

NBN Atlas Update

NBN Atlas Development Updates

By Jo Judge

Board actions:

- a) **Note** the proposed timetable for the core NBN Atlas development
- b) **Note** the updates from the four countries regarding the country portals

Core NBN Atlas

The initial development of the NBN Atlas is time sensitive due to the imminent need to decommission the NBN Gateway, which is reaching the end of its usable life and would incur increased costs to keep it running beyond the end of March 2017. Therefore, it is essential that the NBN Atlas is live, has a substantial amount of data uploaded and provides at least the functionality of the NBN Gateway (without replicating the complex access systems) by the 31st March 2017.

Broadly speaking this functionality includes the ability to browse by dataset, species, sites and designation. The data can also be viewed in grid and/or interactive maps and records can be explored and downloaded. See Appendix A for a more detailed description of functionality. This development work will also include development of all common databases and basic functionality required for the individual country portals, although not the individual country user interfaces.

Timescale

It is estimated that this initial development stage will take approximately eight weeks of developer time. The process of data loading, including liaison with data partners regarding new Data Partner Agreements and licence designation will be undertaken, by the NBN Trust Secretariat, concurrently with platform development. The aim would be to have the NBN Atlas ready for a soft launch and user testing by end January 2017. With a fully live NBN Atlas in place by 31st March 2017.

A suggested broad plan for NBN Atlas development is:

Short term (by end March 2017) - A fully live core NBN Atlas with functionality to match (but not necessarily exactly replicate) the NBN Gateway

Medium term (by end March 2018) - ensuring NBN Atlas fits the need of the Network, including addition of further functionality

Long term (by end March 2019) - development of bespoke portals for education, engagement and Citizen Science etc.

The Core NBN Atlas Steering Group has agreed the initial development proposals and broad timescale.

NBN Atlas Scotland

Over 250 actions were identified from user feedback received in the period since the NBN Atlas Scotland was launched in May 2016. These were prioritised by the NBN Secretariat and the most pressing issues will have been actioned by the 11th

November 2016. The NBN Atlas Scotland is currently the flagship website for the whole NBN Atlas project, therefore it was considered essential to fix some of the more fundamental issues before diverting resource to the core NBN Atlas development.

SNH have been invoiced for £25,000 to cover the Scottish contribution to the NBN Atlas hosting and development (both the underlying combined databases and specific NBN Atlas Scotland work) this financial year.

NBN Atlas Wales

Steering group was on hold until after the Core NBN Atlas Steering Group Meeting had been held. A Welsh Steering Group meeting has been arranged for the 2nd November. The SG are keen to push forward with development of the NBN Atlas Wales.

NBN Atlas England

The budget for Atlas development is available but not yet committed. NE are seeking permission from Government Digital Services (GDS) and a decision is expected within 28 working days. There is, therefore, still a risk that England will not be able to provide financial support for the NBN Atlas this FY. NE are working on the assumption that approval will be given by GDS (likely with conditions attached), so are able to progress preliminary work to scope an agreement and prepare for a Steering Group and inclusive Stakeholder Group to be set up.

NBN Atlas Northern Ireland

Dave Martin (CSIRO) and Jo Judge visited Belfast to discuss the NBN Atlas Northern Ireland with the Centre for Environmental Data and Recording (CEDaR) and the Northern Ireland Environment Agency (NIEA) on the 9th and 10th August. Following this, funding is in place and the paperwork is ready for submission. NIEA are happy to commit to starting the project and are on the fringe of being ready to go.

Spatial Referencing in the NBN Atlas

Board Actions:

- a) **Note** the rotation caused to the OS grid squares in the Spherical Mercator projection
- b) **Note** the intention to add an OSGB grid projection at a later date

Background

The NBN Atlas uses the WGS84 coordinate reference system, based on decimal latitude and longitude, rather than the OSGB grid referencing system which is thought to be the most commonly used system by biological recorders in the UK, however, it is likely that marine data will be provided as latitude and longitude.

