GREAT BRITAIN
National Report 2024

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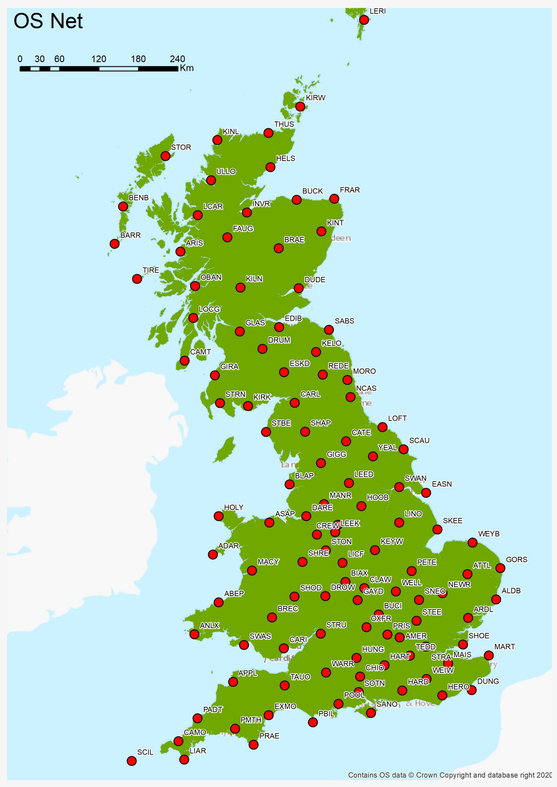
National GNSS network (OS Net)



The OS Net® network contains 114 stations, runs on the Trimble Pivot Platform (TPP)™ software and delivers RTK corrections via mobile internet to approximately 200 Ordnance Survey surveyors. Public services are also available via Ordnance Survey commercial partners.
Activity in the last year has focused on upgrading the comms lines at most stations. The new lines have improved latency and 4G mobile data links as a back up to the wired line.

EPN and EPOS data submissions

The current OS Net EPN submissions are hourly RINEX v3 data (GPS+GLO+GAL+BDS) from stations ADAR, ARIS, CHIO, DARE, INVR, LERI, PMTH, SCIL, SHOE, SNEO and SWAS.
Data from the entire OS Net network is also submitted to the EPOS archive (https://gnss-epos.eu/) and all OS Net station log files are managed and made available via the M3G facility (https://gnss-metadata.eu/). Historic OS Net data (back to year 2000) archive is also at EPOS.
Stations DARE, INVR, HERT and SHOE provide also real time data. Real time data from any other OS Net station is not possible due to conflict with OS Net partner's commercial operations.
Non OS Net stations contributing hourly data to EPN are BGS SGF hosted IGS stations HERS and HERT; Newcastle University station MORP and University of Nottingham station NEWL.

National mapping system update

There is a public consultation being planned on how to update the legacy OSGB36 British National Grid mapping system to one based directly off ETRS89.

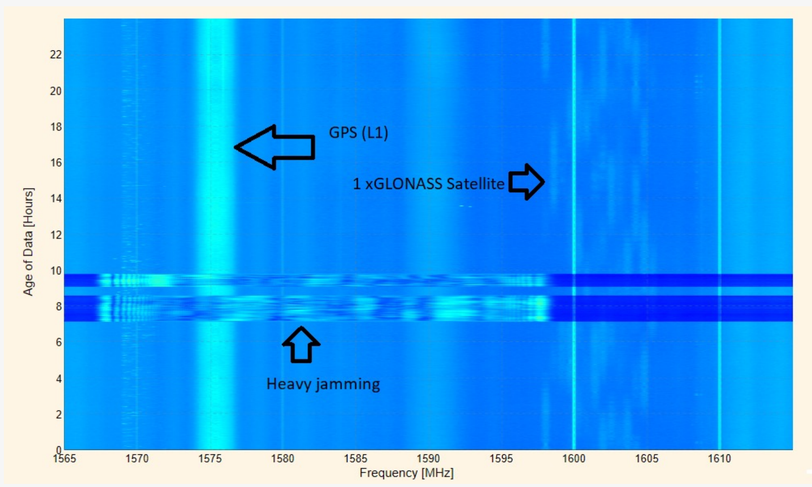
British Isles continuous GNSS Facility (BIGF)

British Geological Survey

Natural Environment Research Council

BIGF archives quality-assured RINEX data and creates derived products, based on a network of continuous GNSS stations sited throughout the British Isles. This network includes national CORS stations from Ordnance Survey (GB), Tailte Éireann (Ireland) and Ordnance Survey Northern Ireland. It also includes a number of 'scientific' stations established by: the UK Met Office; the University of Nottingham; the UK Environment Agency Thames Region; the Space Geodesy Facility at Herstmonceux; Newcastle University; and the University of Hertfordshire, with the University of Nottingham's contribution being carried out in collaboration with the National Oceanography Centre, Liverpool.
The past year has seen a concerted effort to bring the operation onto the BGS systems and servers, with a focus in the last few months of re-establishing the creation of GNSS time series for each station.

