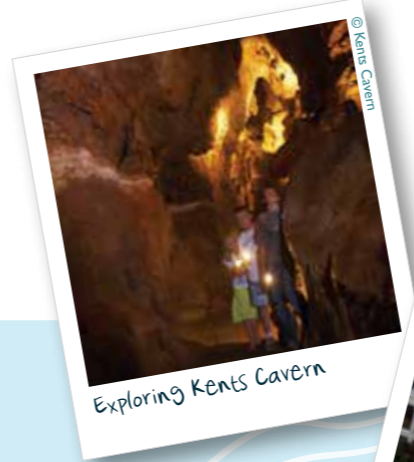
Oddicombe rock fall

3

Kents Cavern

Nationally protected, this award winning prehistoric cave is the underground visitor centre for the English Riviera Global Geopark. With an extensive labyrinth of spectacular and easily accessible caverns and rich in fossil remains, the cavern has fascinated many of Britain's pioneering Earth scientists including Rev Buckland, Charles Darwin, Alfred Wallace and William Pengelly. A human jawbone discovered here is the oldest human fossil ever found in northwestern Europe. Kents Cavern's connection to humankind goes back much further to Neanderthals and *Homo heidelbergensis* over 500,000 years ago. This makes Kents Cavern by far the most important prehistoric cave in Britain. Open to the public since 1880, the cave has inspired many visitors, notably Beatrix Potter and Agatha Christie, and continues to draw in audiences for guided tours and innovative artistic and cultural events.

Kents Cavern
www.kents-cavern.co.uk
 Tel: 01803 215136
 Postcode: TQ1 2JF



Exploring Kents Cavern



Kents Cavern sign

4

Hope's Nose

Hope's Nose provides a spectacular vantage point, but regardless of the view, the headland itself is a fascinating site for both its geology and biodiversity. The wavecut platform reveals coral and stromatoporoid fossils of the ancient Devonian tropical seas. Hidden between the layers of limestone are occasional bands of volcanic ash and later deformation has created gentle undulations that give way to dramatic folds and faults all topped by the 200,000 year old raised beach. Perhaps most remarkable, are the sites suite of rare minerals - some new to science.



Hope's Nose aerial view



Hope's Nose

Geopark Key Sites

5

Triangle Point and Meadfoot Beach

The steep sloping surface of Triangle Point was once part of a tropical reef – but 395 million years ago during the mid-Devonian time period, it was horizontal (later tectonic movements tilted it). The surface covered in Devonian reef fossils still sit in exactly the same position as they were in life so long ago.

The shore and cliffs to the middle and east of Meadfoot Beach expose sandstones and slates which were once sands and muds in a shallow tropical sea some 405 million years ago, during the early part of the Devonian time period. These are some of the oldest rocks in Torbay, and are known as the ‘Meadfoot Group’, named after this bay!



Meadfoot Beach



Triangle Point

6

Torquay Museum

Originally set up by Pengelly to house the artefacts from Kents Cavern the museum today displays a wide variety of exhibitions that share the areas past. It is here that the most important find from Kents Cavern, a 41,000 year old human jawbone is on display as part of the Ancestors exhibition. Additionally it is possible to experience what life was like in a traditional Devon farmhouse and to enjoy Britain’s only Agatha Christie Gallery which is dedicated to the life story of the Queen of Crime who was born in the area. Re-developed and improved in 2013, the new gallery now enables visitors to step inside Poirot’s study and lounge, including furniture, books, pictures and even the fireplace from his beautiful Art Deco London apartment. Delegates who visit the museum will also have the opportunity to meet Prof Gordon Walkden who will present on the importance and context of local Devonshire Marble.

Torquay Museum
www.torquaymuseum.org
 Tel: 01803 293975



Torquay Museum



School Group at Torquay Museum



Kents Cavern Jawbone

7

Chapel Woods

Chapel Woods is a small but fascinating site which contains the 13th Century St Michaels Chapel, a recently restored Scheduled Ancient Monument, perched on the top of a designated Regionally Important Geological Site. For many years both the Chapel and important geology had been hidden from view but following phased works that included tree clearance, clearance of important rock faces, improvements to the path network and restoration of the Chapel that is no longer the case.



St Michaels Chapel before restoration



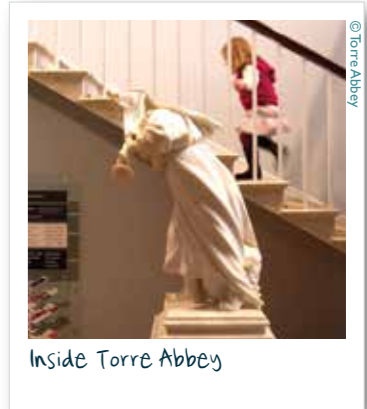
Chapel Hill line drawing

8

Torre Abbey

A magnificent Grade I listed building, Torre Abbey is set within beautifully landscaped grounds and gardens with stunning views over Torquay. There were only ever 30 such abbeys throughout England. Along with the Spanish Barn built in the 13th Century, the abbey is one of the most important historic buildings in the South West of England. Founded in 1196 it is a very rare example of a premonstratensian abbey. The abbey is a historic building with monastic ruins, a museum and art gallery and has just been through a major refurbishment. The Spanish Barn, which is a great medieval tithe barn, was so named as it was used to imprison the 397 Spanish crew of the ship Nuestra Señora Del Rosario which was captured by Sir Frances Drake during the Spanish Armada campaign. Torre Abbey is owned and managed by Torbay Council and has been open to the public since 1930.

Torre Abbey
www.torre-abbey.org.uk
 Tel: 01803 293593
 Postcode: TQ2 5JX



Inside Torre Abbey



Torre Abbey



Torre Abbey restored

Geopark Key Sites

9

Cockington Court and Country Park

With Saxon origins, Cockington, situated in a hidden valley and surrounded by rolling farmland and orchards, retains its rural identity. Within the centre of the village you can still see the smithy, mill, granary and weaver's cottage. Cockington Court sits a little way back from the village within a beautiful arboretum with a traditional cricket lawn in front of the house. Over the last thousand years three major families have controlled the court and estate. In 1130–1135 the lands were owned by the Fitzmartin family who took the surname De Cockington. It was the De Cockingtons, who, in 1196, allowed stone to be quarried from Corbyn Head to build Torre Abbey. The property was sold to the Cary Family in 1375, who remained there until 1654. In 1521, William Cary of the Cockington Carys married Mary Boleyn, the sister of Henry VIII's second wife Anne Boleyn and thus became the uncle of the future Queen Elizabeth I when Anne Boleyn gave birth in 1533. The last family who lived here from just after the Civil War until the 1930s, was the Mallocks. Today the Court is operated by Torbay Development Agency (TDA) and is home to a vibrant centre for arts and crafts. The wonderful landscape and Country Park is managed by Torbay Coast & Countryside Trust.

Cockington
www.cockingtoncourt.org
 Tel: 01803 607230
 Postcode: TQ2 6XA



Cockington Court



Our glass at Cockington



Rex Latham Blacksmith at Cockington

10

Occombe Farm

Both Occombe Valley and Scadson woods border the beautiful farmland of Occombe. This 150-acre organic farm is a mixture of pasture, wet meadows and woodland with a Site of Special Scientific Interest at its heart containing important habitats and species that need to be protected. Situated on our rich and instantly recognisable red soils, the farm has remained unchanged, without being drained or subjected to extensive use of fertilisers since the Second World War. As such it represents an unusual snapshot of the country's farming past.

With wonderful winding footpaths to follow the farm includes a farm shop and café, and is a great place to start your day with an Occombe breakfast.

Occombe Farm
www.ocombe.co.uk
 Tel: 01803 520022
 Postcode: TQ3 1RN



Occombe Meadow



Occombe Farm Nature Trail

11

Paignton Geoplay Park

The Paignton Geoplay Park, an open access children's play park, has been a major success story and it is in the park that we have had the opportunity to explain the local geology in simple terms. The park is divided into four areas the Devonian, Carboniferous, Permian and Quaternary where the play equipment and landscaping tells the tale of each period. Colourful, attractive and engaging interpretation panels support this whilst the story telling chair shaped as a spiral pictorially depicts the whole of geological time. The park provides an ideal setting within which the Geopark's creative Geo-collective and trained Play Rangers can engage with children and adults. Delegates will hear about the community development of the park as well as explore and play!