The projection used in the maps on the NBN Atlas is the Spherical Mercator, which is the most commonly used projection on the internet today, largely due to the success and prevalence of Google Maps. It is believed that most NBN data partners and members who will be embedding maps from the NBN Atlas into their websites are likely to use a spherical mercator base map, e.g. Google, Yahoo, Open Street Map etc. Furthermore, other UK biological recording platforms use WGS84 and web mercator projection, e.g. Indicia can support data entry in multiple formats (e.g. OS

Grid, Lat/Long, Channel Islands Grids, UTM30), the data are then converted and entered into the web mercator projection. GBIF also uses these systems.

The disadvantage of using the spherical mercator projection is that it leads to a slight rotation in the visualisation of the OS grid squares displayed in the maps in the NBN Atlas (see Appendix 1 for examples). This has led to debate on whether the NBN Atlas should be reconfigured to use the OSGB grid referencing system by default.

The NBN Gateway, does not use the OSGB system by default and the Interactive Map Tool (IMT) uses the Spherical Mercator projection with all available base maps, except for the OS base map. The rotation of squares is visible in the majority of the maps produced using the NBN Gateway IMT, as such, the Network should be accustomed to the slightly rotated visualisation of the OS grid squares that will be evident on the NBN Atlas mapping tools.

At this stage converting the NBN Atlas to use the OSGB grid referencing system by default would require approximately 60 days of developer time at an estimated cost of £35,000. This cost has not been included in any proposals to date and would, therefore, require extra funding or diverting funding from other proposed development work. This would also be a major diversion from the Atlas platforms being developed and used worldwide (as Great Britain is the only country in the world to use the OSGB system, it is not even used by Northern Ireland). It could also reduce the potential for adding other countries such as Ireland, the Channel Islands and British Overseas Territories to the NBN Atlas as these areas are not covered by OSGB.

This issue was discussed at the Core NBN Atlas Steering Group meeting on the 30th September. While the overwhelming majority of the SG were happy to progress development of the NBN Atlas platform using the Spherical Mercator projection, two individuals expressed serious concern over this course of action.

It will be possible to add an OSGB grid referencing projection option to the NBN Atlas at a later date. Furthermore, CSIRO are re-developing the spatial portal used in the Atlas of Living Australia and the NBN Atlas, which is due to be completed in early 2017. It is probable that implementing an OSGB projection will be easier (and therefore, less costly) once the new spatial portal is available.

Access to sensitive species data

The NBN Atlas platform does not currently provide a suitable process for dealing with access to sensitive species data. Therefore, further development work is required in order to provide enhanced access. Discussions in the Core NBN Atlas Steering Group meeting, indicated that the preferred option for enabling access to sensitive species would be through a Data Partner “White List” with approved individual data users having access to individual species or datasets.

No such system exists in any of the Atlas Platforms developed to date. Estimated costs for development of such a system are in the region of £20,000 with 35 days of developer time.

Effects of Spherical Mercator projection on visualisation of OSGB Grid squares

The spatial referencing system used in the NBN Atlas is the widely used WGS84 with Spherical Mercator projection. This projection system more accurately represents the spherical shape of the earth than the flattened appearance used by OSGB36 to produce a 2D map of the United Kingdom. When OSGB grid squares are displayed in the spherical Mercator projection, it results in the squares not being “straight” across the whole of the UK. The squares are rotated to the left as you go west from the prime meridian (0° longitude) and right as you go east. The land area covered in each square is the same as it would be on the flatter projection used in OSGB36.

Below are a series of figures that depict the visualisation of OS Grid squares in the NBN Atlas at a variety of scales and longitude. The grid square layers have downloaded from files produced by Charles Roper.

