



NEWSLETTER

NUMBER 63**January 2014****Iontaobhas Oidhreacht Mianadóireachta na hEireann****Mining Heritage Trust of Ireland****DIARY DATES 2014**

- Feb 8-9 Cave Surveying Workshop, Co. Fermanagh:
<http://www.caving.ie/2014/01/cave-surveying-workshop-last-few-places/>
- Feb 12-13 Digital Past, New technologies in heritage, interpretation and outreach, St George's Hotel, Llandudno, Wales. See <http://digitalpast14.blogspot.ie/>
- Feb 21 Mountainviews/Walkers Association of Ireland Gathering, short talk by Martin Critchley and Sharron Schwartz: 'Walking Under our Mountains: A Mine Explorer's Mountainviews', 7.30pm Landsdowne Hotel, 27 - 29 Pembroke Road, Dublin 4
- Feb 22-23 Cave Surveying Group Paperless Surveying Course, Yorkshire.
<http://cavesurveying.org.uk/> Contact Andy Chapman for more details:
andychapm@googlemail.com
- Mar 8-9 MHTI Field Trip to County Antrim. See inside for details**
- Apr 12-13 Historical Metallurgy Society Spring Meeting, Blarney, Co. Cork.
See <http://hist-met.org/>
- Apr 26-27 MHTI AGM at Killarney and Ross Island Field Trip. See inside for details**
- May 10 Industrial Heritage Association of Ireland Conference: "Irish Industry and Railways Heritage", Louth County Museum, Jocelyn Street, Dundalk, 10.30-16.30:
<http://www.ihai.ie/events.htm>
- Jul 6-13 10th International Mining History Congress 'Past Heritages; Future Prospects' and 20th Australasian Mining History Association Conference, Charters Towers, Queensland, Australia. <http://www.ct2014miningcongress.com/programme.html> Paper abstracts to be submitted before 31 March 2014.
- Jul 12-13 MHTI Field Trip to the Connaught Coalfield**
- Jul 25-27 NAMHO Conference, 'Mining Technology: technical innovation in the extractive industries', Bangor, Gwynedd, North Wales. For details see:
<http://www.namho.org/news.php#26>
- Aug 23-31 Heritage Week <http://www.heritageweek.ie/>
- Sept 5-8 MHTI Overseas Field Trip to the Banská Štiavnica World Heritage Site in Slovakia. See inside for the draft itinerary**
- Sept 13-14 European Heritage Open Days, in Northern Ireland
<http://www.discovernorthernireland.com/niea/ehod.aspx>

Check with organisers of meetings before making any travel bookings in case of change of dates or arrangements. MHTI lists events in good faith but is not responsible for errors or changes made. For MHTI field trips please register your interest, without commitment, so the organiser can keep you informed.

WWW.MHTI.COM

MHTI MEMBERS' BUSINESS

2014 ANNUAL GENERAL MEETING (AGM)

Notice is hereby given that an Annual General Meeting of the Mining Heritage Trust of Ireland Ltd. will be held on Saturday 26 April at 4.00 pm at the Killarney National Park Education Centre, County Kerry (further details on p.4)

Agenda

- 1) Presentation of the accounts for 2013
 - 2) To appoint auditors
 - 3) To elect Directors
- Signed: Nigel Monaghan, Company Secretary

Proxy Form

If you are unable to attend but wish to have a proxy form, please let us know and we will supply directly. Contact Nigel Monaghan: nmonaghan@museum.ie

Alastair Lings, Stephen Callaghan and Barry Flannery are resigning at the AGM, as required by the Memo and Articles of the MHTI. Alastair and Stephen are willing to stand for re-election. We are always keen to receive nominations from people who would like to become Directors of the MHTI and who are willing to actively engage in projects or responsibilities. Contact Nigel Monaghan if interested.

MHTI Journal 2013

This is shortly to be published and contains three quality articles from a range of authors, some writing in our journal for the first time. Thank you to all of our contributors.

2014 Membership Subscriptions

Membership subscriptions for 2014 are now due. You will be receiving a form from our Membership Secretary shortly.

Board of Directors

The Board are pleased to welcome Ewan Duffy back as a Director. Ewan joined MHSI in 1999 and has served as a director on two previous occasions.

Appointment of New Bibliographer

Paul Rondelez has kindly volunteered to take on the role of Bibliographer from late January.

Revision of the County Donegal Heritage Plan 2014-2019:

In response to a request for public consultation on revisions to the County Donegal Heritage Plan, in December the MHTI made the following submission:

Objective 2.16 of the existing Heritage Plan is to "Establish a database of, and disseminate information on, industrial heritage in the county". We would like to see an inventory made of all mining and significant quarrying sites in the county. This can

be achieved by reference to the maps and publications of the Geological Survey of Ireland, the online historical maps of Ordnance Survey Ireland, and by fieldwork. We would like to see surveys made of surface remains at Carrowtrasna Talc Mine (Church Hill) and Crohy Head Talc Mine (Dungloe), which would aid interpretation of these sites. This would require reference to the online historical maps of Ordnance Survey Ireland, and the use of surveying equipment and drafting software. MHTI, an entirely voluntary organisation, could carry out these actions. We have volunteer time, expertise, and surveying equipment available, but no funding. The sandstone mines at Drumkeelan Lower Quarry, Mountcharles date back to about 1820. In places they extend nearly fifty metres from surface and they are the only significant examples of stone mining in Ireland. We recommend that the mines are considered for inclusion in the county's Record of Protected Structures. The nearby mine workings in Drumkeelan Upper Quarry have been destroyed by recent quarrying.

MHTI Wins Heritage Award

The Industrial Heritage Association of Ireland have decided to make one of their annual awards (a framed certificate) to the MHTI in recognition of the long term commitment of our group to industrial heritage. The ceremony will take place on Thursday 12 February at 6.30 pm in the ESB offices on the corner of Merrion Square, Dublin.

Underground Exploration: MHTI Policy

A recent article was published online in an e-journal mentioning the MHTI in relation to the activities of a group of mine explorers in Ireland. We have no connection with this group and felt it necessary to correct this error and to reiterate our policy on responsible underground exploration. MHTI always seeks the agreement of land and mine owners (if traceable) before visiting mine workings. Many old mines in the Republic are owned by the State and managed by the Exploration & Mining Division (EMD) of the Department of Communications, Energy and Natural Resources (DCENR). MHTI has the Department's consent to visit old mines that they manage, subject to an indemnity, insurance cover and advanced notice being given to the Department. The Department are reviewing this general consent and have requested MHTI to give plenty of advanced notice of proposed underground visits and to reduce the number of visits to a minimum. They have also asked that no visits are made into the 850' Level at Tigroney Mine, Avoca, until the cracked timber supports have been inspected and a safety assessment has been made. MHTI currently has no plans to visit underground workings that are managed by DCENR. If you want to visit specific underground workings, please contact a Director so that we can get the necessary approvals and add the visit to our programme of events. <http://www.thejournal.ie/abandonedmines-of-ireland-1232200-Jan2014/>

EVENTS AND NOTICES

MHTI County Antrim Field Trip Saturday 8th – Sunday 9th March 2014

This field trip will explore laterite (iron) and bauxite (aluminium) mining sites, limestone quarries and their associated tramways, north and east of Ballymena. The laterite and bauxite is produced by the weathering of basalt lava flows. Around 5 MT of iron ore was mined from 1867 until 1925, and bauxite production continued until 1945. The Geological Survey of Northern Ireland has recorded 780 adits and shafts linked to iron working, mainly in Co. Antrim.

The location and basic information on the workings can be found on the GeoIndex viewer:

http://maps.bgs.ac.uk/gsni_geoindex/ Industrial heritage sites are shown on the Northern Ireland Environment Agency map viewer: <http://maps.ehsni.gov.uk/MapView/Default.aspx>

Coordinator

Alastair Lings

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Mobile: +44 7763 850087

In case of any changes to the programme, please let the coordinator know if you are interested in attending: no commitment is required.

Programme

Saturday 8 March

Meet at 10:30 at the picnic site approximately 500m southwest of Cargan on the A43 Ballymena to Glenariff road, D 162 174, Discoverer sheet 9, or Glens of Antrim Activity Map.

Subject to the consent of landowners we will visit the iron ore smelter (1844) at Newtown Crommelin, Engine House and mineral processing works at Mountcashel Mines, Magazine at Parkmore Mines, and the loading bay at Cloghcor Mine, Glenariff.

Sunday 9 March

Meet at 10:00 at the picnic site and toilet near the sailing club on the A2 coast road on the south side of Cushendall, D 244 270, Discoverer sheet 5, or Glens of Antrim Activity Map.

Subject to the consent of landowners we will visit Red Bay Pier, Milltown Pier, White Arch Bridge and nearby miners' houses, the inclined plane at Ardclinnis Mine, Gortin Quarry and the Carnlough Lime Company tramways.

