



CMAC : WCMC

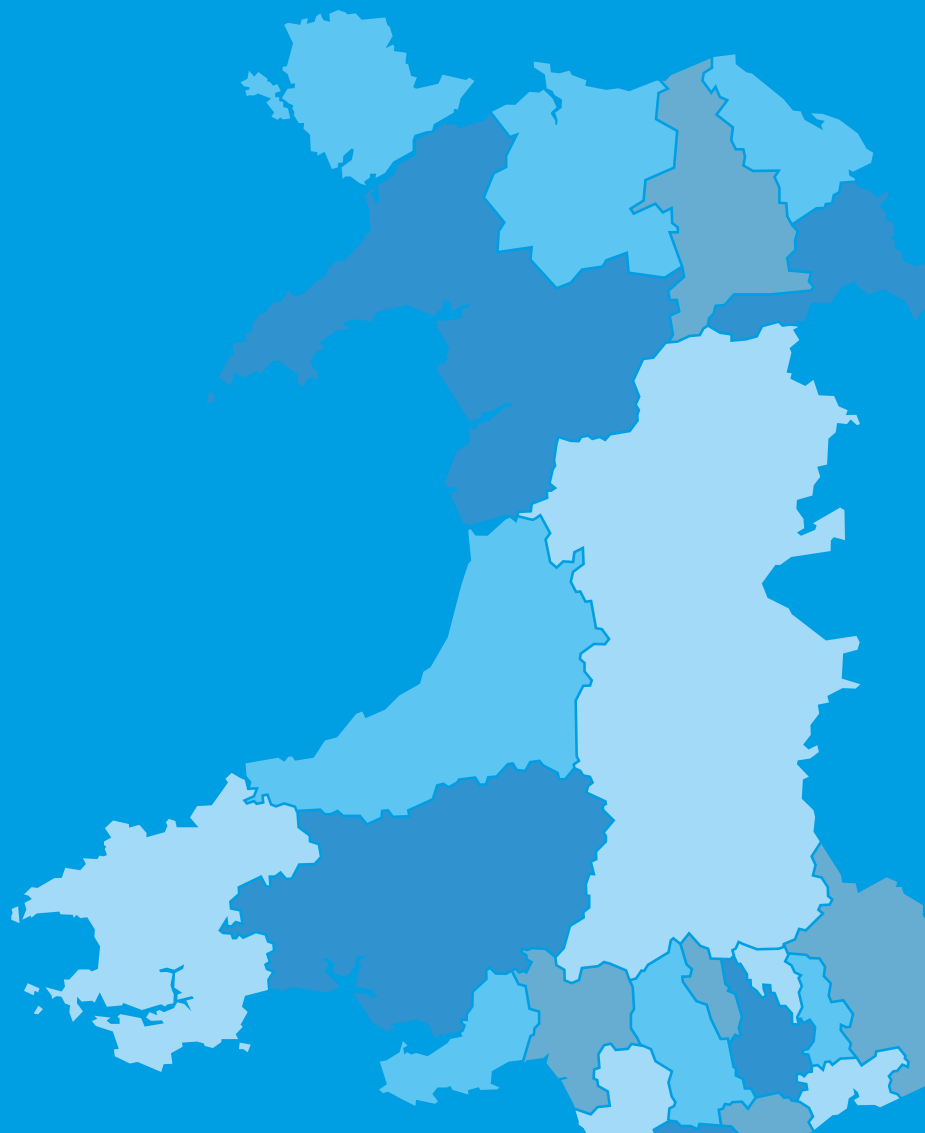
Canolfan Monitro Arfordirol Cymru
Wales Coastal Monitoring Centre

Annual Report

2019/20



| | |
|--------------------------------------|-------|
| Foreword | 3 |
| 2019/20 at a Glance | 4 |
| 2019/20 in more Detail | 5 |
| Our Monitoring Programme | 6 - 7 |
| Surveys Delivered this Year | 8 |
| Collaboration & Partnership Funding | 9 |
| Survey Trials & New Technologies | 10 |
| Our Commitment to Future Generations | 11 |



Foreword

The Wales Coastal Monitoring Centre recently celebrated its second year and what a year it has been for our team and all those involved and supporting the WCMC. We set ourselves some ambitious targets focussing on delivering a national risk-based monitoring programme providing Risk Management Authorities and stakeholders high quality data to inform decisions.