GNSS interference monitoring



OS Net raw GNSS spectrum data feeds are integrated with OS Net RTCM data. The spectrum data analysis is automated using machine learning and AI techniques to automatically recognise, alert for and categorise interference events.

Along with the interference being categorised the receiver's real time PNT response to interference is also being studied Interference / jamming is perhaps more prevalent than expected. CORS are usually protected from serious impacts by the robust receiver tracking and multi constellation/observable operation, but the inherent GNSS vulnerabilities remain.

Some jamming trials, in a controlled environment, have taken place to study the impact of jamming on RTK performance

Space Geodesy Facility (SGF) at Herstmonceux

British Geological Survey

Natural Environment Research Council

The SGF is part of the 'Multi-hazards and resilience' global challenge, under Geodesy and Earth Observation, in the British Geological Survey (BGS). It is funded through 'National Capability and Public Good' by the Natural Environment Research Council (NERC). The SGF is part of the International Laser Ranging Service (ILRS) and International GNSS Service (IGS) networks. It is appointed by the ILRS as one of the eight ILRS Analysis Centres and was awarded by the Global Geodetic Observing System (GGOS) the status of 'New Technology SLR Site'. The site hosts ILRS SLR site HERL, two IGS GNSS sites HERS and HERT, and an absolute gravimetry station.

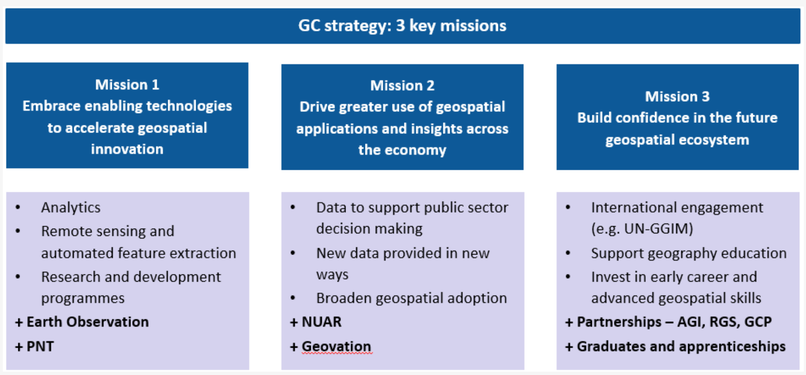
Data from HERS and HERT are also being used by PhD students in the School of Engineering, Newcastle University in their research projects, such as the investigation of site-specific multipath error for different GNSS constellations, and the study of constellation-specific repeating error sources

GNSS and PNT "Organisational structures"

Two bodies have been set up to provide a more "focused" view of GNSS and PNT activities in the UK, particularly and threats to GNSS and PNT continuity. A "National PNT Crisis Plan" has also been developed.

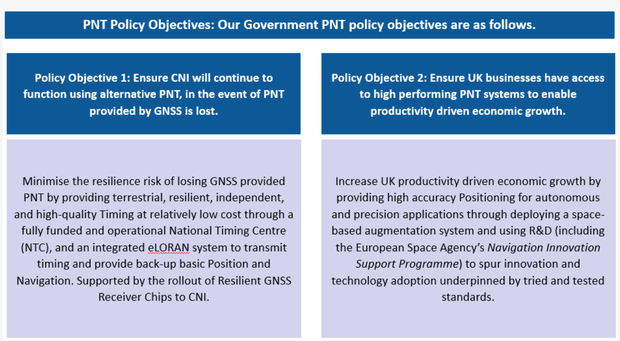
Geospatial Commission

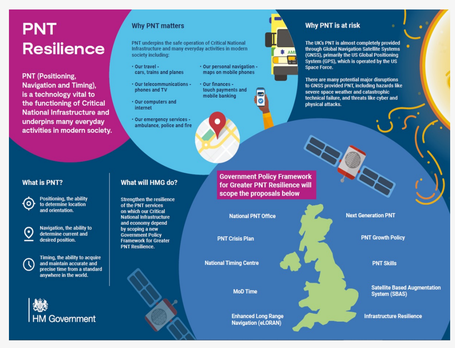
Published strategy up until 2030. The Government's plan to unlock the power of location data and technologies across the UK economy



National PNT Office

Goal to improve PNT resilience and drive growth through:
- PNT policy and coordination internationally and with industry
- Spending review bids
- Manage PNT delivery programmes
- Parliamentary and industry engagement





National PNT Crisis Plan

Sets out the actions and responsibilities if national PNT capabilities are lost.

Also, a roadmap for developments and projects designed to strengthen and improve the resilience of UK PNT