Paignton Geoplay Park
 Postcode: TQ4 6BE



Story telling chair, Geoplay Park



Geoplay Park

12

Saltern Cove

From Goodrington, South Sands around to Saltern Cove this beautiful stretch of sheltered coves and exposed cliffs not only boasts fantastic geology but also supports diverse communities of intertidal life. As a result, in addition to its geological SSSI designation, it is also the only underwater SSSI in the country and a marine local nature reserve. It is here that one of the most important Upper Devonian stratigraphic localities in Britain is exposed whilst close by the unconformable contact between the Lower Devonian and the overlying Permian beds is clear. Additionally, an abundance of fossil burrows found nearby are evidence of life within the Permian desert. Theories regarding the resident of the burrows have ranged from giant sandworms to small reptiles, with the current favourite being giant millipedes.



Unconformity at Waterside Cove



Saltern Cove



Climbing net, Geoplay Park





13

Brixham Heritage Museum

Celebrating the heritage of the historic fishing port and town of Brixham the museum exhibits and explains a wealth of fascinating local artefacts from the Brixham bone caves, the fishing industry, Napoleonic War through to the more recent life of Brixham.

Brixham Heritage Museum
www.brixhamheritage.org.uk
 Tel: 01803 856267
 Postcode: TQ5 8LZ



Heritage Fishing Fleet and Brixham Heritage Museum

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Berry Head National Nature Reserve

Berry Head, with its 60 metre (200 feet) high cliffs has for centuries offered shelter and protection to wildlife, people and nation. Integrating the fragile, rare plant and insect life of its limestone grassland, the thousand-strong guillemot colony (the most southerly in the UK) and its many sea caves the site holds a hugely impressive list of official designations all of which hint at its national and international significance for nature conservation. Particular rarities include the small blue butterfly, curl bunting, white rock rose, several orchid species and the Devonshire cup coral. The heart of the headland is 400 million year old limestone that once formed part of a reef environment in a shallow tropical sea south of the equator. Berry Head is an exceptional, strongly interrelated site, and people as well as geology have shaped Berry Head, most dramatically by quarrying its limestone over the last 300 years. Used to build the Napoleonic forts, quarrying continued even up to the 1950s. Today the quarry's quiet seclusion is ideal for a range of wildlife from seabirds to the protected nursery roost of the greater horseshoe bats.

Berry Head
www.countryside-trust.org.uk/berryhead
 Tel: 01803 882 619
 Postcode: TQ5 9AP



Guillemot colony



Berry Head aerial view



Greater horseshoe bats



Geopark Sightseeing Cruises

With a rich mosaic of beaches, sheltered coves, blood-red bluffs and steel grey sea stacks, interwoven with seafront proms and bustling harbours one of the best ways to view the spectacular geology and landscape of the Geopark is from the sea. Such a rich geological heritage of coastal cliffs and rocky islands has influenced the area's remarkably diverse marine and terrestrial biodiversity and the boat cruises will provide an opportunity to enjoy spectacular views and wildlife. If lucky on the day there may even be glimpses of seals and dolphins.

Those on the cruise departing from Torquay Harbour will be treated to the sight of incredible deformation structures of the Marine Devonian limestone from the Harbour all the way to Hopes Nose with its renowned raised beaches. Also watch out for Hesketh Crescent where Darwin resided in the summer of 1861 and the incredible fold on the island of Orestone. Whilst in residence at Hesketh Crescent,

Darwin wrote in a letter to Charles Lyell (dated 20 July, 1861) "*Lady Lyell & you will be glad to hear that Etty improves a little. This is a quite charming place & I have actually walked I believe good two miles out & back, which is a grand feat. – I saw Mr Pengelly the other day & was pleased at his enthusiasm.*" Pengelly was responsible for the main excavations of Kents Cavern.

For those on the cruise from Brixham Harbour there are sights and sounds of the UK's 2nd largest fishing port to enjoy before heading around to Berry Head. On route, in addition to watching out for some of the bays wonderful wildlife look out for the fissures in the grey limestone in filled with the bright red, younger Permian sandstone, these features called "Neptunian Dykes". Take in the incredible view of the Napoleonic Fort and the position of the most southerly guillemot colony in the UK used for monitoring climate change.

Geopark Sightseeing Cruises
 Paignton Pleasure Cruises
 Tel: 01803 529147 or 07767 622727
 (Please note all cruises are subject to tides and weather)



London Bridge natural arch



Geopark cruise



Fishing boat at Berry Head



Hesketh Crescent now the Osborne Hotel



Management Plan Part I - Synopsis

Undeniably, the geological tale behind the English Riviera UNESCO Global Geopark is quite spectacular and one of extremes. From a seascape bathed in warm and beautiful tropical seas of the Marine Devonian to a landscape of arid, barren Permian desert and from our earlier relatives, living in caves, to modern civilisation. The ERUGGp's outstanding historical contribution, both in terms of the development of geological and archaeological sciences is astounding, from the Huttonian Theory to the naming of the Devonian Period by Sedgwick and Murchison and even Pengelley's discoveries influencing worldwide public opinion as to the antiquity of man.

The shape of Tor Bay provided the naval fleet safety during times of crisis and thus was a catalyst for the building of the Napoleonic Forts whilst its sheltered natural harbours led to the growth of what today, is the UK's largest fishing port by catch.

The beauty of the area influenced the early development of the tourism industry thus instigating the requirement for the exploitation of its geological resources in the form of extensive limestone quarrying, in addition to the marble and terracotta industries.

Today, the ERUGGp, inspires our community and has generated enthusiastic support from all sectors. The reason being the Geopark fits so well with all past, present and future and enables all to engage, understand and make better use of the natural and cultural heritage with which we have been blessed, an area worthy of UNESCO recognition.

Part 2 of the plan covers the ERUGGp organisation, governance and management, strategic approach and action plan to ensure it is both sustainable and resilient for the long-term future.



Photos: 1. Berry head CliffView © TCCT / 2. Fishing Fleet Brixham Harbour © ERBIDCo / 3. Torre Abbey © ERBIDCo / 4. Occombe Farm © TCCT

Photos: 1. Bluebell walk in Scadson Woods / 2. Girl Bunting © Mike Langman / 3. Walkers at Roundham © ERBIDCo / 4. Seagrass © Warwick Sanders / 5. Greater Horseshoe Bat © David Wills / 6. Occombe Farm © TCCT / 7. Paignton Geopark © ERBIDCo / 8. Broadsands Beach © ERBIDCo / 9. Great Green Bush Cricket © TCCT / 10. School group at Torquay Museum / 11. Small Blue Butterflies © Stuart Murdoch / 12. Nature Trail Occombe Farm © TCCT / 13. Geopark exploration along the coast © ERBIDCo / 14. Dolphins © J Border / 15. Jewel anemone © underwaterpics.co.uk

Appendix 1 - Geological Conservation Review (GCR) - Principles of Site Selection and Aims

From the outset, of the GCR used the highest scientific standards to identify systematically the key Earth science sites in Britain. The site series would reflect the range and diversity of Great Britain's Earth heritage and each site would ultimately satisfy the legal requirements for notification as a Site of Special Scientific Interest (SSSI) by reason of its geology and physiography. The notification of SSSI's under the National Parks and Access to the Countryside Act 1949 and subsequently under the Wildlife and Countryside Act 1981, is the main mechanism of legal protection in Great Britain.

To achieve these aims, criteria and guidelines were developed. These can be encapsulated in three distinct, but complimentary components:

1. Sites of importance to the international community of Earth scientists
2. Sites that are scientifically important because they contain exceptional features
3. Sites that are nationally important because they are representative of an Earth science feature, event or process which is fundamental to Britain's Earth history

From the outset, the GCR site selection ensures that the geological and geomorphological sites of international importance are included so that our international responsibilities are met. Five main types of internationally important GCR sites can be recognised:

- (i) Time interval or boundary stratotypes
- (ii) Type localities for biozones (rock strata which are characterised by a closely defined fossil content, usually a fossil species) and chronozones (rock strata formed during the time span of the relevant stratotypes)
- (iii) Internationally significant type localities for a particular rock type, mineral or fossil species and outstanding landform examples such as Chesil beach
- (iv) Historically important type localities where rock or time units were first described or characterised, or where great advances in geological theory were first made
- (v) Important localities where geological or geomorphological phenomena were first recognised and described, or where a principle of concept was first conceived or demonstrated

Ref: An introduction to the Geological Conservation Review, geological Conservation Review Series, JNCC

Appendix 2 - Global Geosite Framework Categories and Geological Conservation Review Sites Table