This year has been a milestone for the WCMC, we ratified our risk-based methodology which is providing the foundations for our long-term monitoring programme. In doing so, we support the delivery of a key objective of the Welsh Government National Flood & Coastal Erosion Risk Management Strategy: *Investing where risk is the highest*.

Our survey teams in Conwy and Gwynedd Councils have worked hard to meet our survey specifications and we acknowledge the value they bring to the WCMC by surveying most of the North Wales frontages and helping our core team improve data quality and accessibility.

The Centre has also grown in reputation and recognition across Wales and beyond through the hard work of our team providing support and advice to a wide range of stakeholders from contractors to schools. We have also engaged with universities to stay at the cutting edge of technology and our Advisory Panel chaired by Natural Resources Wales.

But as we reflect through 2019-20 achievements, we must also highlight the limitations of the current monitoring programme. Effectively, many high-risk areas are not currently being monitored either due to health & safety or because of the limited investment which restricts wider coverage or the use of more costly techniques. As we start work on our next business case, we need to focus our effort on increasing the value of our data to support local and national FCERM decisions.

At the time of publication, we are still dealing with the impacts of the Coronavirus pandemic on communities across the United Kingdom and public services. It is also important to acknowledge the implications of COVID19 on our monitoring programme and contractors. We are keen to progress the annual programme of coastal surveys and are working closely with our contractors and local authorities to ensure safe methods of working for all involved.

Finally, we look forward to building upon the experiences gained and lessons learnt during 2019/20. We will continue to develop the skills and capacity of our teams to assist the Centre in delivering the programme in the future.

2019/20

AT A GLANCE



We supported an undergraduate placement perfecting skills in data capture and survey techniques.



Live WCMC website with map viewer providing details of sites monitored across Wales (www.welshcoastalmonitoringcentre.cymru).

Data holding system freely accessible via online portal, in partnership with Channel Coastal Observatory (www.channelcoast.org).



101 No. Terrestrial survey units completed across Wales.

33% of nationwide profiles delivered in-house; an increase of 10% from last year.

Equipment trials with British Geological Survey, Unmanned Survey Solutions and Severn Partnership.



5 capital schemes benefitting from our data.

Provided support to Rhondda Cynon Taff Council with coal tips laser surveys.



Multi-beam bathymetric survey delivered from Fishguard to Cardigan in West Wales. This is a partnership project with the Maritime Coastguard Agency and the Civil Hydrography Programme who coordinated the project.

Bathymetric surveys for Conwy bridges.



Academic Collaboration with Cardiff University and the University of South Wales.

Connecting Wales with international schools, sharing climate change issues and developing relationships.

2019/20

IN MORE DETAIL

How we meet our Objectives

Cost-effective monitoring programme

Cost effectiveness is a core objective of the WCMC to ensure we can make the most of our funding and deliver multi-benefits where possible. This also dictates site selection on which our programme is based. To ensure cost-effectiveness we work closely with our survey teams and contractors to improve data collection and quality. We have also developed a 10 year plan for our monitoring activities.

Improving skills & expertise

Our aspiration is for the WCMC to be an inclusive organisation and a resource available to Risk Management Authorities to help improve public sector skills and expertise in this field. We work closely with Conwy and Gwynedd teams to improve data quality and ensuring that our survey specifications are met. We have also optimised survey workflows and identified areas for improvement in survey techniques through providing quantified performance measures to contractors. This work has been key to targeted improvement from both the public and private sector and ensuring value for money.

Being aware of a shortage in public sector resources in the field of FCERM, we are exploring opportunities to set-up an undergraduate programme. This year, we offered the opportunity to a graduate to volunteer with us.

Moving forward, we are hoping to recruit an undergraduate on a yearly basis to work with our team based in the Vale. This will be a great opportunity to learn new skills in the field of surveying and data analysis. We are also working in partnership with Swansea, Cardiff and Aberystwyth Universities to provide subjects for undergraduate and postgraduate dissertations.