Equipment

On the Saturday, depending on the weather, we will be on exposed hillsides and in forests at about 300m altitude. Full hillwalking equipment is recommended: boots and gaiters (or wellies), warm clothes, waterproofs, and a change of clothes.

Accommodation

There is a wide variety of accommodation in the Cushendall area including hotels, B&Bs, a caravan park and a hostel. For more information please phone Cushendall Local information Office 028 2177 1180 (Open Tuesday-Saturday, 10am-1pm), or Ballycastle Visitor Information Centre 028 2076 2024 (closed on Sunday). Callers from the Republic replace the 028 number with 048. Alternatively check out: <http://www.discovernorthernireland.com/>

Bibliography

Cole, G.A.C., et al, 1912. 'The interbasaltic rocks (iron ores and bauxites) of north-east Ireland'. *Memoirs of the Geological Survey of Ireland*. HMSO, Dublin. 129pp <http://geologicalmaps.net/IrishHistMaps/memoir.cfc?method=list&findtext=&sheetno=&start=100>

Geological Survey of Northern Ireland, 2009. 1:50 000 series Northern Ireland sheet 14, Cushendall, bedrock and superficial deposits. British Geological Survey, Keyworth. (Includes an illustrated section on the mining heritage of mid-Antrim by G.O.Warke)

Hamond, F., 1991. *Antrim coast and glens: industrial heritage*. HMSO, Belfast. 103pp.

O'Hagan, K.J., 1987. 'The Cargan to Red Bay wire tramway: a unique photograph'. *The Glynnys*, Volume 15, p59-62. <http://www.antrimhistory.net/category/volume-15-1987/> (For photo, see Hamond, p.21)

Patterson, E.M., 2007. *The mid-Antrim narrow gauge*. Colourpoint Books, Newtownards. 175pp.

Wilson, H.E., 1963. 'The rise and decline of the iron ore and bauxite industry of County Antrim'. *Proceedings of the Belfast Natural History and Philosophical Society*, 2nd Series, No.7, pp. 14-23.

MHTI Annual General Meeting, 26-27 April 2014, Killarney, County Kerry

This year's AGM will be held at the Killarney National Park Education Centre and promises to be a highly memorable weekend. In addition to the business aspects of the meeting we have planned a great itinerary of events continuing the theme of Bronze Age copper mining. Following visits to the Beara Peninsula in County Cork and last year's overseas trip to North Wales to inspect Bronze Age workings at Parys Mountain and Orme's Head, we will be visiting the Ross Island site that archaeological research suggests was the first place where copper was produced in Ireland, and which lay at the very forefront of European Bronze Age mining.

Ireland's leading academic Bronze Age mining archaeologist, Professor William O'Brien of the National University of Galway and author of *Ross Island: Mining, Metal and Society in Early Ireland* (2004), will be conducting the field visit to this unique site. There will be an illustrated talk on the Saturday evening. On the Sunday we plan to locate and explore the Bronze Age mine workings dubbed the 'Copper Caves', on Coad Mountain, inland from Caherdaniel. These include St Crohane's Hermitage, Coad and Staigue.

The Killarney National Park Education Centre is based in Knockreer House, the last of the Kenmare mansions, which is situated on a hill close to the town of Killarney and has spectacular views over the National Park. Download the pdf giving directions to the centre:

http://www.killarneynationalpark.ie/documents/Directions_Map.pdf

PROVISIONAL PROGRAMME

Saturday 26 April

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|---------------|--|
| 10.00am : | Guided walk with Professor O'Brien to the Ross Island site. Meet at car park to the site |
| 3.00pm | Board Meeting |
| 4.00pm | AGM Business Meeting |
| 5.00pm-6.00pm | Keynote Speech TBA |
| 7.30pm | Dinner venue TBA |

Sunday 27 April

- | | |
|---------|---|
| 10.00am | For those not staying in Killarney, meet at the Post Office in Castle Cove 5km on the Killarney side of Castledaniel on the N70 |
|---------|---|

Accommodation

There is a wide range of hotels, B&Bs, self-catering cottages, hostels and campsites in Killarney and District, but given that it is late April and the beginning of the holiday season, people are advised to make bookings early to avoid disappointment. For more information on places to stay see:

<http://www.kerrytourism.ie/>

Equipment

Saturday's activities will be taking place inside the National Park and require no special clothing or footwear beyond a comfortable pair of walking boots and the usual rain wear. On Sunday, depending on the weather, we will be exploring exposed hillsides. Full hill walking gear is recommended: boots and gaiters (or wellies), warm clothes, waterproofs, and a change of clothes.

We hope to see many of you in Killarney. Further details of the AGM meeting and activities will be published in our Spring (April) newsletter.

Historical Metallurgy Society Spring Meeting, 12 – 13 April 2014

The Historical Metallurgy Society (HMS) Spring Meeting is being organised by Paul Rondelez, and will be based at Blarney, County Cork. On the Saturday the group will visit East Clare to look at exceptionally well preserved charcoal fuelled blast furnaces dating from the 17th and early 18th centuries. The visit on the Sunday morning will be to the East India Company's ironworks near Bandon, which date back to the 1610s. The afternoon will be spent at University College Cork, with a talk on early Irish iron technology, and an exhibition of the remains of early iron working, including a preserved slag pit bloomer furnace, tuyeres and early blooms. See: <http://hist-met.org/>

Obituary

It is with tremendous sadness that the Board has learnt of the sudden death of Dr Gwynfor Pierce Jones at his home in Penygroes, Wales, on Christmas Eve. A warm and generous man with a wonderful sense of humour, he was born in the Nantlle Valley and had a lifelong interest in the area's industrial heritage. He initially studied biochemistry becoming a science teacher, but later completed an MA degree on the history of Dorothea slate quarry and a doctorate on the economic and technical development of mineral planning.

An author of numerous books and articles, he was a pioneer of industrial archaeology, making notes and measurements, often of buildings long vanished, whilst exploring slate quarries in the 1960s. He rescued many documents from quarries on the brink of closure which he donated to the Gwynedd Archives and was always willing to share the information he had amassed with other historians and mining heritage enthusiasts.

It was Gwynfor who assisted access to the Dorothea Holman's Engine for the MHTI visit in September 2009. This site was particularly close to his heart and he worked tirelessly to protect it over the years as its unofficial caretaker, undoubtedly saving both the engine and its house from vandalism, theft and arson on numerous occasions. When questioned about the future of the engine, he quipped, 'It depends on which goes first, it or me'. We sincerely hope that the engine can be conserved, as this would be a fitting tribute to a man who devoted so much of his life protecting this important item of industrial heritage. RIP old friend.

MHTI Overseas Field Trip for 2014: The Banská Štiavnica Historic Town and Surrounding Technical Monuments World Heritage Site, Slovakia

Situated on the steep slopes of the Glanzenberg and Paradajz mountains and in the centre of an immense caldera created by the collapse of an ancient stratovolcano, Banská Štiavnica is the oldest mining town in Slovakia; its town seal of 1275 is the earliest known bearing a mining emblem. This picturesque town was a crucible of invention and innovation, attracting some of the finest contemporary scientists, engineers and metallurgists. The old medieval mining centre was transformed, embellished with Renaissance palaces, 16th-century churches, elegant squares and castles and was a pioneering centre of mining education.

The urban and industrial complex of Banská Štiavnica and its surrounding area is an outstanding example of a medieval mining centre of great economic importance that continued into the modern period. It became a UNESCO World Heritage Site in 1993. For additional information, please refer to the article 'Banská Štiavnica: World Heritage in a Collapsed Caldera' in the MHTI Newsletter 59 (February 2013).



**DRAFT ITINERARY (may be subject to changes
depending on access etc.)**

Friday 5 September

Rendezvous at Banská Štiavnica between 12.00 and 3.00 pm.
PM: Slovenské Banské (Kammerhof) Museum, Berggericht (Mineralogical Exposition) and short guided walk of the old town. Historical talk before dinner.

Saturday 6 September

AM: Štôlna Glanzenberg (adit) and the Open-Air Mining Museum, including the Štôlna Bartolomej (adit).
PM Starý Zámok (Old Castle) and The Mining and Forestry Academy (with possible interior visit TBC).

Sunday 7 September

AM: The 5 km Piargsky Footpath from the neighbouring village of Štiavnické Bane including the C14th Štôlna Bieber;
PM: Hodrusa-Hamre village or free time for own sightseeing.

Monday 8 September

AM Depart Banská Štiavnica.

Getting There

The Banská Štiavnica mining region is easily accessible by road, with good air connections to Bratislava (Slovakia), Kraków (Poland) or Budapest (Hungary) which are served by most low fare carriers from major Irish and UK airports. Approximate road distances and travel times to Banská Štiavnica are:

From Bratislava: 190 km (2 hrs)

From Kraków: 260 km (3.5 hrs)

From Budapest: 145 km (2 hrs)

Ryanair flights from Dublin get into Bratislava at 10.25 am, and from London Stansted at 9.45 am. Flights back to both Dublin and London Stansted leave around the same time mid-morning. Dublin to Kraków with Ryanair is not as convenient, as flights arrive in the evening which means leaving a day earlier and staying overnight in Kraków. Easyjet has flights to Kraków from Edinburgh, London Gatwick and Bristol and to Budapest from London Gatwick and Luton. Other possibilities include Wizzair from Luton to Budapest and Aer Lingus from Dublin to Budapest (a bit more expensive).