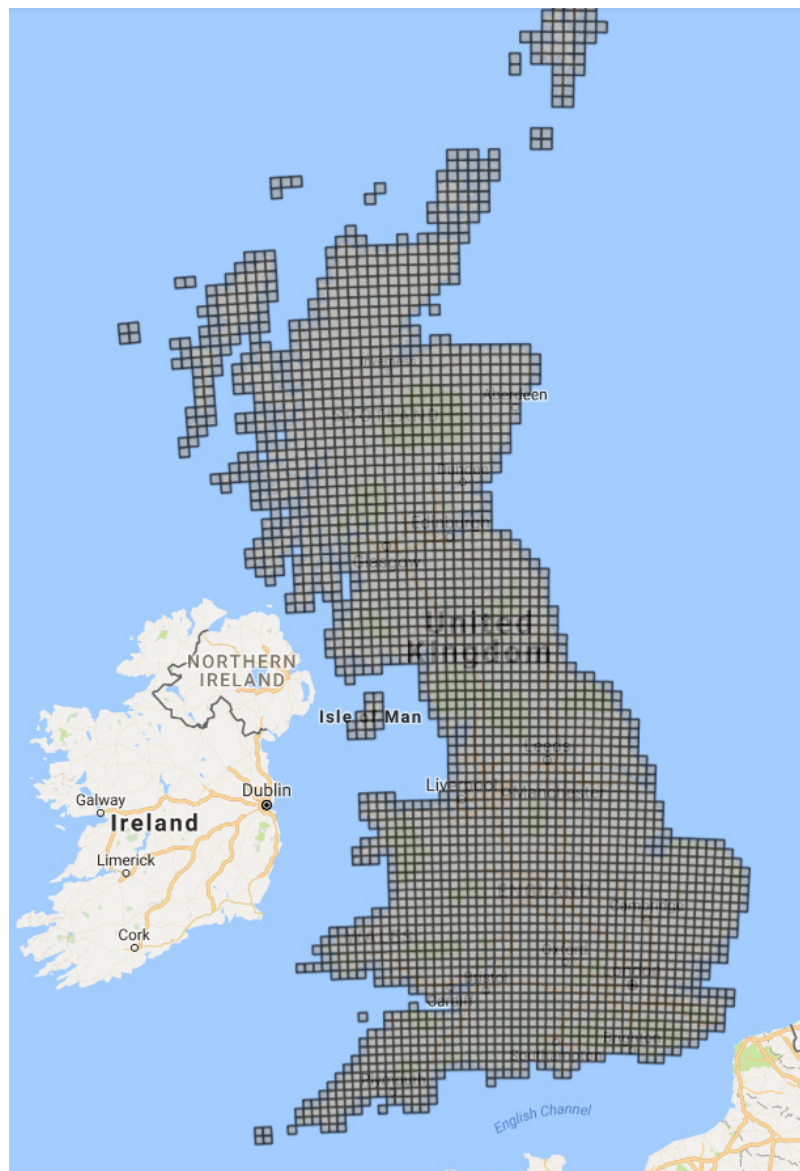


Figure 1. Small scale 10km OS grid squares showing the whole of GB.