Helping to prioritise investment

Our monitoring programme focusses on the most at-risk coastal areas. To do so we developed a risk-based methodology using specific datasets to ensure that we are monitoring where the risk is the highest.

We are also in constant discussion with Local Authorities and NRW to ensure that local knowledge is fed back to the WCMC. This will ensure that our monitoring programme adapts with local priorities. Long-term data collection will ensure a sound knowledge of coastal dynamics around the Welsh coast providing valuable information for upgrading or construction of coastal managing schemes.

This methodology is core to our programme, it provides transparency for sites selection ensuring our funding is used where the risk is the highest thus aligning with the objectives of the Welsh Government National FCERM Strategy. It also provides RMAs with invaluable comparative data to inform local decisions and investment in coastal risk management.

Our Monitoring Programme

Our monitoring programme which aims to inform FCERM decisions is shaped by funding availability and our risk-based methodology which split 1827km of coastline into 473 survey units which again are divided into 8 categories ranking from the highest to the lowest risk. The survey units follow SMP2s Policy Units to ensure further consistency.



Image courtesy of Google Earth(<https://www.google.com/earth/index.html>)

| Category | Surveyable Frontage (km) | Not Surveyable by topographic methods (km) | Total frontage (Km) |
|--------------|--------------------------|--|---------------------|
| 1 | 47.37 | 150.23 | 197.60 |
| 2 | 57.35 | 148.90 | 206.25 |
| 3 | 78.04 | 156.81 | 234.85 |
| 4 | 98.22 | 146.72 | 244.94 |
| 5 | 62.85 | 143.36 | 206.21 |
| 6 | 41.10 | 89.70 | 130.80 |
| 7 | 48.55 | 273.12 | 321.67 |
| 8 | 28.84 | 256.33 | 285.17 |
| Total | 462.33 | 1365.17 | 1827.50 |

We currently survey frontages in categories 1-3 as well as neighbouring SMP units where no geomorphological boundary exists. Overall this equals to 639Km of coastline but we can only access and monitor 183 km with the current monitoring techniques being used (topographic baseline and profiles) missing out on 455km of inaccessible and terrestrially unsurveyable high risk frontages, in particular along estuaries.

We continue to improve our beach monitoring specifications with feedback from survey teams and contractors. Our coordinating working group sessions are used to highlight aspects of the specifications that require review. We encourage Risk Management Authorities to use these specifications consistently for any monitoring undertaken as part of capital schemes.

Both Conwy and Gwynedd Councils carried out training for the internal surveying team such as instructional sessions, walkthroughs and trial runs relating to surveying techniques, equipment uses and ideas.

Communication with WCMC has allowed our partners to increase knowledge and understanding of our specification and other beach monitoring techniques, in order to achieve the desired deliverables with increased efficiency. As monitoring teams' knowledge of the specific coastal areas increases year on year, so will our understanding of complex coastal systems. Through continuous improvement productivity will also increase, reducing costs to allow for an increase in beach monitoring in the coming years. Working in partnership with the WCMC throughout the year, through ongoing feedback sessions/ communication has also served as a form of training and allowed us to review, clarify on and improve the survey outcomes.

Contracting surveys

Our survey contracts are awarded through the Dynamic Purchasing System offering access to a range of qualified companies. We work closely with contractors, building sound relationships to ensure surveys are achievable, HSE is adhered to by ensure surveys are achievable, safe and deliverables are of high quality thus ensuring value for money.

Quality assurance & Data availability

We adhere to updates from the latest 'National Standard Technical Specifications for Surveying Services (V4.01)' thus ensuring data capture integrates with the English monitoring programme standards for mutual benefits. This further ensures our capability to produce coastal monitoring data to a reputable and repeatable level and in a familiar format for a range of users. This standardised collective approach to coastal surveying allows RMA and FCERM based management decisions to be informed on a nationally comparable data source. Data for the 2019/20 surveys is assessed for quality assurance before being uploaded to our data portal accessible via the WCMC website.