There should be no problem taking a hire vehicle from Poland or Hungary into Slovakia. The rental company will give you a cross-border certificate with the car's registration and insurance details. This will incur a small charge for extra breakdown cover outside of either country. A *vignette* is required for motorway travel in Slovakia, so ensure the car has one, or ask the hire company where to buy one.

Accommodation and Eating Out

There isn't a vast choice of places to stay in the old town of Banská Štiavnica and ideally, we would like as many people as possible to stay in the same hotel or, at the very least, in nearby accommodation. The Penzion Katchelman and the Hotel Grand Matej are located on Kammerhofská Street and the Penzion Nostalgia, on Visnovského Street. We can vouch for the Penzion Katchelman and its restaurant is more than adequate. Expect to pay, on average, about 30-40 euro per person per night. Based on our experiences last year, a 3 course meal with drinks costs around 10-15 euro per person.

Salamander Festival 2014

This year's Salamander Festival takes place from Thursday 11th-Saturday 13th September, with the main day being Friday 12th. Additional activities will take place before and after the festival including a mining archaeology seminar on the 10th and a meeting of mineral collectors on the 13th. People may wish to stay in Banská Štiavnica for these dates and there is a possibility MHTI could be involved in the Festival. More details will follow.

Co-ordinators:

Martin Critchley and Sharron Schwartz (details on back page). Could those who wish to participate in this trip confirm their interest to the organisers as soon as possible, as there will be a limit of around a dozen participants. We will be happy to discuss any aspect of the trip in more detail with those who wish to join us. It is the responsibility of attendees to make their own flights, transport and accommodation bookings.

FEEDBACK AND CORRESPONDENCE

Feed ramps to Cornish rolls crushers

Ainsley Cocks

I read with great interest the paper by Dr Sharron Schwartz and Dr Martin Critchley covering the lead mining landscapes at Glendalough and Glendasan, as featured in the December 2012 edition of the MHTI Journal, and thought that the accompanying photographs would be of interest.

The historic engraving (Fig. 1) reproduced on page 23 of the Journal depicting the lead dressing floors at Lughanure Mines in 1860, shows a water powered crusher installation to the left which, as described, was used to undertake the reduction of lead ore extracted from within the surrounding mountains. The historic illustration shows an inclined ramp leading to doorway in the upper storey of the crusher house and whilst this is depicted simply as a ladder-like structure, it would have supported an iron tramroad up which the laden ore wagons would be hauled before being discharged into the crusher hopper in the upper storey. Close inspection of the illustration shows two ore wagons near the base of the ramp and this supports the authors' assertion that the artist had misinterpreted the scene in respect of the ramp. For reference, a useful section illustration of a Cornish rolls crusher with a powered feed ramp is depicted within James Henderson's 'On the Methods generally adopted in Cornwall, in Dressing Tin and Copper

Ores', a paper he presented to the Royal Geological Society of Cornwall in February 1858.

An historic photograph of Cotehele Consols within the Danescombe Valley in east Cornwall c.1880 depicts a similar installation to that at Lughanure (Fig. 2). The feed ramp and supporting timber trestles can clearly be seen alongside the driving rotative beam engine within its characteristic whitewashed house. An additional image of Tincroft Mine in Camborne, Cornwall, c.1900 (Fig. 3) shows a similar crusher installation, although the rear three quarter view of the crusher house mostly obscures the feed ramp in this instance. An alternate view of this site can be seen in Trounson's *Mining in Cornwall: Volume One* (1980). Both crushers are understood to have housed Cornish rolls using externally weighted cast iron rollers to undertake the necessary ore reduction, as devised and introduced by the renowned mining entrepreneur and engineer John Taylor, c.1805.

These rare and revealing images also demonstrate the value of a well known internet auction site in bringing historic scenes of mining heritage to a wider audience.



Fig.1: The etching depicting the Glendalough dressing floor as depicted in Schwartz and Critchley's article in the 2012 MHTI Journal



Fig. 2: Cotehele Consols within the Danescombe Valley, Cornwall, c.1880, with the crusher house (right) adjoining its driving beam engine (SX 42298 69369, extant); the feed ramp is clearly evident to the fore and two figures can just be discerned underneath this at the foot of the house. The loading at the front of the driving engine was built to accommodate two flywheels although only one is installed at this date. (EBay web auction listing, accessed: April 2013)



Fig. 3: Another Cornish scene, understood to have been Tincroft Mine within the Central Mining District around the turn of the twentieth century (SW 66791 40823, site of); a combined part time Cornish rolls crusher and whim installation can be seen to the left comprising engine house and chimney (to the rear of the group) with the adjoining boiler and crusher houses to the front left and right, respectively. The crusher feed ramp can just be discerned to the right and in front of the crusher house. The image is also interesting in that it shows a supporting gantry and dolly wheel frame (bottom left) which was used to facilitate remote haulage from a nearby shaft and to keep the haulage cables clear of the mine road. (EBay web auction listing, accessed: April 2013)

SPECIAL FEATURE

Sardinia: jewel in the crown of Mediterranean mining heritage

Sharron Schwartz

It's twilight and the full moon, the colour of rich cream, rises like a paper lantern in a purpling sky above the medieval skyline of Cagliari, a port in the south of the Mediterranean island of Sardinia, famously described by novelist, D. H. Lawrence, as being 'lost between Europe and Africa and belonging to nowhere'. A warm, salt laden breeze blows in from the sea as Martin and I climb one of the steep cobbled streets above the old fort, past the Baroque façade of the Cathedral which is bathed in honey coloured light. There is something almost Moorish about the maze of narrow streets, dark and hemmed in by tall ancient buildings constructed of limestone with shuttered windows, and hole in the wall shops selling mouth watering local delicacies. We enter one to buy a bottle of wine produced from the Carignano grape which we later savour on the roof terrace of our apartment overlooking the twinkling crescent of lights along the Via Roma facing the sea. The night is warm and still. Across the bay and the vast lagoon beyond, we can just discern the inky black peaks of mountains. Tomorrow we will be heading there to meet a Sardinian friend in a small village called Narcao.

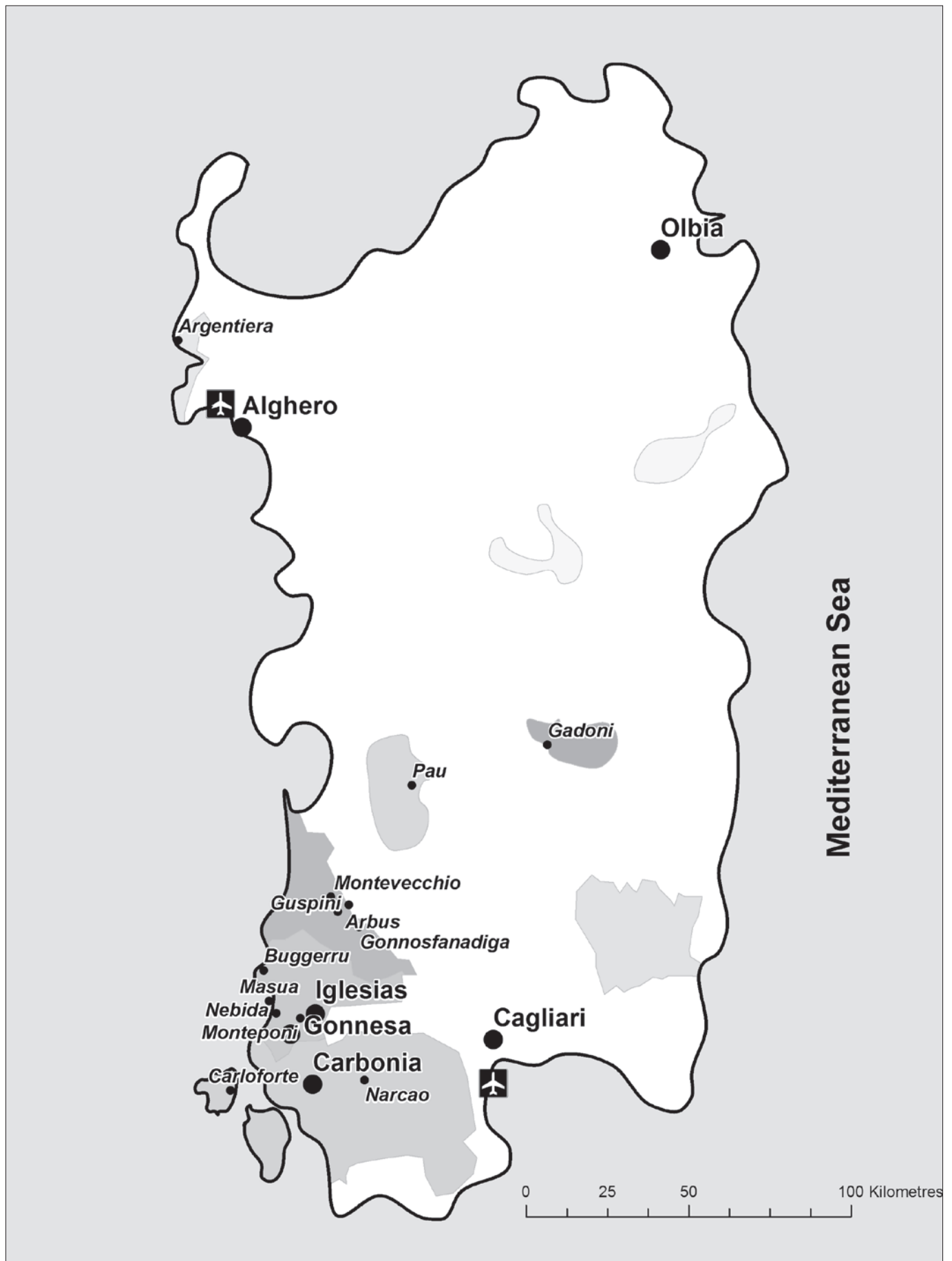
Our car rounds another hairpin bend. Its early morning and the winter sun, low in a brilliant blue sky, is blinding. It's hard to make any speed along the narrow roads that weave their way through the long spurs of the craggy mountains which sport scrubby heath-like vegetation interspersed with jagged cactus and prickly pear that chaotically tumble down towards the coast. Mid-morning we pull into the central piazza of Narcao in the Province of Carbonia-Iglesias, according to the current *Lonely Planet* guide, only worth making a detour to in order to see a collection of *murales* and which flashes on the map just once a year due to its international blues festival. At any other time of the year it is hard to believe that very much happens in this sleepy backwater.