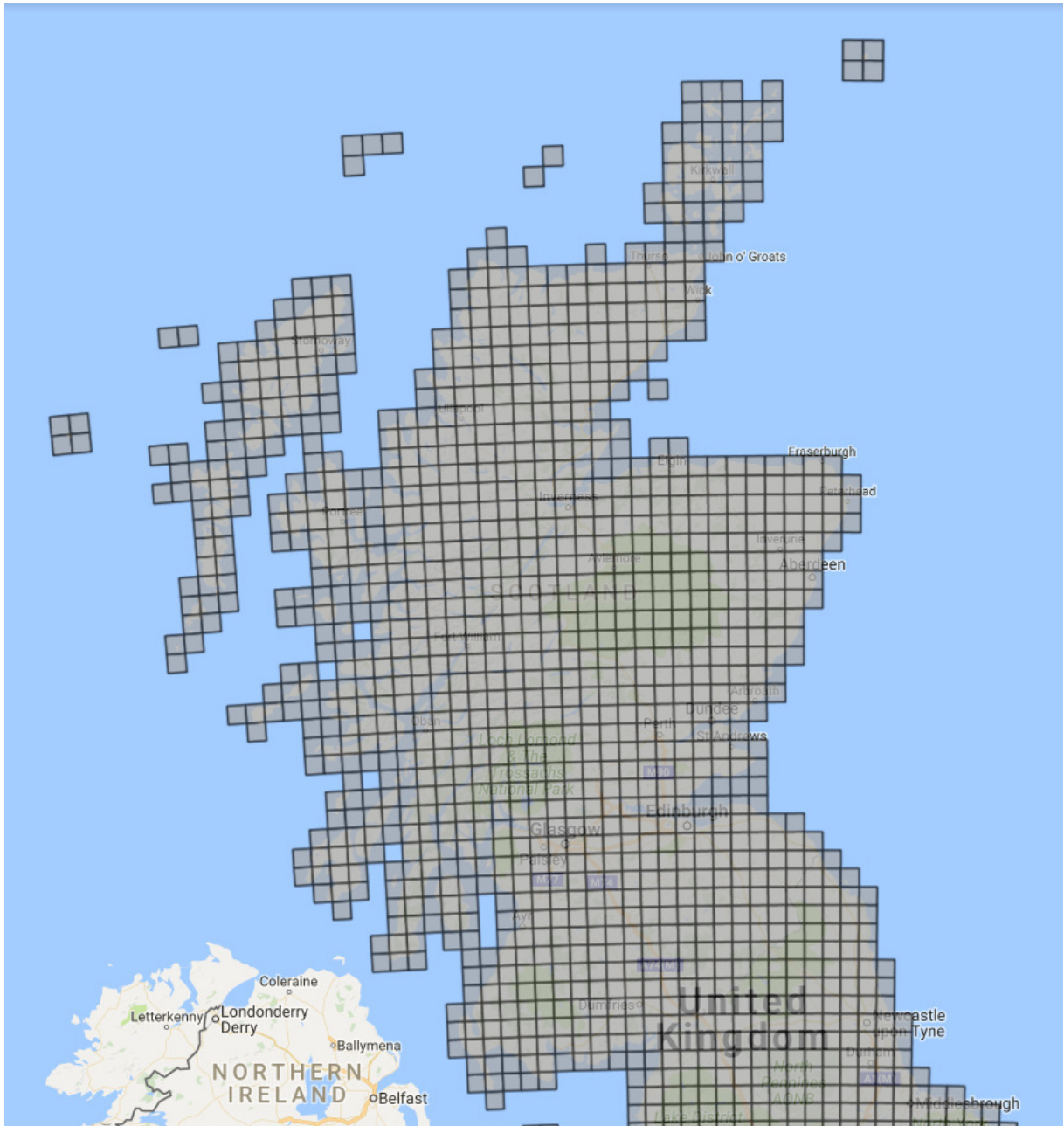


Figure 2. Small scale 10km OS grid squares showing Scotland.