| | Method | Frontage | Locations |
|---|-----------------------|----------|---|
|  | Bathymetric Surveys | 93 km | West Wales Fishguard to Cardigan Bay Conwy Council bridges |
|  | Topographic surveys | 151 km | 53 km coastal frontage baselines Total 1269 profiles completed |
|  | Mobile Laser Scanning | 2 km | Trials at Penarth, Tenby North Beach and Newton |
|  | Laser | 7.2 km | Monmouth, Swanbridge, River Rhymney, Penarth Cliff, Porthcawl |

Conwy and Gwynedd Councils are instrumental in helping us deliver our annual programme with their survey teams supporting annual delivery. This year Conwy Council completed 127 beach profiles across the Conwy and Denbighshire County frontages as well as a baseline survey of Llandudno’s North Shore. In addition to the surveying outputs, a new control network was installed across the Conwy and Denbighshire frontages in order to assist with beach monitoring for all future programmes. The survey output of 2019/20 has helped provide the necessary evidence for FCERM decisions

Llandudno’s North Shore was a focus for an extensive beach survey due to its high risk of flooding. The survey team consisted of both surveyors from CCBC and WCMC, working in collaboration to ensure that all 61 beach profiles surveyed at a spacing of 50m and baseline survey were carried out in the same tidal window.

Gwynedd Council team carried out beach profile surveys along the west coast of Wales and Anglesey. This work has provided an excellent opportunity for the survey team within Gwynedd to test new survey skills and become familiar with coastal locations beyond their historical survey programme, such as New Quay, Aberaeron and Aberystwyth in Ceredigion, as well as Holyhead and Red Wharf Bay on Anglesey.



Surveys Delivered This Year

Collaboration & Partnership Funding

We are continuing our close collaboration with the Channel Coastal Observatory to promote consistency in monitoring across the United Kingdom and ensure our datasets are widely available to stakeholders.

We have also worked with NRW and the Crown Estate to support the 15 Maritime Local Authorities (28G authorities) applying for assents to designated sites on intertidal areas around Wales. WCMC produced 39 maps of intertidal designated sites which supported the notice of intent for each location, with the aim of ensuring permission for the most appropriate survey methods in the designated areas for a few years.

We provided a range of data to Cardiff, Swansea and UWE to inform undergraduates dissertations on subjects linked with the Welsh coastline and coastal survey techniques. We have provided survey experience to undergraduate volunteers and are currently supporting further dissertations using WCMC data which will provide valuable research findings in key areas including climate change assessments.

We also work closely with Aberystwyth University Robotics department who were successful in receiving Kess2 funding to develop a low-cost autonomous survey rover for beach surveying. We will continue our involvement with the department and provide opportunities for future trials. Coastal groups also contributed to unlock this funding and further match funding was also secured from the West of Wales Coastal Group and the Welsh Government to fund the inshore extension of the Fishguard to Cardigan bathymetric survey.

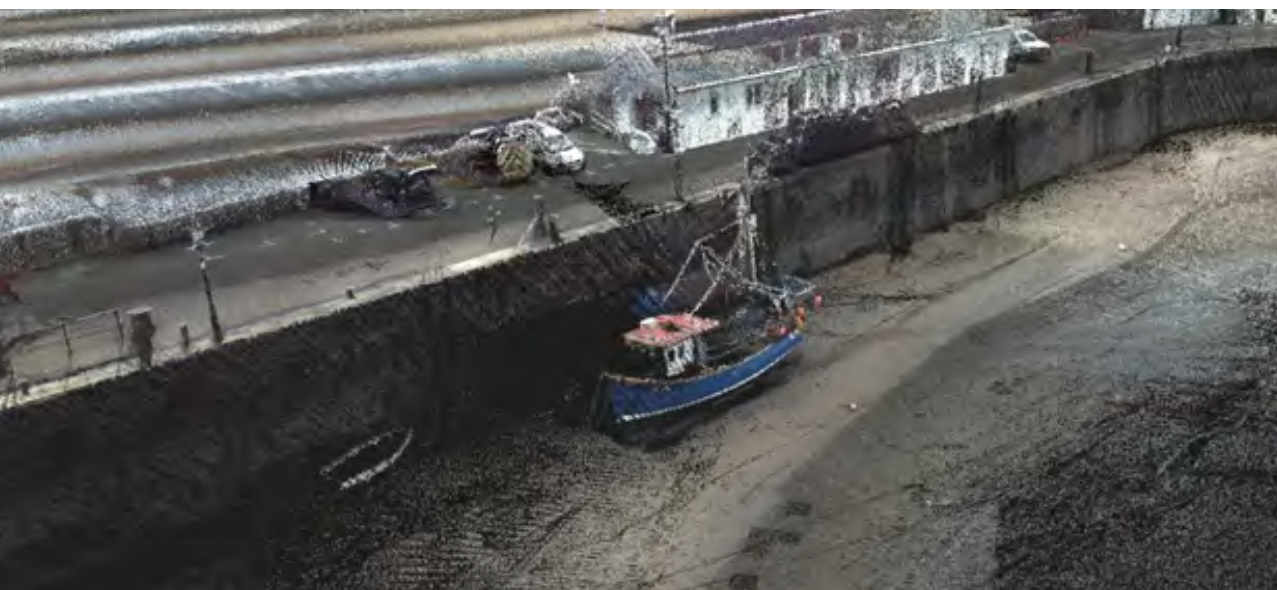
February saw some of the worst floods in decades with the valleys and Rhondda Cynon Taff seeing some of the worst hit areas in Wales. The heavy rainfall also caused some major issues around coal tips with several landslides. Our team supported by officers and equipment from the Vale Council offered support to RCT by undertaking several laser surveys of high-risk coal tips providing valuable data to inform local decision and management of these.



