



Template for CORS Networks

This template gives an idea on what can be included in the document or poster to describe the national or regional CORS network that your organisation is responsible for. The format is not so important, the content is. The idea is to publish the description on the FIG Commission 5 web page together with other description of others networks..

This is a co-operation between the FIG Working Groups 5.2 (Reference Frame in Practice) and FIG Working Group 5.4 (GNSS). For more information about the working groups, please visit <http://www.fig.net/commission5/index.htm>.

Your document should be sent to Mikael Lilje, wg-chair of FIG-WG-5.2 (Reference Frame in Practice). Email address is mikael.lilje@lm.se

Your help is most appreciated!

TITLE: OS Net

General description

Originally known as the Ordnance Survey Active GPS Network, OS Net began in the late 1990s as a network of some 20 CORS distributed across Great Britain. These provided RINEX data which was made freely available to the public via the internet (<http://www.ordnancesurvey.co.uk/oswebsite/gps/>).

In 2003 Ordnance Survey purchased Network RTK software and embarked on a CORS densification program, with full national coverage achieved in 2007.

The main driver of this work was to provide a National Network RTK correction service to meet Ordnance Surveys internal business needs. A by-product has been the development of commercial GNSS correction services via licensed partners.

Between October 2008 and April 2009 the base station hardware has been fully upgraded to be GNSS compliant (currently GPS + GLONASS).

Manager(s)/Organisation(s)

Ordnance Survey, Great Britain's national mapping agency, owns the CORS hardware which are located on leased sites or are hosted by other government agencies and organisations.

The raw GNSS data feed from the CORS are used by Ordnance Survey to provide a real-time and post-processed GNSS correction services to internal customers.

Ordnance Survey also distribute the raw data to licensed partners who provide their own commercial GNSS correction services (see Services section below).



Type of equipment, description of a “typical” station

All OS Net CORS are equipped with Geodetic quality GNSS receiver (mainly Leica GRX1200GGPro or +GNSS, some Trimble NetR5) and antenna (mainly Leica AR25 with radomes, some Trimble Zephyr Geodetic2). Most are securely mounted on low buildings.

There is a subset of some dozen stations which are installed with geodetic quality monumentation. Where available these are drilled directly into bedrock, else are mounted on helical pier tripods. These are due to be completed July 2009.



Above: photographs of typical OS Net CORS

Description of Control Centre

OS Net is currently hosted on 12 servers (six live + six back-up servers). These are equipped with back-up power and connections to the internet.