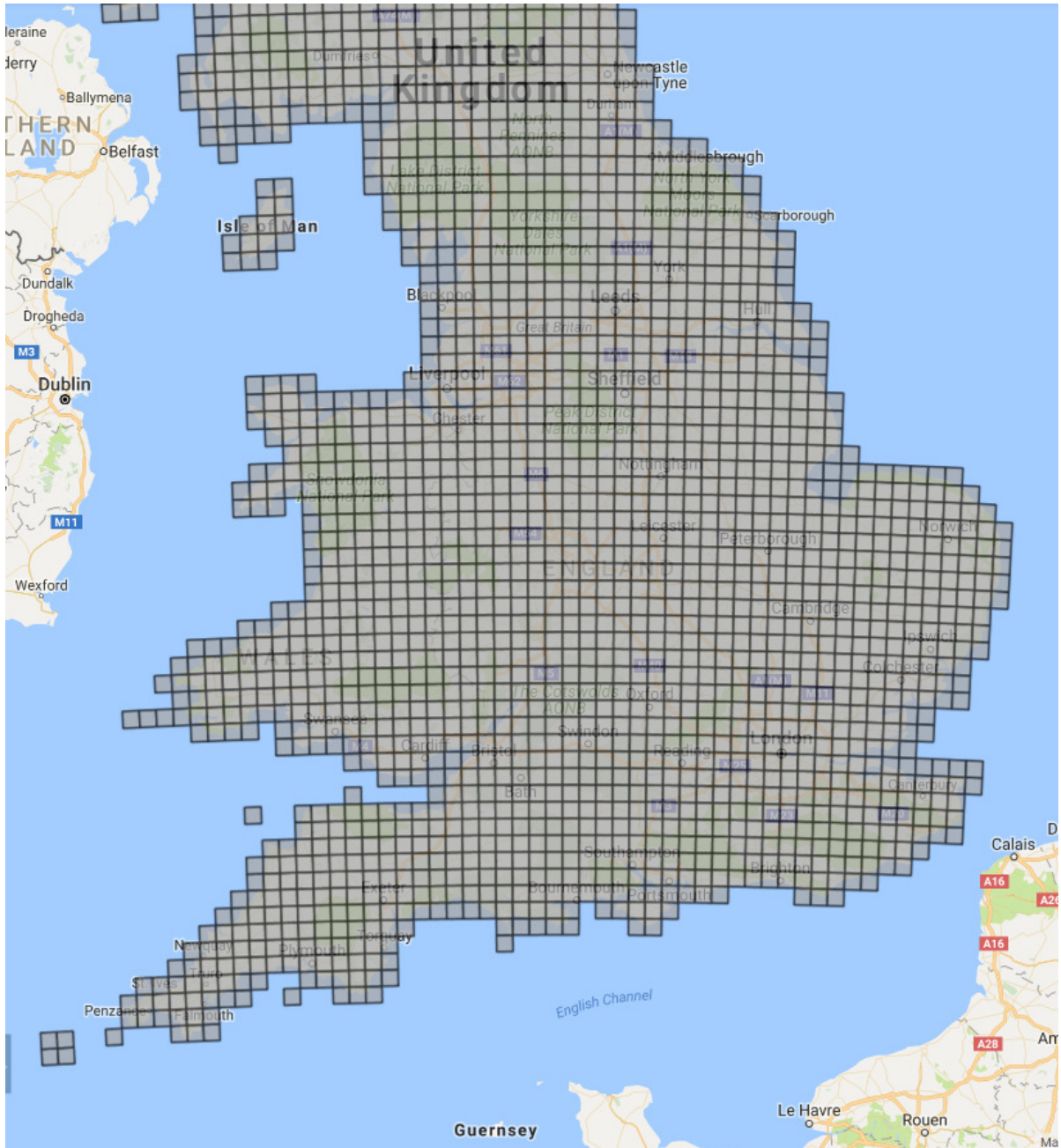


Figure 3. Small scale 10km OS grid squares showing England.