GLOBAL GEOSITE FRAMEWORK	TYPES OF SITE	GCR	COMMENT
Devon (marine) carbonates and clastics (Devon [-Cornwall])(= 'Marine Devonian Rocks, part, / Lyme Bay Coast (Lyme Regis to Start Point)', part, of 1998 Key features)	Exposure sites*: Disused quarries, pits and cuttings, Active quarries and pits, Coastal and river cliffs, Foreshore exposures, Inland outcrops and stream sections. Integrity sites**: Unique mineral, fossil or other geological sites. Moveable geological heritage: Fossils.	No. 421: Babbacombe Cliffs No. 425: Daddyhole No. 468: Dyers Quarry No. 426: Hopes Nose No. 420: Long Quarry No. 471: Lummaton Quarry No. 422: Meadfoot Sea Rd No. 429 New Cut No. 424 Saltern Cove	Devon is the type area for the Devonian System, an interval of Earth history between around 416 and 359 million years ago. Marine rocks with rich invertebrate faunas of this age are only found in Devon, Cornwall and West Somerset in the UK.
Permian-Triassic red-bed sequence (Devon coast)(= 'Lyme Bay Coast (Lyme Regis to Start Point)', part, of 1998 Key Features)	Exposure sites: Disused quarries, pits and cuttings, Active quarries and pits, Coastal and river cliffs, Foreshore exposures. Integrity sites: Unique mineral, fossil or other geological sites. Moveable geological heritage: Fossils.	No. 1496: Oddicombe No. 1504: Roundham Head No. 1503: Saltern Cove No. 1494: Shoalstone	The Permian-Triassic succession between Torbay and Axmouth is the most completely exposed in the UK. It records the initial stages of the development of the Wessex depositional basin and includes an important reptile fauna. Part of this succession is now included within the Dorset and East Devon World Jurassic Coast World Heritage Site.
Late Pleistocene interglacial/glacial, cave/beach sediments (Saalian-Weichselian) [provisionally includes Pleistocene giant mammal/ hominid assemblages] (= 'Quaternary Features', part/ Lyme Bay Coast (Lyme Regis to Start Point)', part, of 1998 Key features)	Integrity sites: Static (fossil) geomorphological sites, Caves and Karst, Unique mineral, fossil or other geological sites. Moveable geological heritage: Fossils.	No. 1312: Kents Cavern	Cave sediments in south Devon, including in Torbay and near Buckfastleigh provide an important record of large mammal faunas and climate changes going back at least 350,000 years.
Late Pleistocene Interglacial (OIS7, 5e) raised beaches (southern England, Cornwall, South Wales) (= 'Quaternary Features', part/ Lyme Bay Coast (Lyme Regis to Start Point)', part, of 1998 Key features)	Integrity sites: Static (fossil) geomorphological sites. Moveable geological heritage: Fossils.	No. 1868: Hopes Nose and Thatcher Rock	Well-developed raised beaches in both south and north-west Devon provide important information on climate and associated sea-level changes.

*Integrity sites = Small, Finite and Irreplaceable. **Exposure sites = Accessible exposures of deposits otherwise extensive but hidden

Appendix 3 - ERUGGp Site Designations and Geological and Geomorphological Descriptions

SITE NAME: Babbacombe cliffs	SITE NO: 1	GCR BLOCK / KEY THEME: Marine Devonian
DESIGNATIONS: GCR (No. 421)	ASSOCIATED SSSI: Babbacombe Cliffs SSSI	
GCR Statement of Interest:		
This locality includes the type section of the Babbacombe Shales, which have yielded a rich goniatite fauna of early Frasnian age. The cliff section is inverted and displays interesting structural features, and the best accessible section through the richly fossiliferous Barton Limestone. This section is of great interest in demonstrating the marked facies change from a high-energy, reef environment of the Barton Limestone to deeper water conditions represented by the Babbacombe Shales.		
SITE NAME: Barcombe Mews Quarry	SITE NO: 2	GCR BLOCK / KEY THEME: Permian-Triassic
DESIGNATIONS: CGS / RIGS	ASSOCIATED SSSI: Not applicable	
Geological / geomorphological features:		
Permian breccia with large angular to sub-rounded clasts of sandstone, limestone. Quartz and slate, set in a bedded, well-cemented, coarse gravel matrix. Traces of cross-bedding indicate an approximately E-W depositional flow. Minor faulting can be seen.		
Reasons for registration as a RIGS sites:		
The site provides an excellent clean exposure of the Permian breccias of the Torbay area in a safe and accessible situation particularly suitable for educational use by younger children. The site also demonstrates the variation in proportion and composition of the rock fragments found in the breccias of the Torbay district.		
SITE NAME: Barton Quarry	SITE NO: 3	GCR BLOCK / KEY THEME: Marine Devonian
DESIGNATIONS: CGS / RIGS	ASSOCIATED SSSI: Berry Head to Sharkham Point SSSI	
Geological / geomorphological features:		
The old quarry, now occupied by development, still shows important exposures of the bioclastic Barton Member of the Torquay Limestone Formation, and effectively forms the type locality of the unit. In the past the site has yielded a rich fauna, not dissimilar to that from the better known Lummaton Quarry, including varied brachiopods, bivalves, gastropods, trilobites and rare ammonoids. Current exposures show rich coral-stromatoporoid assemblages, with the tabulate <i>Thamnopora</i> being particularly abundant. The exposures have also yielded conodont faunas confirming an uppermost varcus to lower assymmetricus biozone age (Upper Givetian).		
Reasons for registration as a RIGS sites:		
The site is of key historical importance as a source of rich late Middle Devonian faunas and has the potential to yield additional material of palaeontological importance. Crucially, it is also effectively the type locality of the Barton Member of the Torquay Limestone Formation, and therefore has regional lithostratigraphical significance. Limited access makes the site primarily a research rather than educational locality. [Torbay High: Torquay Limestone Formation, Barton Member]		

SITE NAME: Berry Head to Sharkham Point	SITE NO: 4	GCR BLOCK / KEY THEME: Marine Devonian, Mineralogy, Variscan structures of south-west England, Quaternary of south-west England, Caves and Karst.
DESIGNATIONS: CGS / RIGS	ASSOCIATED SSSI: Berry Head to Sharkham Point SSSI	
Geological / geomorphological features:		
Marine Devonian: The coastline and adjacent disused quarries between Sharkham Point and Shoalstone Point on the north-west side of Berry Head, show a key section through the changing facies of the Middle Devonian 'Brixham High', including stratotypes for the Sharkham Point and Berry Head members of the Brixham Limestone Formation and the St. Mary's Bay Member of the Nordon Formation. The Sharkham Point Member (early-mid Eifelian) at its type locality includes slaty mudstones with thin beds of shelly crinoidal limestone below, passing upwards through levels with interbedded tuff to thin bedded limestones with abundant stromatoporoids. The Berry Head limestone sequence is then interrupted by a wedge of dark slaty mudrocks of the St. Mary's Bay Member of the Nordon Formation (late Eifelian-late Givetian), which at its type locality - St. Mary's Bay itself - includes thin seams and lenticles of limestone with a shelly fauna including brachiopods, small solitary corals and rare trilobites and cephalopods. Carbonate sedimentation resumes with the Berry Head Member of the Brixham Limestone Formation, well exposed around the Berry Head itself, its type locality, which, although locally showing signs of tectonic distortion, includes a range of facies including bioclastic and stromatoporoid rich levels indicating a reef-like biogenic bank complex.		
Structural geology: The cliffs on the south side of Berry Head show spectacular structures in the Middle Devonian, Berry Head Member of the Brixham Limestone Formation, revealing several phases of deformation. These include gently inclined, northward verging, tight D1 folds refolded by steeply inclined D2 folds.		
Quaternary of south-west England, Caves and Karst: The Devonian limestones of Berry Head include a remarkable sequence of caves with associated deposits, some of which lie below present sea-level, ranging from -15 OD to +29 OD. The caves provide a unique record of marine transgression with 3 levels of horizontal passage development, at -2 to +2 m, +5 to 9 m and 22 to 29 m OD, clearly related to former sea level stands. The morphology of the caves is also typical of passage development at the boundary between fresh and saline waters. Cave sediments are extensive and speleothems have been dated using Uranium series methods, indicating ages between around 107,000 and 332,000 years for the caves.		
Shoalstone Beach, to the west of Berry Head Quarry, where most of the caves have been recorded, includes a raised beach platform at +8.5 m O.D., clearly related to the intermediate level of cave development on Berry Head. The beach is marked by a cobble deposit suggesting an ancient storm deposit.		
Reasons for registration as a RIGS sites:		
Marine Devonian: The area is of prime importance for Middle Devonian stratigraphy and sedimentology, showing the development of carbonate facies associated with the 'Brixham High'. It includes stratotypes for the Brixham Limestone Formation and three lithostratigraphical members: The Sharkham Point Member and Berry Head Member of the former formation and the St. Mary's Bay Member of the Nordon Formation. Accessible exposures, in particular in St. Mary's Bay and around Shoalstone Point give the site a high educational value in addition to its scientific importance. [Brixham High: Brixham Limestone Formation, including Sharkham Point Member and Berry Head Member; Nordon Formation, St. Mary's Bay Member]		
Structural geology: Although not easily accessible, these spectacular folds can be viewed from the south side of the Berry Head Fort, although binoculars are recommended. In this way the site can be incorporated into educational visits to the headland. The features exposed, however, are some of the most dramatic and important structural features in the district.		
Quaternary of south-west England, Caves and Karst: The site is unique in the region, and similar features related to cave development under the influence of changes in sea-level in the Plymouth limestone are either inaccessible or have now been largely destroyed by development. The scientific value of the site is potentially national, although educational use is limited by health and safety considerations.		
SITE NAME: Black Head and Anstey's Cove	SITE NO: 5	GCR BLOCK / KEY THEME: Igneous rocks of south-west England
DESIGNATIONS: CGS / RIGS	ASSOCIATED SSSI: Hope's Nose to Walls Hill SSSI	
Geological / geomorphological features:		
The only significant outcrops of intrusive igneous rocks in the Torbay district are between Black Head and Anstey's Cove, where microgabbros ('dolerite') are intruded into the Upper Devonian Saltern Cove Formation. The intrusions are associated with basic tuffs and believed to be typical of alkaline or sub-alkaline basalts of a within-plate Ocean Island type, as elsewhere in Devon and Cornwall.		
Reasons for registration as a RIGS sites:		
The only significant outcrops of intrusive igneous rocks in the Torbay district, which are readily accessible and therefore suitable for educational use in Anstey's Cove.		