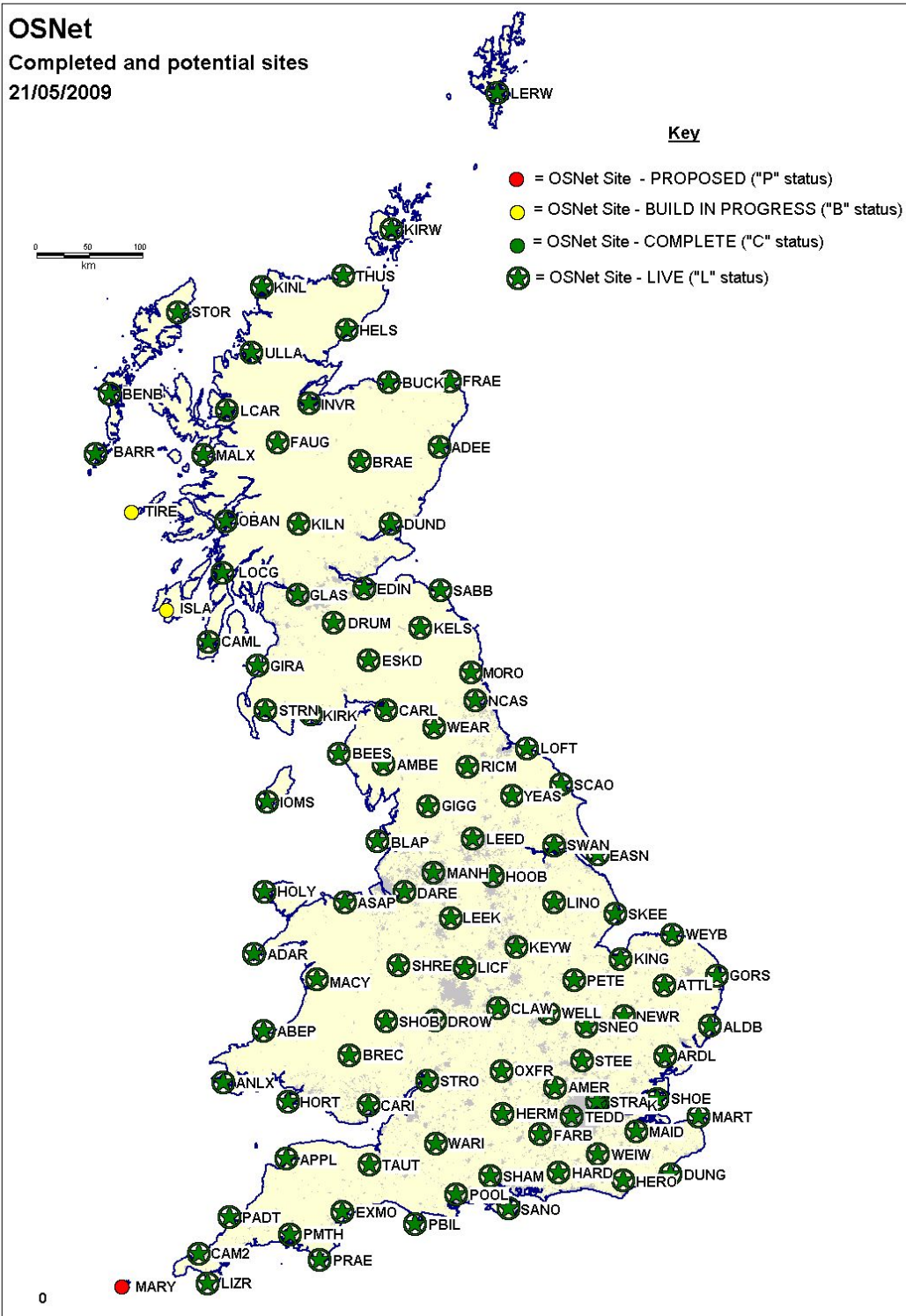
A Network RTK solution is produced using Trimble’s RTKNet software. VRS type real-time corrections are made available in RTCMv2.3 (GPS only due to bandwidth issues) and RTCMv3.1(GPS + GLONASS) format and Virtual RINEX data is available for post processed applications.

Raw (uncorrected) GNSS data in RTCM format are made available to partners via NTRIP to feed their own commercial correction services.

All OS Net CORS stream data in real-time to the Control Centre over high speed ADSL or leased lines.

Stations

OS Net comprises approximately 110 CORS. Average station density is about 60 km. Map of completed and potential sites is below.



Services

OS Net services include:



Realtime GNSS (currently GPS + GLONASS) Network RTK (VRS type solution) RTCM3 correction service for Ordnance Survey operatives via GSM, GPRS and NTRIP

Commercial GNSS Network RTK correction services via licenced partners, currently:

Leica Geosystems SmartNet (<http://smartnet.leica-geosystems.co.uk/SpiderWeb/SmartNet/smartnet.html>)

Topcon® TopNETPLUS™ (<http://www.topnetplus.eu/>)

Trimble® VRS Now™ (<http://www.trimble.com/vrsnow-GB.shtml>)

RINEX data at 30 second epoch rate are made freely available for up to 30 days on our website <http://www.ordnancesurvey.co.uk/oswebsite/gps/>. After this period, the data are archived at the British Isles continuous GNSS Facility (BIGF) at <http://www.bigf.ac.uk/>, along with data from other CORS operated within the UK.

Users

OS Net fulfils two main functions:

A sub-set of OS Net CORS are the current realisation of ETRS89 in Great Britain. These, in conjunction with the transformation models OSTN02 and OSGM02, define the national mapping coordinate system OSGB36.

The other primary function is as an enabler of downstream positioning applications: both real-time (Network RTK) and postprocessing (RINEX / Virtual RINEX):

Real-time GNSS corrections are produced for internal users and (via licensed partners) as commercial services.

RINEX data on a no cost to end user basis allows direct access to the geodetic framework of Great Britain. Long term RINEX data are also archived at the BIGF for use by the scientific community.

Issues to Resolve

Although raw data is stored locally at the CORS remote sites, we do not currently have an automated system of retrieval of data following a break in communications. We hope to resolve this by end of 2009.

Future plans

To improve the redundancy of the system we are looking into establishing a duplicate set up of the OS Net control centre at an off-site location (disaster recovery site).

Contact information

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