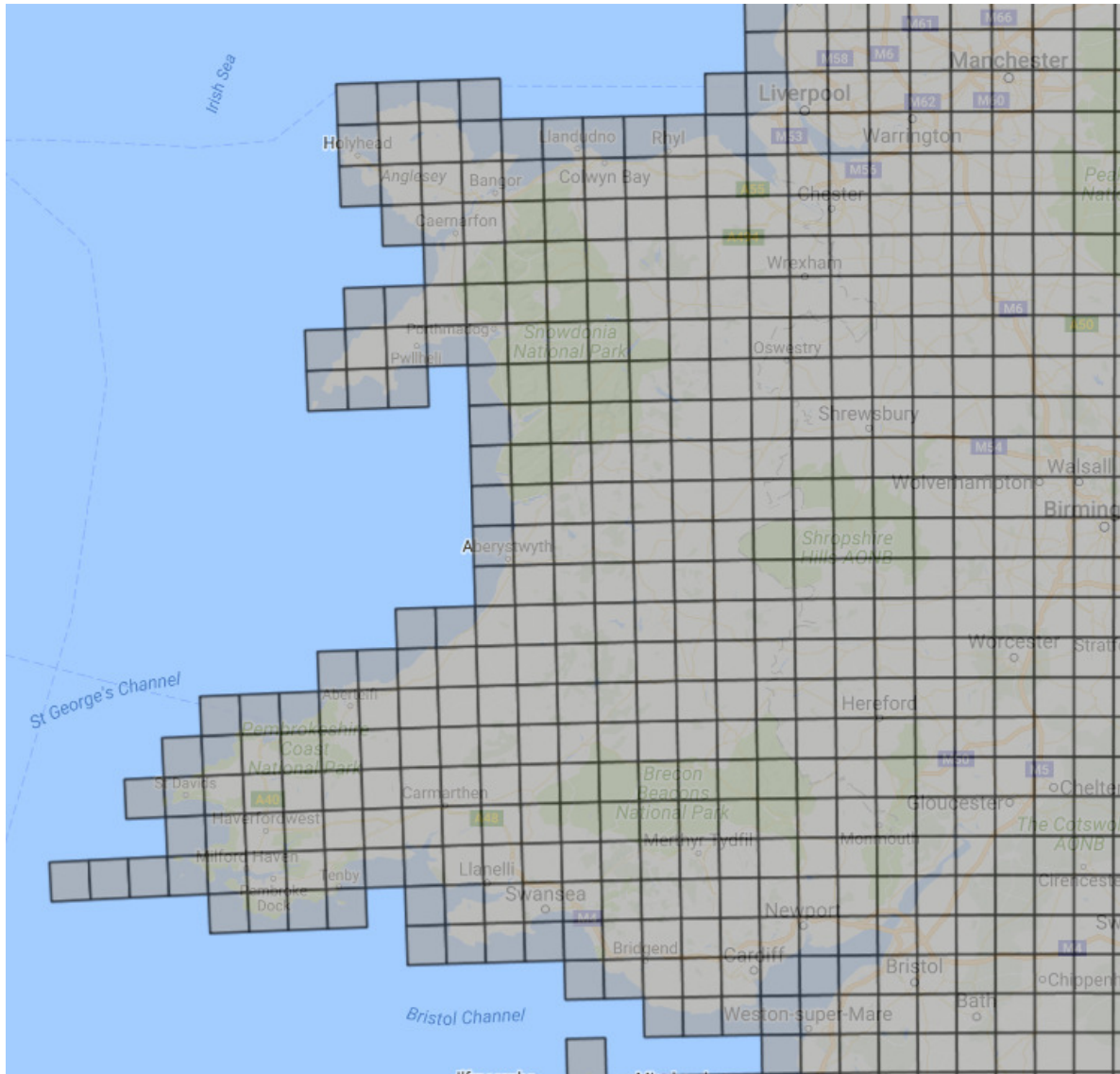


Figure 4. Small scale 10km OS grid squares showing Wales.

At these small scales, zoomed to country level (figures 1 to 4), the effect is very small and the output is likely to be accurate enough for publications, presentations etc.

The effect is more noticeable when zooming in to a medium or large scale (figures 5 to 8).