Our friend, Paolo, greets us warmly and we retire to the sunny terraza of a local café. Over espressos, he explains that there is far more to Sardinia than just its magnificent beaches. It has a veritable cornucopia of industrial archaeology and a mining heritage of international significance and importance stretching back 8,000 years. In September 1998, UNESCO, the Italian government, the Sardinian Autonomous Region, the Sardinian Mining Authority (EMSA) and the University of Cagliari and Sassari, signed the *Carta di Cagliari* to acknowledge the importance of the *Parco Geominerario Storico, Ambientale della Sardegna* (the Geological, Mining, Historic and Environment Park of Sardinia) and in October 2001 this was set up by ministerial decree. Emphasis is placed on working closely with local communities to remediate former mining landscapes and to deliver sustainable eco-tourism through careful conservation of bio-diversity and the environment, protection of industrial archaeology and

preservation of the legacy of human values and activities related to the mining industry. The park is made up of a large number of individual sites, several of which are run by Igea SpA, a company of the Autonomous Region of Sardinia that specialises in the remediation and restoration of former mine sites, while others are reliant on Municipalities or independent associations. In 2007 the park, containing eight distinct areas and covering 3,800 square kilometres, joined the UNESCO Global Geoparks network as the Geological and Mining Park of Sardinia. Considerable effort has been invested in providing visitors with exciting new perspectives of the island's history, exemplified at the nearby Parco Minerario di Rosas, just off the main road into Narcao. It's the reason we are here.

Mining activity in the Rosas area dates to around 1832, the year a businessman from Iglesias discovered a mineral deposit rich in lead and zinc in the Rosas Mountains. In 1851 a mining concession was granted by Vittorio Emanuele II to the Società Anonima dell'Unione delle Miniere del Sulcis e del Sarrabus and this company began to exploit galena and smaller amounts of zinc and iron. Nearby Narcao mushroomed as people poured into the area, the mines employing whole families including young boys who worked underground and women and children who dressed the ore at the surface. But after a promising start, progress was blighted by civil lawsuits, frequent changes of ownership and periods of inactivity during the turbulent years of Italian Unification. It wasn't until the late 1880s that a consortium of local businessmen headed by Giorgio Asproni, a mining engineer and Director of the Montevecchio Mine, the most important in contemporary Sardinia, brought the mines to a state of prosperity, improving the mill to boost the recovery of zinc and building a road to transport the ore to Porto Botte 30 km away.

The Sardinian company sold out to the Turin based Societe Anonyme Minière de Liège in 1898 and under Belgian management the mines prospered for the next decade. This company installed a new mill in 1899-1900 with six main sections and a secondary section which treated the tailings for copper and iron. However, problems in separating the mixed ores coupled with high production costs and adverse market conditions were compounded by growing unionisation. The mineworkers' demand for better conditions and an end to the truck system of payment led to two strikes in 1895 and 1896, all of which culminated in the Belgians selling out in 1911. The mines passed into the ownership of a British mining engineer, Karl William Wright. He was to enjoy little success and is remembered locally more for sensational rumours that he murdered his wife dubbed 'The White Lady', an albino who only emerged from their house at night. It seems more probable that she could not tolerate the scorching Sardinian summer and returned to England. Wright leased the concession



The shaded areas represent the eight discrete parts of the Geological and Mining Park of Sardinia, a Global Geopark Site. During our visit, we toured several mining heritage sites in the SW of the island, but there are additional attractions further north including at Buggerru, Guspini, Arbus, Pau, Gadoni and Argentiera



The beautifully restored mill building at the Parco Minerario di Rosas near Narcao

to the Domusnovas Mining Company Limited in 1912 which he sold to them in 1922.

The First World War and the rise of Fascism had a negative impact on mining operations. Mineral yields declined and despite alterations to the mill in 1919, continued their downward trajectory to 1924, causing the workforce to plummet from 700 to 120. Nevertheless, a survey undertaken in 1922 estimated that there were still significant ore reserves and in 1924 a company named Società Miniere di Rosas emerged to work the mine which remained in their ownership until 1962. Several mines were closed and the remainder were worked with varying degrees of success. In 1938, a state of the art froth flotation plant which could dress 50 tons of minerals a day replaced the hydro-gravity mill. However, this only became active after the Second World War, during which time the mine was suspended.

After the war the mine reopened and in 1951 about 152 people lived in the small village that had grown up in the valley behind the mill. However, many post-war Sardinian mines, a good number operated by state companies set up by Mussolini, were not commercially viable and were kept open purely to provide employment. Despite the shift to public companies in the early 1960s and the refitting of the mill in the 1970s to boost mineral recovery, Rosas, like a lot of other Sardinian mines, was subjected to a long, slow decline characterised by a number of strikes. Depletion of the lodes and the soaring cost of mineral extraction led to its closure in 1980.

It was only due to the prescience of the local mayor, Gianfranco Tunis, who saw the site's potential as a future industrial archaeological and mining heritage attraction, that saved the Rosas mill and surrounding buildings from the scrap merchants

In 1986 the Municipality of Narcao issued an order, the first public deed to call for the conservation and protection of the site. Local support for the preservation of Rosas was strong, spearheaded by the Association of Former Rosas Miners and two decades later, following a multi-million euro project to conserve the mill and other buildings, the whole of the Rosas Mine opened as an eco-museum in 2009 and is an integral part of the UNESCO Geological and Mining Park of Sardinia.

A thin strip of asphalt winds its way through a craggy valley vegetated with brilliant green broom, oleander, laurel, and mastic trees. We soon spy the tell tale signs of mining as large heaps of deeply weathered spoil loom into view above the road before an entire mining settlement, rescued from the past to challenge the future, greets our eyes. We arrive at a paved



Interior of the restored mill at the Parco Minerario di Rosas, part of the Geological and Mining Park of Sardinia

area in front of a mill, above which towers a square stone built chimney that appears to connect to an old calciner. This striking building constructed of local stone with a wooden façade has been tastefully restored to the highest standard. We enter the reception on the bottom level where we are greeted by a member of staff who provides us with an ipod audio guide and directs us to the restored former chemical laboratory opposite. Here, a series of externally mounted interpretation boards give an overview of the mine buildings and their restoration. These are in Italian, but the audio guide provides a comprehensive translation into English of each. We pass inside the building to view the small museum which boasts numerous mineral specimens including rosasite, a type of pink quartz for which the region is famous, and various items of machinery and equipment. Interpretation panels illustrated with period images and newspaper clippings provide information in Italian and English, not just about the engineering and technological history of the mine, but of the owners and the work and social conditions experienced by the men, women and children who worked there.

We then progress to the mill which, thanks to Mayor Tunis, has its machinery largely intact. Now eerily silent, the giant ball mills, rod mills, classifiers, feeders and froth flotation cells are in an excellent state of preservation. The pungent lingering smell of minerals, chemicals and oil assails my nostrils as I read the interpretation panels that explain the ore dressing process. I can imagine the place working. To our delight we discover that the machinery is still operational and we are treated to the spectacle of one of the huge ball mills slowly revolve with a grating roar followed by the deafening clanking of the iron balls inside its giant metal drum.