Appendix 3 - ERUGGp Site Designations and Geological and Geomorphological Descriptions

SITE NAME: Breakwater Quarry	SITE NO: 6	GCR BLOCK / KEY THEME: Permian-Triassic
DESIGNATIONS: CGS / RIGS	ASSOCIATED SSSI: Not applicable	
Geological / geomorphological features:		
Middle Devonian limestone, mainly massive and micritic but bioclastic in part. Bedding is obscure, the dip is steep to the SE. Cleavage seen in places dips about 20° NW. The limestone has an irregular palaeokarst surface and is penetrated by deep narrow fissures filled with brown Permian sandstone which contains angular limestone fragments in places, some of large size. Pleistocene/Holocene solution fissures in the limestone are associated with coatings of flowstone. Engineering geological applications include the use of rock bolts for the large scale stabilisation of rock faces in association with steel mesh to prevent falls of smaller rock fragments.		
Reasons for registration as a RIGS sites:		
The quarry provides an excellent demonstration of pre-Permian solution fissures in the Devonian limestone (palaeokarst) with later, Permian, sandstone and limestone fragment infilling. The vertical extent of the fissure is particularly notable. Other useful aspects included structural features and solution fissures with flowstone in the limestone; also engineering application of rock bolts to stabilise faces and the use of mesh to prevent falls of smaller material.		
SITE NAME: Brokenbury Quarry	SITE NO: 7	GCR BLOCK / KEY THEME: Variscan Structures of south-west England
DESIGNATIONS: CGS / RIGS	ASSOCIATED SSSI: Not applicable	
Geological / geomorphological features:		
Middle Devonian limestone. Foliated, micritic, light pinkish grey, partly dolomitised limestone. Most strongly foliated layers are probably more argillaceous and represent bedding. Crinoid stem fragments and traces of burrows in foliated layers. On the east side of the quarry the foliation/bedding dip is about 10° SW. On the west side of the quarry upright folds about 1m in amplitude with a NS trend, deform the earlier foliation. These folds have been partly excavated, possibly for research purposes and are exposed in three dimensions.		
Reasons for registration as a RIGS sites:		
The main interest of the quarry lies in the later folds, which deform the early foliation, and are particularly well exposed at the present time. Later fold structures are seldom seen in inland exposures. The main quarry face provides evidence of the nature of the earlier structure and lithology to which the later folds are related and can assist the overall structural interpretation of the district.		
SITE NAME: Brixham Cavern	SITE NO: 8	GCR BLOCK / KEY THEME: Quaternary of south-west England and Pleistocene Vertebrata
DESIGNATIONS: CGS / RIGS	ASSOCIATED SSSI: Not applicable	
Geological / geomorphological features:		
Quaternary: Brixham Cavern is a historically important source of Pleistocene vertebrate remains, indicating an assemblage similar to that known from Kent's Cavern. The site is a Scheduled Ancient Monument and was formerly operated as a show cave. The cave was discovered in 1858 and subsequently excavated, yielding mammoth, horse, woolly rhinoceros, deer, cave lion, hyaena, bear, amongst other remains.		
Reasons for registration as a RIGS sites:		
Brixham Cavern is a key historical site in Torbay, a former source of rich Pleistocene vertebrate faunas. Access is currently restricted and the cave is privately owned - use is therefore likely to be primarily for research purposes.		

SITE NAME: Chapel Hill	SITE NO: 9	GCR BLOCK / KEY THEME: Permian-Triassic
DESIGNATIONS: CGS / RIGS	ASSOCIATED SSSI: Not applicable	
Geological / geomorphological features:		
Roadside exposure of Permian breccia containing angular to sub-rounded clasts of Devonian limestone, together with some sandstone, volcanic and quartz fragments, in a matrix of red sandy gravel. Rare chert, and possible granitic fragments, also occur. Some limestone clasts contain fossil corals. Bedding traces have a 5° N dip, and imbrication indicates depositional flow from the north. Minor faults occur. Outcrops of Middle Devonian limestone above and to the east of the breccia demonstrate the infilling of Permian palaeotopography, possibly controlled by faulting, by the younger breccia. The limestone is generally massively bedded and bioclastic, with a dip of 60°-70° WSW. Cleaner exposure lies beside paths at the top of the hill show corals and stromatoporoids.		
Reasons for registration as a RIGS sites:		
The site demonstrates the palaeotopographical relationship between the Permian breccia and the underlying Devonian limestone. The excellent breccia exposure on Newton Road is very accessible for study. There is considerable potential for development as a valuable educational resource.		
SITE NAME: Churston Cove / Churston Point	SITE NO: 10	GCR BLOCK / KEY THEME: Marine Devonian
DESIGNATIONS: CGS / RIGS	ASSOCIATED SSSI: Not applicable	
Geological / geomorphological features:		
Cliff and foreshore exposures between Churston Cove and Broad Sands show a thrust-bounded section through the Churston Member (Frasnian), the highest division of the Berry Head Limestone Formation, and constitute the stratotype for the unit. Slaty mudstones interbedded with thinly bedded crinoidal limestones and tuffs pass upwards into medium to massive bedded stromatoporoid-rich limestones, in part dolomitised.		
Reasons for registration as a RIGS sites:		
The area is of regional stratigraphical importance as the type locality of the Churston Member of the Brixham Limestone Formation, and makes the final stages of carbonate sedimentation on the Brixham High. Accessibility gives the site educational value, especially when studied in association with the lower part of the sequence of the Brixham High, within the Sharkham Point to Berry Head CGS (proposed). [Brixham High: Brixham Limestone Formation (including Churston Member)]		
SITE NAME: Crystal Cove	SITE NO: 11	GCR BLOCK / KEY THEME: Structural geology post-Variscan
DESIGNATIONS: CGS / RIGS	ASSOCIATED SSSI: Not applicable	
Geological / geomorphological features:		
Structural geology: Crystal Cove includes a well known exposure of a relatively late (i.e. post-Variscan) north-south fault zone, associated with a remarkable 25 m wide zone crystalline calcite – indicating the presence of a major fluid pathway. The fault zone separates the Goodrington Limestone Member of the Brixham Limestone Formation from sandstones of the Torbay Breccia Formation.		
Reasons for registration as a RIGS sites:		
The remarkable 25 m zone of crystalline calcite may be unique in the region and is a well-known geological feature in the district. Although damaged by mineral collectors, the feature is of educational value, especially due its proximity to Broadsands and Saltern Cove.		
SITE NAME: Daddyhole	SITE NO: 12	GCR BLOCK / KEY THEME: Marine Devonian
DESIGNATIONS: GCR (No: 425)	ASSOCIATED SSSI: Daddyhole SSSI	
GCR Statement of Interest:		
"This site includes the type section of the Devonian Daddyhole Limestone and displays well the characters of this carbonate unit. There is a rich fauna which is well-exposed, and the limestones are noteworthy in containing desiccation cracks, a very uncommon feature in the Torquay Limestone. In Daddyhole Cove an alternating sequence of shales and limestones indicate local facies variations in the late Eifelian, important in interpreting the palaeoecology of the Middle Devonian limestones of the Torbay area. These units are well-displayed in a large recumbent fold."		