Survey Trials & New technologies

Three trials with new technologies were undertaken in the last year. We worked with British Geological Society with a trial application of their mobile laser scanning backpack on an Etrike on Tenby frontage.

We worked with the Severn Partnership to trial their mobile laser scanner on an ATV at Newton Beach, Bridgend. This work is still in support of the ongoing Coastal Risk Management Programme and review of the current Shoreline Management Plan preferred policy.



A bridge scour survey was also carried out on two structural assets which span the Conwy River. This task was completed by Unmanned Survey Solutions, with direction and instruction from Conwy council and procurement through the WCMC. This provided detailed information on the extent of scour to the bridge foundations without the need for man entry into the Conwy River.

Our Commitment

to future generations

Awareness raising of future coastal risks associated with climate change is paramount to ensure resilience of our communities. Equally as important is the assurance that the right skills and knowledge are passed on to the next generation to ensure a steady flow of skilled workforce. This is why this year we worked closely with 2 Welsh schools to develop a series of lessons on climate change and coastal monitoring for year 6 pupils. This has been developed in line with the new school curriculum (2022) and lessons will be freely available to download for schools to use.

As part of this project we also engaged with schools in Fiji, America Samoa, and Australia to collaborate on material and share experiences. This is a fantastic example of how such project has embedded the principles of 5 ways of working as set-out in the Well-Being of Future Generations Act and brought people from around the world facing similar challenges together.



Forward look

As we aim to deliver our annual monitoring programme for 2020-21, we are also focussing on developing the business case for our next tranche of funding. Bearing in mind the forthcoming publication of the National FCERM Strategy, this will help us develop the best option possible to support its delivery and ensure that we can provide the right support to Risk Management Authorities. Our aim is to improve monitoring resolution which will ensure more opportunities for the use of our data. We are also aware that improvement goes hand in hand with progress and technology and this is why we will focus a lot of our attention on building-up stronger partnership with academia and other stakeholders to ensure that we stay at the cutting edge of technology.

We had to make the hard decision to cancel our planned Stakeholder event due to COVID19. We are now looking at alternative ways of delivering future events and new ways of working using virtual platforms are opening new and more sustainable windows of opportunities. We plan to deliver some virtual sessions this year and hope to see you all.



Contact the WCMC

Wales Coastal Monitoring Centre
Vale of Glamorgan Council
The Alps
Alps Quarry Rd
Cardiff
CF5 6AA

www.welshcoastalmonitoringcentre.cymru/eng

Gwyn Nelson

WCMC Programme Manager
Phone - [02920 673 168](tel:02920673168)
Email - gnelson@valeofglamorgan.gov.uk

William Russell

Coastal Scientist
Email - wrussell@valeofglamorgan.gov.uk