Over a delicious lunch consisting of many courses including blue fin tuna, a local pasta dish and roasted suckling pig washed down with a fine Sardinian red wine, Paolo tells us that the secret of the success of this mining park is that it has the support of the local government which recognises its socio-economic value to the local community which is very

involved in the project and this has engendered a sense of democratic ownership of it. Indeed, the home cooked lunch we are consuming with gusto has been prepared by the wives and daughters of the former mineworkers as the restaurant, a building that was once the mine post office, is run by the Association of Former Rosas Miners. Hardly able to move after such a large meal, we explore the mining settlement, now a holiday village. The workforce was permitted to build houses on the mine sett at their own expense and were allowed to reside in these dwellings for the duration of their employment. The house, however, remained the property of the company. Their attractive little one up and one down homes, each one different, are built of limestone or shale, the roofs, now tiled, were formerly of reeds and the floors of shale stone or concrete tiles. In the late 1980s the importance of this vernacular housing was recognised by the Municipality of Narcao and the restoration of a number of cottages was undertaken with the support of the Superintendent of Environmental Heritage of Sardinia and Cagliari. The one we inspect is fully furnished and complete with its original black and white floor tiles in the kitchen and dining area. The cottages are available to rent at about 60 euro in the high season and 40 euro in the low, very competitive rates indeed for Sardinia which is by no means a cheap holiday destination.

We now drive further uphill and stop below a large building with ceramic roof tiles just visible above the trees. This we are informed, was the mine director's villa. Nearby is a long building, once a barracks and canteen converted to a guest house, and inside another small building we receive a helmet. We cross the road to the entrance portal of one of the refurbished late-nineteenth century adits: La Galleria Santa Barbara. Inside the entrance gate we pass by a shrine to Santa Barbara, patron saint of mineworkers, and follow tram lines down a long, brightly lit tunnel which runs for over 200 metres. There are some stopes off to the side and our guide explains that there are many more levels below this one. Below the deep adit the levels are flooded, but those above are still accessible. However, the cost involved in refurbishing these and making them safe for tourists means that they are likely to remain closed for the foreseeable future. Our circular visit lasts around half an hour and we pass one or two displays including ore tubs and a selection of pneumatic drills. However, we have been to far more interesting and exciting underground attractions and feel that this one lacks a 'wow' factor.

Over espressos at the museum's café, we discover that the mine receives about 10,000 tourists a year. Having inspected the visitor book, we conclude that the majority of these are from Sardinia. The fee for a guided tour of the buildings and underground gallery is six euro, five if you opt out of the underground visit. An audio guide costs six euro, but you can visit the external features of the site for free. With around three full time members of staff, the eco-museum is not sustainable without funding from the local government and the help of a number of volunteers. The current *Lonely Planet* guide notes that the museum is rarely open and that there is often no one around, an observation that is not good for business. Evidence points to the fact that the people running the site have little experience of marketing or management and have much to learn in this respect.



Monteponi near Iglesias, the former mining capital of Sardinia. The tall building marking the Sella shaft head can be seen just to the left and below a brown chimney close to the centre of the image

We bid farewell to Paolo as the sun is sliding low in the sky and head for Carbonia, a town built in just 300 days by Mussolini in 1936-38. The clue lies in its name: it was constructed to house colliers from the nearby Sirai-Sirbairu coalfield which was developed in earnest after the Italian invasion of Ethiopia in 1935 resulted in international sanctions against the Fascist government and a drive for self-sufficiency. The sun has set and the sky has turned a dark, sombre bluish shade. There is something slightly unsettling about the uniformity of the architecture and rectilinear streetscapes, something fabricated and mildly Orwellian about the place. I feel this particularly as we pass the town's central piazza dominated by the hard outline of the *Municipio* which appears to frown over everything and the somewhat bleak and soulless Chiesa di San Ponziano with its gloomy red bell tower. With the decline in coal mining from the 1970s, Carbonia has fallen on hard times and unemployment is high. On the outskirts of town we pass the former Serbairu colliery, now a museum and part of the UNESCO Geopark, dominated by a huge 30 metre high steel headframe which glowers over the parking area. Having taken my fill of Fascist architecture, I am relieved to head back to the chaotic medieval splendour of Cagliari where I delight in the discovery of a remarkable artisanal and craft beer bar!

Our car traverses the brow of a hill near Iglesias. A dramatic view confronts us. Ahead looms a large hill with a jigsaw puzzle of buildings tightly clustered about its lower slope, the sharp rooflines and each window intricately etched in the glassy glow of the morning sun like something from a Joan Miró painting. Above, the tell tale scars of scouring and terracing, associated spoil spilling down the hillside and the long line of a flue defiantly running uphill towards a ruinous chimney stump that stands proud of the skyline like a broken tooth. And below the buildings, some unroofed and ruinous, a

vast expanse of angry rust-red tailings. This is Monteponi, the most industrialised and important silver-lead mining area in Sardinia. Known from Phoenician times, Monteponi assumed great importance during the medieval period attracting experts from Tuscany and Germany, its mines so numerous a code of laws governing mining operations was written in the early fourteenth century and a mint built to press silver coins. It was here that dynamite was first used in 1743 but it attained its zenith during the nineteenth century with the Società di Monteponi Regia Miniera, formed in 1850. Over 1,000 people found employment with this company which built extensive mills; sank the great shafts of Sella and Vittorio Emanuele; constructed a railway to Cannelle where a new port named Vesme was created to connect the mainland with the port of Carloforte on the island of San Pietro opposite, and introduced steam engine technology from Belgium to drain the workings. Perhaps most impressive of all, in order to resolve the persistent problem of flooding, between 1880-1892 the company drove the 5.8 km Umberto Adit from the San Vittorio Shaft to a swamp near Fontanamare. This proved so successful at draining many nearby mine workings that by the turn of the twentieth century, over 15,000 people were at work in the area.

However, storm clouds were gathering on the horizon in the shape of faltering production and declining employment in the Post World War One period. A climate of unease ensued where fears of growing communist sympathies among the workforce and rising labour discontent resulted in bloodshed in 1920 when police killed seven miners at a protest in nearby Iglesias. The decline was further exacerbated by the Wall Street Crash and the outbreak of World War Two. After the Second World War, the mines witnessed something of a renaissance and in 1962 an amalgamation of the company running Montevicchio with Monteponi created the largest lead-zinc producer in Italy.



The toxic rust-red tailings dumps of Monteponi

However, a move to state run companies in the late 1960s resulted, as at Rosas, in very high running costs with the mines kept open mainly to provide employment. All mining activity ceased here in 1997. It is possible to visit Monteponi which includes the Villamarina Tunnel and the miners' village by prior appointment, and just outside Iglesias, the Museo del Lavoro Minerario di Genna Luas and the Cave of Santa Barbara and the Mine of St John which is part of the abandoned San Giovanni mining area, all attractions within the Geopark.

The main road bisects the huge Monteponi mining site, passing beneath towering banks of rust coloured tailings hoary with mineral salts whimsically eroded by heavy rainfall into sinuous arteries that have liberated and carried away trapped toxins. Timber baulks protrude from the heaps like the ribcage of a giant carcass, while matted beds of fraying reeds make a feeble attempt to hold back the friable mass that oozes downslope like melted wax. We inspect a row of ruddy stained masonry ore chutes sandwiched between the giant banks like an ancient temple. Close by, a single straggling myrtle bush defiantly sporting purple berries covered in red dust has managed to gain a foothold, but nothing else grows on this blighted wasteland. I find the place mildly disturbing and it is something of a relief to pass beyond this lifeless wilderness to a landscape of typical breast-high myrtle bushes, arbutus scrub, juniper and mastic trees amid which a straggle of goats, bells clanking loudly, are grazing.

A kind of Stendhal syndrome that makes you lose your senses in the face of so much beauty, occurs when you take the coast road up to Nebida and Masua. And that's before you even encounter the amazing industrial archaeology



Flue and chimney of the Fontanamare smelting works

We head for Masua along a road that winds its way above the spectacularly sculpted coastline of the Golfo di Gonnese, sea stacks protruding from an abyss of turquoise, cobalt and sapphire, the most impressive of all being the Pan di Zuccherò, a giant limestone monolith that sits impervious amid the pan flat surface of the Mediterranean. Even along this seemingly pristine coastline, the tell tale signs of mining are never far away and we pause briefly to photograph a long flue leading to a truncated chimney stack atop a knoll. This leads from an area of crumbling walling behind which we spy a cluster of roofless buildings and a restaurant above a beach and small quay. The place is closed for the season but close to its car park we discover many black glassy fragments and a line of ore bins built into a bank above the beach. The site was formerly the Fontanamare smelter, one of the island's most important late-nineteenth century lead works which processed ores from Monteponi.