Appendix 3 - ERUGGp Site Designations and Geological and Geomorphological Descriptions

SITE NAME: Dyers Quarry	SITE NO: 13	GCR BLOCK / KEY THEME: Marine Devonian
DESIGNATIONS: GCR (No: 468)	ASSOCIATED SSSI: Dyers Quarry SSSI	
GCR Statement of Interest:		
Dyer's Quarry exposes the best sections available of the upper horizons of the Daddyhole Limestone (late Eifelian); horizons which are not exposed at the type section, Daddyhole. There is a rich fauna dominated by corals which can be observed in the quarry face and also on bedding planes on the quarry floor. This locality is of particular interest in showing the presence of corals in their position of growth, the best example in south Devon, and lateral changes in coral growth and species distribution related to the substrate.		
SITE NAME: Goodrington Quarry and Road Cutting	SITE NO: 14	GCR BLOCK / KEY THEME: Marine Devonian
DESIGNATIONS: CGS / RIGS	ASSOCIATED SSSI: Not applicable	
Geological / geomorphological features:		
Middle Devonian (Givetian) limestone. Quarry area: Partly dolomitised, light-grey limestone with slickensided fault-plane surfaces, calcite crystals and stromatoporoids. Road cutting east side: Limestone beds, mainly thickly bedded and dolomitised, interbedded with micritic limestone. Stromatoporoids, corals and other fossils occur. The general dip is about 20° N, with very open, upright folds, at the southern end. Possible low-angle fault/thrust along bedding plane. Permian sandstone-filled fissures occur. Road cutting west side: Detailed examination difficult because of inaccessibility. Possible faults and Permian sandstone-filled fissures visible. The succession as a whole is considered to be a recumbent anticline.		
Reasons for registration as a RIGS sites:		
The site, which is generally readily accessible to all interest groups, shows a valuable range of geological features which have been previously documented. There is considerable potential for future development as a valuable educational resource.		
SITE NAME: Hollicombe Head to Corbyns Head	SITE NO: 15	GCR BLOCK / KEY THEME: Permian-Triassic
DESIGNATIONS: Permian-Triassic	ASSOCIATED SSSI: Not applicable	
Geological / geomorphological features:		
Permian: Foreshore and cliff exposures between Hollicombe Head and Corbyn's Head provide key, readily accessible exposures of conglomerates and sandstones of the Permian 'red bed' sequence of the Torbay Breccia Formation. These exposures include the stratotype of the Corbyn's Head Member at Corbyn's Head. The member is characterised by medium to coarse grained sandstones, commonly cross-bedded and varying in colour from reddish brown to buff and pale greyish, which pass upwards into conglomerates. The latter include clasts of sandstone, quartz and limestone. Thin beds of reddish or greenish mudstone are also present and some show mudcracks. The sandstones indicate deposition in seasonal rivers and the conglomerates suggest more proximal alluvial fan conditions.		
Reasons for registration as a RIGS sites:		
The site shows a sandstone dominated sequence within the breccias and conglomerates of the Torbay Breccia Formation, including the stratotype of the Corbyn's Head Member, of regional lithostratigraphical importance. The area has a high educational potential due to easy access in the heart of the Torbay seafront [Exeter Group: Torbay Breccia Formation (including Corbyn's Head Member)]		
SITE NAME: Hope's Nose to Wall's Hill	SITE NO: 16	GCR BLOCK / KEY THEME: Marine Devonian
DESIGNATIONS: GCR (No: 426, Hopes Nose)	ASSOCIATED SSSI: Hope's Nose to Walls Hill SSSI	
GCR Statement of Interest:		
This site contains excellent exposures of the Devonian Daddyhole Limestone (Eitelian) and displays the typical characteristics of this unit as well as unusual features, such as evidence of pencontemporaneous erosion, within the limestones of the old Hope & Nose quarry. Distinct subfacies can be recognised in the limestones exposed here. A well-known Devonian locality with unrivalled exposures in the Torquay Limestone.		

SITE NAME: Hope's Nose	SITE NO: 17	GCR BLOCK / KEY THEME: Mineralogy of south-west England
DESIGNATIONS: GCR (No. 1725)	ASSOCIATED SSSI: Hope's Nose to Walls Hill SSSI	
GCR Statement of Interest:		
A series of mineralised veins cutting through Devonian limestone are exposed in the rock platform on the eastern side of Hope's Nose. The vein fillings consist mostly of calcite, haematite and dolomite but small quantities of native gold also occur, as fine branching filaments. Recent detailed research has also revealed the presence of very rare palladium minerals (isomertieite and mertieite II). This is the only known occurrence of this assemblage of minerals in Britain, making this a nationally important site for mineralogical structures.		
SITE NAME: Hope's Nose and Thatcher Rock	SITE NO: 18	GCR BLOCK / KEY THEME: Quaternary of south-west England
DESIGNATIONS: GCR, Devon (No: 1868)	ASSOCIATED SSSI: Hope's Nose to Walls Hill SSSI	
GCR Statement of Interest:		
Hope's Nose and Thatcher Rock are key sites for studies of Quaternary stratigraphy and sea-level change. At Hope's Nose a shore platform at 8 m is overlain by cemented raised beach, comprised of cobbles and boulders at its base, fining upwards into bedded sands. Blown sand and hillwash lie above. A similar raised beach occurs on the offshore stack of Thatcher Rock. The beach deposits are particularly important for their assemblages of fossil marine molluscs and foraminifera. Seventeen species of mollusc have been recorded from Hope's Nose and forty-three from Thatcher Rock. The assemblages from both sites are temperate in nature, although that from Thatcher Rock indicates slightly cooler conditions than those of the present day. Amino-acid dating suggests that the Hope's Nose beach relates to oxygen isotope stage 7 (ca. 210,000 years BP). The well-preserved molluscan faunas and the sedimentary detail of the raised beaches are of crucial importance for dating and interpreting Quaternary sea-level changes and related environmental conditions in south-west England.		
SITE NAME: Hopes Nose South	SITE NO: 19	GCR BLOCK / KEY THEME: Variscan Structures of south-west England
DESIGNATIONS: CGS / RIGS	ASSOCIATED SSSI: Hope's Nose to Walls Hill SSSI	
Geological / geomorphological features:		
Structural geology: Exposed in the cliff face close to the raised beach on Hope's Nose is one of Torbay's best known structural geological features - an overturned F1 fold, verging north-west, in thinly bedded limestones and shales of the Daddyhole Member of the Torquay Limestone Formation, associated with a low-angle thrust. A well known structure in the Torbay area.		
Reasons for registration as a RIGS sites:		
A well known structural feature, useful for inclusion in educational visits to Hope's Nose by older groups (due to proximity to a high cliff).		
SITE NAME: Kents Cavern	SITE NO: 20	GCR BLOCK / KEY THEME: Quaternary of south-west England
DESIGNATIONS: GCR (No: 1312)	ASSOCIATED SSSI: Kents Cavern SSSI	
GCR Statement of Interest:		
Kents Cavern is a famous and important Quaternary site. It is significant for studies in palaeontology, dating and stratigraphy and for elucidating environmental and faunal changes during the Quaternary. It has yielded vertebrate remains of Middle and Late Devensian age and is also notable for the presence of deposits that are probably of Middle Pleistocene age.		
SITE NAME: Long Quarry	SITE NO: 21	GCR BLOCK / KEY THEME: Marine Devonian
DESIGNATIONS: GCR (No: 420)	ASSOCIATED SSSI: Hope's Nose to Walls Hill SSSI	
GCR Statement of Interest:		
The Long Quarry area includes the type section of the Devonian Walls Hill Limestone. The best exposure of this stromatoporoid-rich unit can be seen here in the quarry floor. The steep dip of the beds allows an easy bed by bed examination to be made. Within the formation it is possible to recognise four distinct subfacies not seen elsewhere in the Torquay Limestone. The site is unique in its display of the development, growth and form of a stromatoporoid reef.		