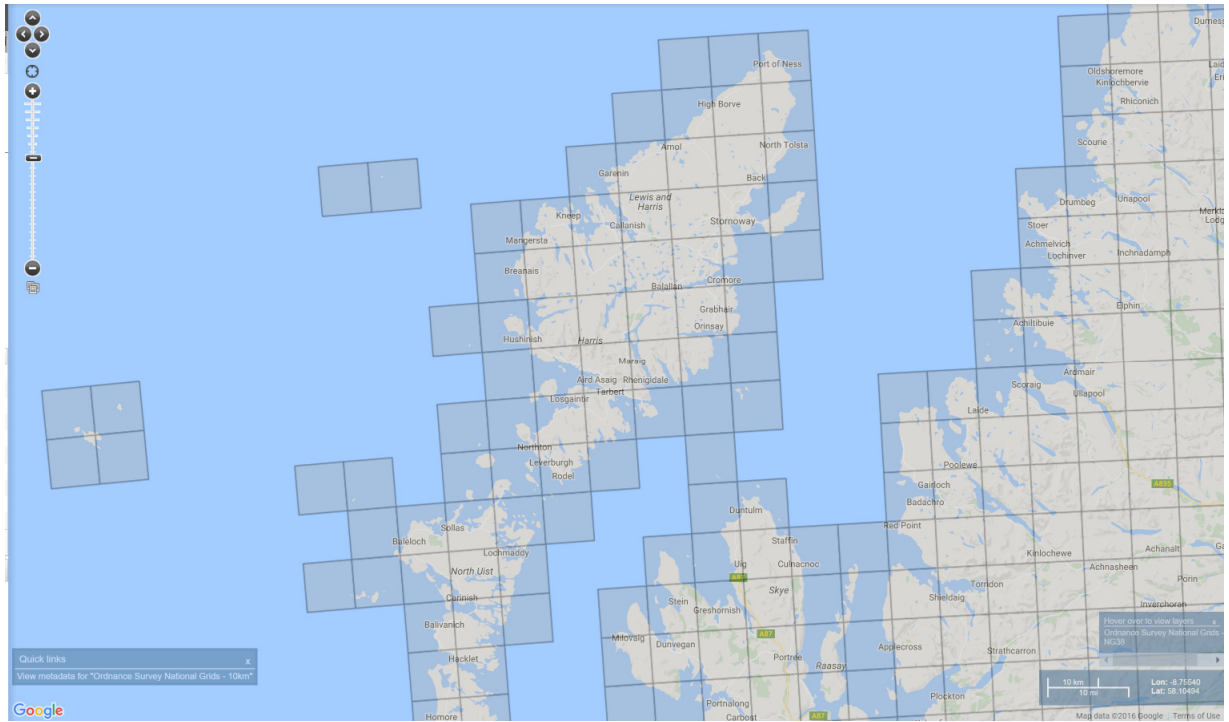


Figure 5. Medium scale, 10km OS grid squares covering North & South Uist in the west of Scotland (the most westerly area shown on this map).