Silver-lead mining at Masua dates back to the 1600s. However, it wasn't until the mid-nineteenth century that the ore deposits were fully developed by the Società di Montesanto which, besides mining galena, also processed sphalerite. The transportation of ores was always problematic along this coastline, as treacherous as it is beautiful. Carloforte, on the island of San Pietro, was the only safe anchorage in the region; from here the ore was shipped to the Italian mainland. Men carrying bags of ore made their way to rocky bays along Sardinia's south western coast where over 250 primitive wooden boats with lateen sails operated by 'galanzieri' (carriers of 'galanez' or galena) ran the gauntlet of dangerous seas to convey cargoes of ore from 20-60 tons in weight on the eight hour journey to Carloforte.

We arrive at Masua to find a small, ramshackle village of largely uninhabited and dilapidated buildings, including a tiny boarded-up church and the museum of mining machinery, (a Geopark site) which is closed. Beyond this lies an enormous mill that has served mines higher up the valley since at least the nineteenth century, now fenced, abandoned and decaying. Roofless buildings and circular concrete thickening tanks stand out starkly amid a forlorn landscape littered with the detritus of former industry. We pass beyond its perimeter fence to a car



The entrance to the Porto Flavia tunnel, a remarkable feat of early twentieth century engineering

park with signposts to Porto Flavia, quite probably the most iconic industrial archaeological site in all Sardinia.

Masua witnessed a change of ownership in the early twentieth century before passing into the hands of the internationally known Vieille Montaigne Company in 1922. This Belgian concern with lead and zinc mines spread across Europe from the Pennines in the north of England to the Pyrenees in the south of France and with a firm foothold in Sardinia as owners of the nearby mines of Montecani and Acquaresi, came up with an ingenious method of safely, quickly and cheaply shipping their ores from Masua. In 1924 a Venetian engineer, Casare Vecelli, devised a plan of excavating two tunnels, one above the other, into the cliff face opposite the Pan di Zuccero. Wagons conveying minerals from the mine arrived in the upper tunnel and passed the ore through nine chutes to storage bunkers. From there a conveyor belt transported the ore via the other tunnel to a crane that loaded it onto large merchant vessels moored safely in deep water beneath the towering limestone cliffs, a task that took, on average about 4 hours, obviating the necessity of the costly sea passage to Carloforte.

We set off along the old mineral railway track towards the portal of the Flavia Tunnel only to spot a paper notice taped to the centre of an Igea SpA sign, the company that runs the site. We manage to translate this from Italian: 'After considerable financial problems sites will remain closed until further notice'. The sign looks recent. We progress further down the track-way past a deserted camper van site. The air is perfectly still on this

mid-December day and a watery sun is trying hard to pierce a bank of high cloud that has silently rolled in from the west. There isn't a soul around and, confronted with a padlocked gate lying between us and Porto Flavia, we scale a fence nearby and hurry furtively towards the famed entrance portal. Flanked by a display of a locomotive and mineral wagons, the portal with its name emblazoned in black letters above a gated entrance way is very impressive. However, the site has a disquieting feeling of benign neglect and it most certainly isn't good for the Geopark that its most iconic feature is currently closed to tourists. The view of the Pan di Zuccero sitting across the narrow stretch of water is particularly fine from here and we soon spot a tall rectangular tower with windows and a castellated roof built into the sheer cliffs opposite it. The tower marks the exit of the tunnels below which a large metal device protrudes seawards. We marvel at this remarkable feat of engineering, imagine what it would be like to travel through the tunnels or to view their vertiginous cliff face egress points from the sea, before beating a hasty retreat.

We drive back through the old mining village of Nebida. The numerous chimneys of small houses lining the road emit fragrant veils of blue wood smoke that hang in the still air of the winter afternoon. We stop to search for the much publicised Lamarmora mill, opened in 1897 to serve the Nebida silver-lead and zinc mines. The signage to the site is poor. D.H. Lawrence in his *Sea and Sardinia* (1921) constantly compared this island to Cornwall, noting that the Sardinian landscape awakened in him a nostalgia for the Celtic regions. I also feel



The extant remains of the late nineteenth century Lamarmora mill near Nebida in its dramatic cliff top setting

a connection with the place of my birth when at last we locate the site and I gaze down upon it from the old mineral tramway above. Flanked at either end by square stone chimneys, the multi-tiered building constructed of warm limestone is built into the cliffs à la Botallack, above a kaleidoscopic turquoise, aquamarine and azure sea. And I realise in an instant that Cornwall does not have the monopoly on face-slapping coastal industrial scenery! This mill, restored in 1995 by the Superintendency of Cagliari and Oristano, was über-modern for its time and was furnished with a steam engine. A free to visit part of the Geopark, it is reached by a long flight of concrete steps that run down the steep scrubby hillside parallel to an inclined tramway complete with its rails and winding drums. An industrial archaeologist's dream.

In the lengthening shadows of late afternoon we pass through the village of Gonnessa south of Monteponi and climb an untarred track into the mountains that takes us through valleys of cork trees and dense scrubland, in a quest to locate the San Giorgio Mine. Huge banks of tailings and a ruinous collection of buildings soon loom through the vegetation on a slope near Serra Scoris. Two mills, the first built in 1893 and the latter, in the mid-twentieth century, were constructed here to treat zinc and silver-lead ores from the Seddas Moddizzis Mine which worked up until the early 1960s. Around the other side of the hill we spot a late nineteenth century calamine mill with large brick arches that once housed three calciners. We don't stop as we are up against the clock to catch our mid-evening flight from Cagliari Airport. We wonder where all the people who worked at the mines and mills of these mountains lived. Before too long we get our answer.

The steep track begins to flatten out and we spot dry stone walling enclosing a scrubby field with a lone palm tree, then the faded

ceramic roof tiles atop a cluster of white plastered buildings. We have arrived at the village of Asproni, constructed on the San Giorgio Plain and named after the famous engineer who owned this and other Sardinian concerns. We stop the car and get out. You could hear a pin drop. The place is entirely deserted, its once busy streets now filled with an enormous silence. We wander up to a large building with an ornate brick cornice and window surrounds. 'Direzione' is marked in concrete lettering above its doorway. Shattered wooden shutters hang forlornly from the windows and the room we enter is bare apart from a broken fireplace. This was the administrative hub of the mine housing the Director's offices and nearby laboratories. Close by is a brick three storey neo-Gothic style tower flanked on either side by two wings connected to it by Juliet balconies and enclosed by a small courtyard. One wing, sporting an intricately designed balustrade and ornate corbels is partially concealed by creeping vegetation. This was Asproni's palatial private residence. In one corner of the yard, a tree dotted with ripe oranges adds a welcome splash of colour to leaven the feeling of disquiet engendered by the atmosphere of desertion that has settled over this place along with the summer dust.

Nowhere is this felt more keenly than at the village church, its brick tower broken, the bells long gone. The weather-beaten wooden entrance doors hang like broken wings from their rusting hinges and inside all is dusty, despoiled and ramshackle. A line of disused chicken coops occupies one side of the interior. There is no spiritual succour to be found inside these walls now, just long, dark shadows. Close by we inspect what appear to be warehouses, workshops, stores and a line of single storey workers' cottages. These are plastered white with ceramic roof tiles and tiny square chimneys with two slabs leaning inwards to form a type of triangular pot. I peer into the western sky where a gloomy blue grey cloud bank obscures



The deserted mountain mining village of Asproni, abandoned half a century ago. Conditions in the Seddas Moddizis Mine were so bad in the 1930s, it was dubbed ‘the mine of the cripples’

the sun which burns inwardly, sullenly and gives no glow. A great chill fills the air. The fireplaces in these tiny cottages would have been essential to banish the winter cold for the families who lived on this exposed plateau up until the 1960s. Martin signals that it's time to leave.

Beyond Asproni the road gets progressively rougher and we do not have a 4X4 vehicle. It's too far to go back the way we came so we take a gamble and press on. In the distance we finally spot the fabulous castellated engine house and chimney of the Santa Barbara Shaft on the San Giorgio Mine, built by the Monteponi Company in the 1870s. By now we are extremely pressed for time and we have to skip inspecting this site to begin the descent to the main road that runs through the valley below the Monteponi mines. The road is treacherous and loose rock and deep gullies caused by the recent storms that swept Sardinia impede our passage. Progress is painfully slow and I am fearful we will soon find the track impassable and miss our flight. Martin does a fabulous job coaxing the car down slowly over every obstacle. Monteponi inches ever closer, then finally, the setting sun emerges from beneath the bank of brooding cloud to flood the mine buildings in exquisite amber light. The impressive shaft head complexes of Sella and Vittorio are brilliantly illuminated as is Bellavista Palace, the grand villa built for the mine manager. All fear of getting stranded half way down the mountainside evaporates in the glorious sunset and before long we hit the main road and are speeding towards Cagliari Airport.