Appendix 3 - ERUGGp Site Designations and Geological and Geomorphological Descriptions

SITE NAME: Lummaton Quarry	SITE NO: 22	GCR BLOCK / KEY THEME: Marine Devonian
DESIGNATIONS: GCR (No: 471)	ASSOCIATED SSSI: Lummaton Quarry SSSI	
GCR Statement of Interest:		
<p>This quarry in the Devonian Walls Hill Limestone shows a good example of a stromatoporoid reef. This locality is, however, more important for its exposure of the lower horizons of the overlying Barton Limestone, the Lummaton Shell Beds Member. This unit comprises discontinuous pockets and lenses containing an extremely rich shelly fauna of Givetian age. Although the exact position and extent of the outcrop varies with quarrying operations, this locality is now unique as other exposures of the Lummaton Shell Beds are no longer available. A key palaeontological site in the Torquay Limestone.</p>		
SITE NAME: Meadfoot Sea Road	SITE NO: 23	GCR BLOCK / KEY THEME: Marine Devonian
DESIGNATIONS: GCR (No: 422)	ASSOCIATED SSSI: Meadfoot Sea Road SSSI	
GCR Statement of Interest:		
<p>This locality forms the type section of the Devonian Meadfoot Beds, of the old terminology, and displays lithological and palaeontological characters typical of the Meadfoot facies of the Meadfoot Group shallow water, outer shelf sediments. In addition to being the best locality displaying the Meadfoot facies, the east end of the site has yielded interesting sedimentary structures which have not been recorded elsewhere in the Meadfoot Group.</p>		
SITE NAME: New Cut	SITE NO: 24	GCR BLOCK / KEY THEME: Marine Devonian
DESIGNATIONS: GCR (No: 429)	ASSOCIATED SSSI: New Cut, Lincombe Drive SSSI	
GCR Statement of Interest:		
<p>The New Cut provides the best exposure displaying the lithological and palaeontological characters of the Staddon facies of the Devonian Meadfoot Group. The composition of the brachiopod fauna and the presence of large numbers of homalonotid trilobites, unique to this locality in Britain, indicate a near-shore, inner shelf environment, which contrasts with the deeper water facies typical of most of the Meadfoot Group in the Torbay area. A unique palaeontological locality.</p>		
SITE NAME: Oddicombe	SITE NO: 25	GCR BLOCK / KEY THEME: Permian-Triassic
DESIGNATIONS: GCR (No: 1496, Oddicombe)	ASSOCIATED SSSI: Babbacombe Cliffs SSSI	
GCR Statement of Interest:		
<p>Here the Oddicombe Breccias of Permian age are faulted against the Devonian limestones of Petit Tor. The breccias are poorly sorted sediments and are arranged in crude sheet-like spreads of sediments, (in fining-upwards units) which were deposited by ephemeral floods. Imbrication of particles in some finer units indicates fluvial transport towards the east. The site also includes a cavity and fissure system cut into the limestone and filled by Permian sandstones and siltstones.</p>		

SITE NAME: Petitor, Maidencombe	SITE NO: 26	GCR BLOCK / KEY THEME: Marine Devonian and Permian
DESIGNATIONS: CGS / RIGS	ASSOCIATED SSSI: Not applicable	

Geological / geomorphological features:

Marine Devonian: The site includes the disused Petit Tor Quarry and adjacent coastal exposures dominated by pale stromatoporoid-rich limestones of the Walls Hill Member of the Torquay Limestone Formation (Givetian), overlain to the north by reddish shales of the Saltern Cove Formation (Frasnian). The limestones also yield a scattered fauna of rugose and tabulate corals and a middle varcus Biozone conodont fauna, have a solution cavities in their upper surface which occasionally contain pale-pink flinty or slaty limestones or slates. The latter have been interpreted as an Upper Devonian infill and have been reported to have formerly yielded orthocone cephalopods. The overlying mudstones of the Saltern Cove Formation show deformation but apparently include a basal red nodular limestone level with Frasnian conodonts and very rare ammonoids; they are in turn overlain, unconformably, by a limestone breccia at the base of the Watcombe Formation, the Petit Tor Member.

Permian: The area shows a virtually unbroken sequence through the upper sequence of Permian deposits in the area, belonging to the Watcombe, Oddicombe and Teignmouth Breccia Formations. The sequence rests unconformably on Upper Devonian Saltern Cove Formation, the contact being marked by the coarse limestone breccias of the Petit Tor Member, at its type locality. This unit includes limestone blocks up to several metres across in a pebbly and sandy matrix; it is interpreted as a local talus deposit. Higher levels in the formation include muddy siltstone with sand and fine breccia below with mudstone and siltstone above – these relatively soft lithologies give rise to large landslip systems immediately north of Petit Tor. The succeeding Oddicombe Breccia Formation includes rounded clasts dominated by Devonian limestone with some Carboniferous sandstone and other rocks in a silty-sand matrix and passes laterally, northwards into the Teignmouth Breccia Formation.

Reasons for registration as a RIGS sites:

Marine Devonian: The Petit Tor area shows the final stages of evolution of the Middle Devonian 'Torquay High', with the apparent development of palaeo-karstic surfaces at the top of the Torquay Limestone Formation, infilled with Frasnian sediments. Stratigraphical evidence also supports an intra-Devonian non-sequence, with the Barton Member being absent and the Saltern Cove Formation apparently resting directly on the Wall's Hill Member of the Torquay Limestone Formation. The area is of potential educational value.

Permian: The site shows the lowest part of the upper Permian sequence of Torbay, separated by a non-sequence from the distinct Torbay Breccia Formation sequence below. It includes the stratotype of the Watcombe Formation, with the Petit Tor Member at its base, and key exposures of the conformable passage into the Oddicombe Breccia Formation above. Exposures are in places readily accessible and therefore have educational potential. [Exeter Group: Watcombe Formation (including Petit Tor Member), Oddicombe Breccia Formation, Teignmouth Breccia Formation].

SITE NAME: Quarry Woods Quarry	SITE NO: 27	GCR BLOCK / KEY THEME: Marine Devonian
DESIGNATIONS: CGS / RIGS	ASSOCIATED SSSI: Not applicable	

Geological / geomorphological features:

Lower Devonian Staddon Grit. The main worked face shows a bed of tough, red-brown, fine grained, micaceous sandstone 1.5m thick, associated above and below with thin beds of reddened slate. The sandstone is jointed and shows slickensides associated with a minor fault. The bedding dips at 55° south.

Reasons for registration as a RIGS sites:

The quarry provides a good exposure of the thickly bedded sandstone of the Staddon Grit and the thin slaty beds between. It demonstrates the sandstone lithology, together with the dip and strike of bedding. If the site was suitably cleared it should be possible to demonstrate the soil profile of the ground on which the woodland is situated and the transition from weathered to solid rock.

SITE NAME: Roundham Head	SITE NO: 28	GCR BLOCK / KEY THEME: Permian-Triassic
DESIGNATIONS: GCR (No: 1504)	ASSOCIATED SSSI: Roundham Head SSSI	

GCR Statement of Interest:

This is the type section of the Permian Tor Bay Breccias. These here include a variety of fluvial breccias, in which types formed during ephemeral sheet floods are the most abundant. On the south side of the headland are interbedded aeolian sands showing palaeowind directions towards the north-west. This contrasts with the directions of fluvial transport, deduced from sedimentary structures such as imbrication and cross-bedding in the breccias, which was towards the south-east. A key site for demonstrating Permian sedimentary environments.

Appendix 3 - ERUGGp Site Designations and Geological and Geomorphological Descriptions

SITE NAME: Saltern Cove	SITE NO: 29	GCR BLOCK / KEY THEME: Marine Devonian
DESIGNATIONS: GCR (No: 424)	ASSOCIATED SSSI: Saltern Cove SSSI	
GCR Statement of Interest:		
The Saltern Cove area, including the north end of Shell Cove and the south end of Waterside Cove, displays an extensive section through the Upper Devonian, and includes interesting structures, and the richly fossiliferous Saltern Cove Goniatite Bed. The Lower Devonian beds exposed in Waterside Cove are a good example of the Staddon facies of the Meadfoot Group and are richly fossiliferous. Waterside Cove also displays well the unconformable contact between the Lower Devonian and the overlying Permian beds. One of the most important Upper Devonian stratigraphic localities in Britain.		
SITE NAME: Saltern Cove	SITE NO: 30	GCR BLOCK / KEY THEME: Permian-Triassic
DESIGNATIONS: GCR (No: 1503)	ASSOCIATED SSSI: Saltern Cove SSSI	
GCR Statement of Interest:		
At this locality coarse Permian fluvial breccias rest unconformably on Devonian slates. The unconformity surface is very clearly seen as a cast on the base of the breccias. These contain much locally-derived material and are arranged in poorly organised, fining-upwards and sedimentary sequences. The coarsest Permian beds occur immediately above the unconformity. A key site showing a regionally significant unconformity.		
SITE NAME: Sharkham Iron Mine	SITE NO: 31	GCR BLOCK / KEY THEME: Mineralogy
DESIGNATIONS: CGS / RIGS	ASSOCIATED SSSI: Berry Head to Sharkham Point SSSI	
Geological / geomorphological features:		
Sharkham Iron Mine is a remarkable but little known geological site. The deposit is characterised by hematite replacement of Devonian limestones, associated with limestone breccias and localised developments of botryoidal goethite, limonite and hematite. Some surfaces show patches and radiating crystals of white and pink barite. The source of the iron was almost certainly from Permian 'red beds' in the area, probably via circulating hot fluids migrating along fractures. The process of replacement is likely to be similar to that known in South Wales, where iron minerals replace zones in Lower Carboniferous limestones close to an unconformity with Triassic red-beds. Although the former open-cast workings are largely filled in, good exposures remain in the coastal slope.		
Reasons for registration as a RIGS sites:		
The former mine workings reveal a form of mineralisation that is virtually unique in the region, and which postdates the better known Variscan phase of metallogenesis in south-west England. An important site with an associated cultural significance, although requiring improvements to access to realise its full educational potential.		
SITE NAME: Shoalstone	SITE NO: 32	GCR BLOCK / KEY THEME: Permian-Triassic
DESIGNATIONS: GCR (No: 1494)	ASSOCIATED SSSI: Berry Head to Sharkham Point SSSI	
GCR Statement of Interest:		
The wave cut platform here exposes two sets of red sandstone filled fissures (dykes). Some of the fissures are lined by large sparry calcite crystals. The fissure cut into the Devonian Torquay Limestone and they mark the initial stages of continental deposition in the Permo-Triassic basin of south-west England on a basement of much older Palaeozoic rocks.		

Appendix 4 - Local Sites of wildlife and Geological Interest

DESIGNATION	TOWN	DESIGNATION	TOWN
ANCIENT WOODLANDS INVENTORY (AWI)			
Clennon Hill Wood	PAIGNTON	Churston Point to Elberry Cove	BRIXHAM
Rams Hill Copse	PAIGNTON	Churston Railway	BRIXHAM
Big Wood	BRIXHAM	Elberry Cove to Churston	BRIXHAM
Barn Copse	BRIXHAM	Galmpton Common	BRIXHAM
The Grove/Ball Copse	BRIXHAM	Lupton Park	BRIXHAM
COUNTY WILDLIFE SITE (CWS)			
Ashleigh	TORQUAY	Sharkham Point	BRIXHAM
Black Head (part)	TORQUAY	Southdown & Woodhuish (Yards Lane to Southdown)	BRIXHAM
Cockington Court	TORQUAY	The Grove	BRIXHAM
Corbyn Head/ Livermead Head	TORQUAY	LOCAL NATURE RESERVE (LNR)	
Daddyhole Cove to Peaked Tor Cove	TORQUAY	Occombe Farm & Scadson Woods	PAIGNTON
Ilsham Marine Drive	TORQUAY	Occombe Valley	PAIGNTON
Lower Gabwell Fields (Labrador Bay)	TORQUAY	Sugar Loaf Hill & Saltern Cove	PAIGNTON
Maidencombe	TORQUAY	OTHER SITE OF WILDLIFE INTEREST (OSWI)	
Petit Tor to Watcombe Coast	TORQUAY	Asheldon Copse (part)	TORQUAY
Smalldon Lane & Easterfield Lane	TORQUAY	Black Head (part)	TORQUAY
St. Marychurch Downs	TORQUAY	Brunel Woods	TORQUAY
Thatcher Point (part)	TORQUAY	Burial Grounds to Stoodley Knowle	TORQUAY
Torquay Golf Course	TORQUAY	Chapel Hill	TORQUAY
Blue Waters Drive	PAIGNTON	Chelston Slopes to Sherwell Valley	TORQUAY
Broadsands Marsh	PAIGNTON	Cockington Court	TORQUAY
Clennon Ponds	PAIGNTON	Daison Wood	TORQUAY
Clennon Woods	PAIGNTON	Edginswell	TORQUAY
Occombe Woods West	PAIGNTON	Great Hill	TORQUAY
Ramshill (Westerland Way)	PAIGNTON	Lincombe Slopes	TORQUAY
Tor Rocks	PAIGNTON	Mainline Railway	TORQUAY
Berry Head Farm (part)	BRIXHAM	Marldon Road	TORQUAY
Churston Ferrers	BRIXHAM	Mincent Hill	TORQUAY
		Rainbow Fields	TORQUAY
		Scadson Plantation/ Ten Acre Brake	TORQUAY

Appendix: List of supporting URLs

DESIGNATION	TOWN	DESIGNATION	TOWN
Shiphay Hospital	TORQUAY	Yalberton Stream	PAIGNTON
Sladnor Park (part)	TORQUAY	Alston Lane	BRIXHAM
Stantaway Hill	TORQUAY	Battery Grounds	BRIXHAM
Stentiford Hill	TORQUAY	Berry Head Farm	BRIXHAM
Torbay Ring Road	TORQUAY	Brokenbury Quarry, Churston Ferrers	BRIXHAM
Warberry Copse	TORQUAY	Churston Quarry	BRIXHAM
Windmill Hill	TORQUAY	Kennels Road	BRIXHAM
Brake Copse	PAIGNTON	Manor Farm, Galmpton	BRIXHAM
Dartmouth Road	PAIGNTON	Mudstone Lane	BRIXHAM
Grange Farm	PAIGNTON	New Road - Monksbridge	BRIXHAM
Higher Blagdon Woods - Butshill	PAIGNTON	Rydons	BRIXHAM
Lower Blagdon Woods	PAIGNTON	UNCONFIRMED WILDLIFE SITE (UWS)	
Lower Yalberton	PAIGNTON	Asheldon Copse (part)	TORQUAY
Meadowside	PAIGNTON	Barton West	TORQUAY
Ocombe Woods East	PAIGNTON	Sladnor Park (part)	TORQUAY
Paignton Zoo	PAIGNTON	Thatcher Point (part)	TORQUAY
Primley Woods	PAIGNTON	Torre Abbey	TORQUAY
Shorton Woods	PAIGNTON	Walls Hill	TORQUAY
Sugar Loaf Hill	PAIGNTON	Broomball Plantation	PAIGNTON
Torbay to Dartmouth Railway	PAIGNTON	Highfield Crescent	PAIGNTON
Waddeton Woods (part)	PAIGNTON	Waddeton Woods (part)	PAIGNTON
White Rock	PAIGNTON	Stoke Hill Road & Whitehill Lane	PAIGNTON
Yalberton Quarry	PAIGNTON		

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[Babbacombe Cliffs \(1976, amended 1986\)](https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1001340&SiteName=Babbacombe%20Cliffs&countyCode=11&responsiblePerson=&SeaArea=&IFCAArea=)

<https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1001340&SiteName=Babbacombe%20Cliffs&countyCode=11&responsiblePerson=&SeaArea=&IFCAArea=>

[Berry Head to Sharkham Point \(1952, amended 1986, notified National Nature Reserve 2000\)](https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1001416&SiteName=Berry%20Head%20&countyCode=11&responsiblePerson=&SeaArea=&IFCAArea=)

<https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1001416&SiteName=Berry%20Head%20&countyCode=11&responsiblePerson=&SeaArea=&IFCAArea=>

[Daddyhole \(1988\)](https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1000084&SiteName=Daddyhole&countyCode=11&responsiblePerson=&SeaArea=&IFCAArea=)

<https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1000084&SiteName=Daddyhole&countyCode=11&responsiblePerson=&SeaArea=&IFCAArea=>

[Dyer's Quarry \(1988\)](https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1001122&SiteName=Dyer's)

<https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1001122&SiteName=Dyer's>

[Hope's Nose to Walls Hill \(1952\)](https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1000812&SiteName=Hope%27s%20Nose&countyCode=11&responsiblePerson=&SeaArea=&IFCAArea=)

<https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1000812&SiteName=Hope%27s%20Nose&countyCode=11&responsiblePerson=&SeaArea=&IFCAArea=>

[Kent's Cavern \(1952, extended 1975 & 1993\)](https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1000875&SiteName=Kent%27s%20Cavern&countyCode=11&responsiblePerson=&SeaArea=&IFCAArea=)

<https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1000875&SiteName=Kent%27s%20Cavern&countyCode=11&responsiblePerson=&SeaArea=&IFCAArea=>

[Lummaton Quarry \(1952\)](https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1000990&SiteName=Lummaton%20Quarry&countyCode=11&responsiblePerson=&SeaArea=&IFCAArea=)

<https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1000990&SiteName=Lummaton%20Quarry&countyCode=11&responsiblePerson=&SeaArea=&IFCAArea=>

[Meadfoot Sea Road \(1987\)](https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1001519&SiteName=Meadfoot&countyCode=11&responsiblePerson=&SeaArea=&IFCAArea=)

<https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1001519&SiteName=Meadfoot&countyCode=11&responsiblePerson=&SeaArea=&IFCAArea=>

[New Cut, Torquay \(1996\)](https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S2000118&SiteName=New%20Cut&countyCode=11&responsiblePerson=&SeaArea=&IFCAArea=)

<https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S2000118&SiteName=New%20Cut&countyCode=11&responsiblePerson=&SeaArea=&IFCAArea=>