At the airport we are surprised to see an alternative tourists' guide to Sardinia sponsored by the Geopark advertised continually on video screen. Sardinia has a well established tourist base built on its fabulous coastline, mountain scenery

and gastronomy, and the Geopark is trying to piggy-back onto this by presenting an alternative aspect of the island's heritage to broaden and enhance the visitor offer. However, we suspect that the overall management of the Geopark leaves a lot to be desired. The Geological and Mining Park of Sardinia is large and it is therefore important that a joint marketing strategy is devised for all the sites in the park and clear guidance about the various attractions and how to reach them presented at each site. It is also imperative to address the fundamental lack of adequate signage throughout the park. We found this ad hoc with a plethora of different interpretation boards with conflicting information. The creation of an instantly recognisable corporate brand for all the Geopark sites is vital and clear signage directing tourists from arterial routes needs to be urgently addressed. We also wonder whether the recent financial storm might have an adverse impact on some of the island's mining heritage attractions through reduced tourist figures and/or a decrease in core funding from municipal or regional sources. Financial security and a rigorous management plan are crucial to the long term viability of the Geopark which might find itself yellow carded at the next four yearly UNESCO inspection if it is remiss in ensuring that these core requirements are met. As our plane soars above the island, I look down on the diamond dazzling pattern created by the pinpoints of thousands of lights. This birdseye view allows me to see Sardinia for what is truly is: the jewel in the crown of Mediterranean mining heritage and industrial archaeology.

If you are interested in the mines and mining heritage of Sardinia, please get in touch with Martin or Sharron. If there is sufficient interest we will consider organising a MHTI fieldtrip there in 2015. Thanks to Paolo Manunta for arranging, and accompanying us on, our visit to Parco Minerario di Rosas.

IRISH NEWS AND PUBLICATIONS

New Geopark Centre Wins Praise from the Taoiseach (From reports in the *Irish Times* 24 November 2013 and 21 December 2013)

On 23 November, the Taoiseach, Enda Kenny, formally declared the Copper Coast Global Geopark's visitor centre at Bunmahon, County Waterford, open. Speeches were given by the Mayor of County Waterford, Councillor Damien Geoghegan, Geopark chairman, John Galloway, Professor Patrick McKeever of UNESCO and the Taoiseach, who unveiled a plaque. In his address Mayor Geoghegan commented that the opening of the visitor centre was "about vision, ambition, determination and pride" and paid tribute to the community along the Copper Coast. John Galloway, Chairman of Copper Coast Geopark Ltd., noted that the Geopark Centre marks the start of two ambitious projects: the first to extend the Geopark into the Comeragh Mountains and the second, the development of a €2.5 million 'underground experience' at Tankardstown. He paid tribute to the Geopark's partners – the Geological Survey of Ireland, Waterford County Council, UCC and the Mining Heritage Trust of Ireland and made particular mention of Waterford Leader Partnership, without whose funding the Centre would not have been created.

Located in the former Monksland Church at Bunmahon which had been unused since 1945, the centre contains a number of exciting displays, including two laser-generated short films, one of which takes you on a surface tour of the extant remains of the Tankardstown Mine and the other, a stunning fly-through right into the mine's subterranean structures. The films were commissioned by the ATLANTERRA project which is co-funded by the European Regional Development fund (ERDF), Atlantic Area programme Interreg 4B. The Taoiseach described the achievements of the Copper Coast Geopark as the community "fighting back" and gave a commitment that the government would help in any way they could. The 3D films can be accessed online at: coppercoastgeopark.com/news.

A New Museum in the old Avoca Courthouse, County Wicklow

The Vale of Avoca Development Association (VADA) took the decision recently to redefine the purpose of the Old Courthouse in Avoca. Up to the final quarter of last year, the Courthouse had been operating as an IT and administrative centre. The intention now is to redirect operations towards developing a local museum with a special emphasis on the rich mining heritage of Avoca. In addition to operating as a museum, it is envisaged that the building will also function as a venue for historical talks related to the area with an emphasis on mining whenever possible. Funds for this project are scarce but VADA would like to make special mention of a kind offer from Dave Banks, Cumbria, who has kindly arranged for the donation of display cabinetry to the courthouse.

The first talk was given by Christiaan Corlett in November on Wicklow's 18th century headstones. Nearby Castlemacadam graveyard holds a significant number of these important artefacts, many of which bear inscriptions of names well known to scholars interested in the history of mining in the vicinity. It was noted at Christiaan's talk that this was perhaps the first time in 150 years that someone was not sent down after a public address! Further talks are planned for the Spring and it is hoped to gather former Avoca miners and mineworkers for an informal get together in the Courthouse. November also saw the creation of a new Facebook page dedicated specifically to the mines. The depth of enthusiasm (both national and international) was outstanding and interest was exponential, resulting in over 600 likes within a fortnight and the page is still growing well. Donations or loans to the new museum have not been quite as forthcoming as expected but the generosity of those who have done so is greatly appreciated. It is earnestly hoped that the 'Avoca Mines' Facebook page will help to publicise the importance of developing and contributing to the display of Avoca's mining heritage. See www.facebook.com/avocamines

Ivor Kenny

Success for the Copper Coast Geopark at the Waterford Film Festival, 8-10 November 2013

The silent film, *Copper Coast Miners* which was commissioned by the Copper Coast Geopark through its *Metal Links: Forging Communities Together* project, was runner up at the prestigious Waterford International Film Festival, where it beat off stiff competition among 36 films from across Europe and North America. The film, which tells the story of a mining family on the Copper Coast in the mid 1800s, is screened daily (Tue.-Sun. 11.00 am to 6.00 pm) at the Copper Coast Geopark Visitor Centre, Bunmahon, County Waterford, as part of the Mining Heritage Exhibition. S. Schwartz

"The Best Irish Industrial Heritage Conference in a Decade"

Praise was lavished on the Glens of Lead heritage group for their organisation of 2-day conference 'The Forgotten State of Industry? Irish Industrial Landscapes and Heritage in a Global Context' at the Glendalough Hotel, Co. Wicklow, on 18-19th October, funded by the *Metal Links* Project with additional funding from the Heritage Council, Wicklow County Council and The Gathering 2013. Described as the "best industrial heritage conference in Ireland for the past decade" it brought together a group of experts from across Britain, Ireland, Europe and Australia to share best practice and showcase examples where industrial heritage has become a major catalyst for the social and economic regeneration of local communities.

Minister for the Arts, Heritage and the Gaeltacht, Jimmy Deenihan T.D., in his opening address spoke of the need to

preserve, protect and promote Ireland's rich industrial heritage and announced plans to apply LEADER funding to heritage projects which would see many historic buildings, monuments and other built heritage features throughout the country being conserved to the highest standard. "Such projects will not only provide a source of pride in the local built heritage but also draw tourists and others to visit and enjoy these special places", he said. He spoke of 2014 as marking the most significant investment in built heritage in recent years and welcomed the Budget allocation of €5m for the Built Heritage Jobs Leverage Scheme to be directed at renovation projects for buildings that are protected and allow for urgent repairs to heritage buildings. He added that his Department was developing policies and guidance with regard to the re-use of historic urban areas and protected structures which would also aid the appropriate re-use of derelict and vacant historic properties in towns and cities. The conference attracted over 100 delegates on both days, the first of which was devoted to a discussion of promoting industrial heritage in a transnational context, showcasing the work of the European Routes of Industrial Heritage, ICOMOS and TICCIH. The positive socio-economic effects of World Heritage Site status to former mining communities in Cornwall and Wales also featured. A wide ranging presentation of how industrial archaeology and heritage have become mainstream and of growing importance was made by keynote speaker, Professor Marilyn Palmer.

Day two focussed on Irish industrial heritage with contributions from heritage organisations, operators and practitioners including the MHTI, with Ireland's industrial revolution put into context by leading Irish industrial historian, Dr Colin Rynne. A lively debate ensued at the plenary session when the issue of the omission of post-1700 industrial monuments in the RMP was considered along with the overall confused state of the current national listing regimen that has resulted in industrial sites being omitted from various registers and might therefore lack statutory protection. In light of Minister Deenihan's recently stated commitment to industrial heritage and monuments, an Ireland-wide working group, including the MHTI, will be set up to discuss the practicalities and logistics of creating an inventory of industrial archaeological sites and to implement an all-Ireland lobbying approach to government bodies to improve national listing regimens. *M. Critchley*

T.D. Sees Tourism Potential in Avoca Mines Site (From a Report in the *Irish Independent* 4 December 2013)

Stephen Donnelly, Independent T.D. for Wicklow and East Carlow, met recently with members of the Vale of Avoca Development Association (VADA) Subcommittee and local tour operators to discuss the enormous potential to tourism and job creation offered by the development of the Avoca Mines site. This historic site, one of the most extensive and important mining areas in the country, has been earmarked by the Department of Communications, Energy and Natural Resources for a remediation programme to reduce the on site risks to health and safety. Tenders for the work were issued in August 2013 in which the proposed works were outlined. These include sealing of shafts and adits, regrading and covering spoil heaps, and removal of the ore bins, with

the work to commence in 2014. Local people fear that the remediation works might not be sympathetic to the industrial archaeology, will not improve access for the public and are concerned that there will be a lack of transparent debate about the site's future.

"Realising the potential [of the site] requires a change in position from the government. They need to acknowledge that it is a heritage site. And instead of seeing Avoca as a problem that needs to be solved, see it as a potential win for the local community and the local economy" said T.D. Donnelly. "Some environmental work may need to be done, but if public access continues to be restricted and if historic structures are dismantled, this opportunity to preserve and develop the site will be missed". "We live in a beautiful county that has a lot to offer but we're not yet maximising our natural and man-made assets", he added. "The Avoca mines could become a real draw, like the Arigna Mines in Roscommon or the Geevor tin mine in Cornwall." The MHTI has offered its full support to the VADA subcommittee and we have written to the Minister of State, Fergus O'Dowd T.D., expressing our concerns and offering to assist his officials in developing a scheme to meet the requirements of public safety, while also protecting the historic and natural environment.

New Home for Downpatrick Cross (04/12/2013)

The 2.38 m tall Downpatrick High Cross was cut and carved from granite in about 900 CE. It probably originally stood at a medieval monastery on the Hill of Down and after the Reformation, served as the market cross in Downpatrick before being damaged. In 1897 the cross was repaired and erected outside Down Cathedral. It has now been moved to the Down County Museum where it will become the centrepiece of a new extension due to be built. A replacement replica hewn of granite from a quarry on Thomas' Mountain near Newcastle in the Mourne Mountains will be erected outside the Cathedral. <http://www.bbc.co.uk/news/uk-northern-ireland-25203568>

New Lease of Life for Tara Mines (21/11/2013)

During a visit to the Tara Mine, County Meath, Minister of State, Fergus O'Dowd T.D., announced that new State Mining Leases had been agreed with Boliden Tara Mines Limited, allowing for a substantial underground extension of the workings, safeguarding hundreds of jobs and permitting the continuation of mining for another ten years. The Minister commented: "I would like to pay tribute to the importance of Boliden's operations here in Navan and their impact on the local area where the mine employs 650 people. The Navan mine commenced production in 1977 and its continued operation will see the State receive royalties of up to 3.75% of revenue." The mining company pays corporation tax at 25%, twice the standard rate, and is the biggest single ratepayer in the county. <http://www.rte.ie/news/2013/1121/488176-tara-mines/> (For a two minute news-clip, click on the image with the computer screen)

Curraghinalt Gold Project, Gortin, Co. Tyrone (03/12/2013)

On the 30th September the Planning and Public Services Liaison Committee of Omagh District Council discussed the

planning application by Dalradian Gold Ltd to extend the 1980s exploratory adit at Curraghinalt, agreeing to support the development without an Environmental Impact Assessment. The Strategic Planning Division of the Department of the Environment has set planning conditions. On the 2nd December the Committee “RESOLVED: that application K/2013/0072/F be issued as an approval.” The company want to carry out 2000 m of underground development to confirm the mineralisation, provide a bulk sample (14000 m3) for metallurgical testing, evaluate different mining methods, and to test the geotechnical and hydrogeological conditions underground. The image below, taken by Alastair Lings, shows the Curraghinalt Adit in 1987.

For more information see: <http://www.dalradian.com/investor-centre/news-releases/2013/default.aspx>



Mining Group Seeks Pot of Gold in Ireland (4/11/2013)

The Irish government has granted 10 prospecting licenses covering gold, silver and base metals in the Stranorlar region of Donegal, to the Toronto-based Connemara Mining Company. Historical records of the Donegal area show certain anomalies consistent with gold, while the geology shares similarities with the major gold discoveries by Dalradian Resources and others in the country's North. Ireland has a history of gold discoveries spanning over two thousand years, back to the ancient Celtic Kings. But the first modern gold mine came into production just six years ago, operated by Galantas Gold Corporation.

See <http://www.mining.com/mining-group-seeking-to-fill-up-pot-of-gold-in-ireland-78426/>

Mining tipped to grow by forty percent

The Irish mining industry netted over €420m in sales in 2012 could grow by up to 40%, according to industry sources quoted in the Indecon report ‘Assessment of Economic Contribution of Mineral Exploration and Mining in Ireland’. Ireland is now a global player in the production of zinc, with 32% of all European zinc mine output, including the Russian Federation, and the 10th largest producer in the world with 2.5% of world output. In 2012 the mining output was €426.1m. Taxes, royalties and other licence-related fees in 2012 approximated more than €65m. See <http://www.irishexaminer.com/business/mining-tipped-to-grow-by-40-244682.html>

New Publications

Mining the Past (2013)

Following on from the tremendously successful *Mining the Past: The History, People and Places of Silvermines District* published by the Silvermines Historical Society in 2012, this new book promises to be just as popular. Launched on the 22nd November 2013, it contains two articles of mining heritage interest: ‘Magcobar (Ireland) Ltd., Ballynoe Open Pit Barytes Operation’ (pp. 63-72) by Neil Booth and ‘The Silvermines Massacre’ (pp. 119-123), by Eamon de Stafort, which relates to events in February 1642. Congratulations to all concerned. The volume can be purchased in all local outlets at a cost of €10 each. Postage charges will be added for anyone overseas. Contact: silvermineshistoricalsociety@gmail.com

Connemara Marble: Ireland's National Gem

By Stephen Walsh: <http://www.obrien.ie/connemara-marble>

Additions to Bibliography:

Adams, Robert, 1839. *Report of Mr. Robert Adams on the Ballysimon marble and stone quarries, near Limerick*. s.n., London. NLI Call Number EPH D350 (View by prior appointment).

Coquebert, Charles, 1796. ‘Notice sur les mines de cuivre de Cronebane et Bally-Murtagh’. *Journal des Mines*, Volume 3, Numero XVI, p77-88. <http://Annales.ensmp.fr/articles/> (See the third entry in the listing).

Cronin, Patrick, 2001. ‘Mid 20th Century mines in the Doolin area, Co. Clare, Ireland’. *Proceedings of the University of Bristol Spelaeological Society*, Vol 22 (Part2), p. 225-233. http://www.ubss.org.uk/search_literature.php

Halpin, Sarah, 2008. ‘The story of Doonagore Quarry and Liscannor Stone’. *The Other Clare*, Volume 32, pp. 73-78.

Henwood, W.J., 1871. Observations on metalliferous deposits. *Transactions of the Royal Geological Society of Cornwall*, Volume 8 (part 1), p1-722. (“Notices of copper mines in Ireland” p.540-634, covering Wicklow, Knockmahon, Bearhaven, Kenmare, Brownstown and “Detrital gold in Wicklow”) <https://archive.org/details/transactionssec03corngoog>

Killaloe Slate Co., 1864. *Memorandum of Association of the Killaloe Slate Company, Limited, with Articles of Association annexed*. Printed by Browne and Nolan, Dublin. 21pp. NLI Call Number Ir 338 p 20 (The WRONG reference for this author was given in Newsletter 62).

Kinahan, G.H., 1873. ‘Notes on the similarity of some of the Cornish rock-names and miners’ terms to Irish words’. *Journal of the Royal Institution of Cornwall*, Volume 4 (Number 14), pp. 133-139. <https://archive.org/details/journalofroyalin4187173roya>

In the Additions to Bibliography section of Newsletter 62 we gave the wrong reference for the author Killaloe Slate Co. The correct reference is given in the list of publications above. We apologise for any confusion caused.

OTHER NEWS

Adaptive Reuse of Cornish Mine Buildings

(29/10/2013)

Following Minister for the Arts, Heritage and the Gaeltacht, Jimmy Deenihan's announcement of the Built Heritage Jobs Leverage Scheme 2014 (see report on the Glendalough industrial heritage conference), this report from Cornwall will doubtless be of some interest here.

A grant totalling £1,126,248 from the ERDF Convergence Programme will go towards conserving and bringing back into economic use the Count House and Carpenters' Shop complexes at the King Edward Mine (KEM), Camborne, part of the Cornish Mining World Heritage Site. Cornwall Council, which owns the derelict listed Grade II* buildings, is contributing up to £800,000 towards the scheme from its capital programme. Described as "great news" by KEM Chairman, Tony Brooks, the two buildings will be refurbished using local materials to create nine workspace units. Moreover, the consolidation project will remove the Count House complex from English Heritage's National Heritage at Risk Register.

"Investing in the conservation and refurbishment of our historic industrial buildings so that they find new economic uses not only safeguards their future, but contributes to the local economy and often in the most deprived areas of Cornwall, stated Councillor Julian German. "The project will provide high quality, distinctive accommodation just outside Camborne, supporting the knowledge economy and creative industry sector." Francis Kelly, Inspector of Historic Buildings for English Heritage in the South West added: "Research commissioned by English Heritage and the Heritage Lottery Fund working with Oxford Economics and Colliers International reveals that rescuing historic buildings does have a positive impact on the UK's economy and has the proven ability to contribute to growth."

This project demonstrates what could be achieved here, albeit on a more modest scale given the amount of finance the KEM project has received.

<http://www.cornwall.gov.uk/default.aspx?page=35665>

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