[Roundham Head \(1974, amended 1986\)](https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1003052&SiteName=Roundham%20Head&countyCode=11&responsiblePerson=&SeaArea=&IFCAArea=)

<https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1003052&SiteName=Roundham%20Head&countyCode=11&responsiblePerson=&SeaArea=&IFCAArea=>

[Saltern Cove \(1952, extended 1986\)](https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1002967&SiteName=Saltern&countyCode=11&responsiblePerson=&SeaArea=&IFCAArea=)

<https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1002967&SiteName=Saltern&countyCode=11&responsiblePerson=&SeaArea=&IFCAArea=>

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[SSSI: Ocombe](https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1006369&SiteName=Ocombe&countyCode=11&responsiblePerson=&SeaArea=&IFCAArea=)

<https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1006369&SiteName=Ocombe&countyCode=11&responsiblePerson=&SeaArea=&IFCAArea=>

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[Prehistoric Field System at Walls Hill](https://historicengland.org.uk/listing/the-list/list-entry/1019134)

<https://historicengland.org.uk/listing/the-list/list-entry/1019134>

[Chapel of St Michael](https://historicengland.org.uk/listing/the-list/list-entry/1206749)

<https://historicengland.org.uk/listing/the-list/list-entry/1206749>

[Berry Head Fort and battery and Hardy's Head Battery](https://historicengland.org.uk/listing/the-list/list-entry/1017322)

<https://historicengland.org.uk/listing/the-list/list-entry/1017322>

[World War II Emergency Coastal Battery and remains of a Victorian practice battery at Battery Gardens](https://historicengland.org.uk/listing/the-list/list-entry/1020411)

<https://historicengland.org.uk/listing/the-list/list-entry/1020411>

[Bishop's Palace](https://historicengland.org.uk/listing/the-list/list-entry/1020764)

<https://historicengland.org.uk/listing/the-list/list-entry/1020764>

[Torre Abbey](https://historicengland.org.uk/listing/the-list/list-entry/1009302)

<https://historicengland.org.uk/listing/the-list/list-entry/1009302>

[Broadsands Chambered Tomb](https://historicengland.org.uk/listing/the-list/list-entry/1019132)

<https://historicengland.org.uk/listing/the-list/list-entry/1019132>

[Kents Cavern](https://historicengland.org.uk/listing/the-list/list-entry/1010745)

<https://historicengland.org.uk/listing/the-list/list-entry/1010745>

[Windmill Cave](https://historicengland.org.uk/listing/the-list/list-entry/1008681)

<https://historicengland.org.uk/listing/the-list/list-entry/1008681>

[Ashhole Cavern](https://historicengland.org.uk/listing/the-list/list-entry/1019133)

<https://historicengland.org.uk/listing/the-list/list-entry/1019133>

[Two prehistoric hilltop enclosures, a ditch system and four bowl barrows, Barton Pines](https://historicengland.org.uk/listing/the-list/list-entry/1020162)

<https://historicengland.org.uk/listing/the-list/list-entry/1020162>

[Bowl Barrows at Beacon Hill](https://historicengland.org.uk/listing/the-list/list-entry/1020164)

<https://historicengland.org.uk/listing/the-list/list-entry/1020164>

Appendix: List of supporting URLs

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[24 designated conservation areas](https://www.torbay.gov.uk/planning-and-building/caal)

<https://www.torbay.gov.uk/planning-and-building/caal>

[Devon Historic Environment Viewer](https://www.devon.gov.uk/historicenvironment/the-devon-historic-environment-record/)

<https://www.devon.gov.uk/historicenvironment/the-devon-historic-environment-record/>

[Parish Church of All Saints](https://britishlistedbuildings.co.uk/101280043-parish-church-of-all-saints-st-marychurch-ward)

<https://britishlistedbuildings.co.uk/101280043-parish-church-of-all-saints-st-marychurch-ward>

[Parish Church of St John the Baptist](https://britishlistedbuildings.co.uk/101195097-parish-church-of-st-john-the-baptist-roundham-with-hyde-ward)

<https://britishlistedbuildings.co.uk/101195097-parish-church-of-st-john-the-baptist-roundham-with-hyde-ward>

[Parish Church of St John the Evangelist](https://britishlistedbuildings.co.uk/101206814-parish-church-of-st-john-the-evangelist-wellswood-ward)

<https://britishlistedbuildings.co.uk/101206814-parish-church-of-st-john-the-evangelist-wellswood-ward>

[Roman Church of Our Lady, Help of Christians and St Denis](https://britishlistedbuildings.co.uk/101206830-roman-church-of-our-lady-help-of-christians-and-st-denis-st-marychurch-ward)

<https://britishlistedbuildings.co.uk/101206830-roman-church-of-our-lady-help-of-christians-and-st-denis-st-marychurch-ward>

[The Spanish Barn, Torre Abbey](https://britishlistedbuildings.co.uk/101280012-the-spanish-barn-torre-abbey-tormohun-ward)

<https://britishlistedbuildings.co.uk/101280012-the-spanish-barn-torre-abbey-tormohun-ward>

[Torre Abbey](https://britishlistedbuildings.co.uk/101206852-torre-abbey-tormohun-ward)

<https://britishlistedbuildings.co.uk/101206852-torre-abbey-tormohun-ward>

[Blatchcombe Ward \(39 buildings\)](https://britishlistedbuildings.co.uk/england/blatchcombe-ward-torbay)

<https://britishlistedbuildings.co.uk/england/blatchcombe-ward-torbay>

[Brixham \(208 buildings\)](https://britishlistedbuildings.co.uk/england/brixham-torbay)

<https://britishlistedbuildings.co.uk/england/brixham-torbay>

[Churston-with-Galmpton Ward \(39 buildings\)](https://britishlistedbuildings.co.uk/england/churston-with-galmpton-ward-torbay)

<https://britishlistedbuildings.co.uk/england/churston-with-galmpton-ward-torbay>

[Clifton-with-Maidenway Ward \(9 buildings\)](https://britishlistedbuildings.co.uk/england/clifton-with-maidenway-ward-torbay)

<https://britishlistedbuildings.co.uk/england/clifton-with-maidenway-ward-torbay>

[Cockington-with-Chelston Ward \(63 buildings\)](https://britishlistedbuildings.co.uk/england/cockington-with-chelston-ward-torbay)

<https://britishlistedbuildings.co.uk/england/cockington-with-chelston-ward-torbay>

[Ellacombe Ward \(28 buildings\)](https://britishlistedbuildings.co.uk/england/ellacombe-ward-torbay)

<https://britishlistedbuildings.co.uk/england/ellacombe-ward-torbay>

[Goodrington-with-Roselands Ward \(3 buildings\)](https://britishlistedbuildings.co.uk/england/goodrington-with-roselands-ward-torbay)

<https://britishlistedbuildings.co.uk/england/goodrington-with-roselands-ward-torbay>

[Preston Ward \(24 buildings\)](https://britishlistedbuildings.co.uk/england/preston-ward-torbay)

<https://britishlistedbuildings.co.uk/england/preston-ward-torbay>

[Roundham-with-Hyde Ward \(92 buildings\)](https://britishlistedbuildings.co.uk/england/roundham-with-hyde-ward-torbay)

<https://britishlistedbuildings.co.uk/england/roundham-with-hyde-ward-torbay>

[Shiphay-with-the-Willows Ward \(19 buildings\)](https://britishlistedbuildings.co.uk/england/shiphay-with-the-willows-ward-torbay)

<https://britishlistedbuildings.co.uk/england/shiphay-with-the-willows-ward-torbay>

[St Mary's-with-Summercombe Ward \(1 buildings\)](https://britishlistedbuildings.co.uk/england/st-marys-with-summercombe-ward-torbay)

<https://britishlistedbuildings.co.uk/england/st-marys-with-summercombe-ward-torbay>

[St Marychurch Ward \(54 buildings\)](https://britishlistedbuildings.co.uk/england/st-marychurch-ward-torbay)

<https://britishlistedbuildings.co.uk/england/st-marychurch-ward-torbay>

[Tormohun Ward \(134 buildings\)](https://britishlistedbuildings.co.uk/england/tormohun-ward-torbay)

<https://britishlistedbuildings.co.uk/england/tormohun-ward-torbay>

[Watcombe Ward \(9 buildings\)](https://britishlistedbuildings.co.uk/england/watcombe-ward-torbay)

<https://britishlistedbuildings.co.uk/england/watcombe-ward-torbay>

[Wellswood Ward \(143 buildings\)](https://britishlistedbuildings.co.uk/england/wellswood-ward-torbay)

<https://britishlistedbuildings.co.uk/england/wellswood-ward-torbay>

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