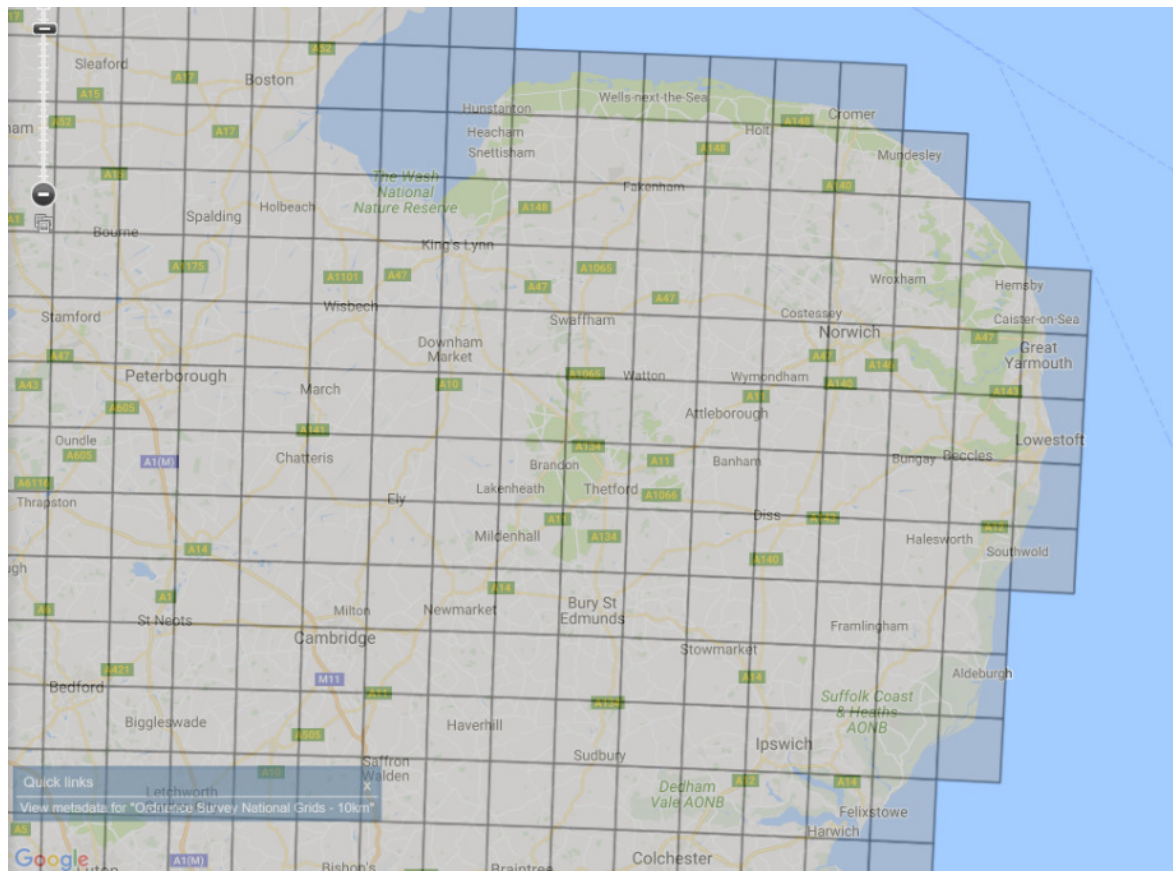


Figure 6. Medium scale, 10km OS grid squares covering East Anglia in the east of England (the most easterly area shown on this map).

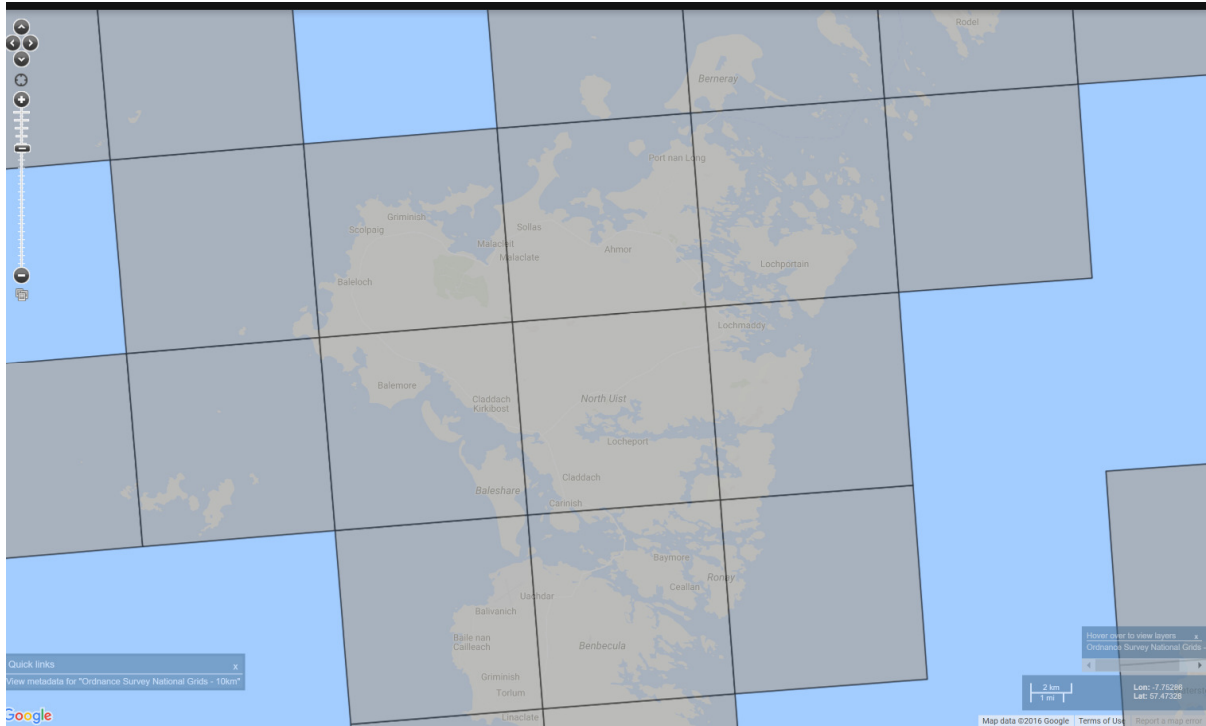


Figure 7. Large scale 10km OS grid squares covering North Uist in the west of Scotland.

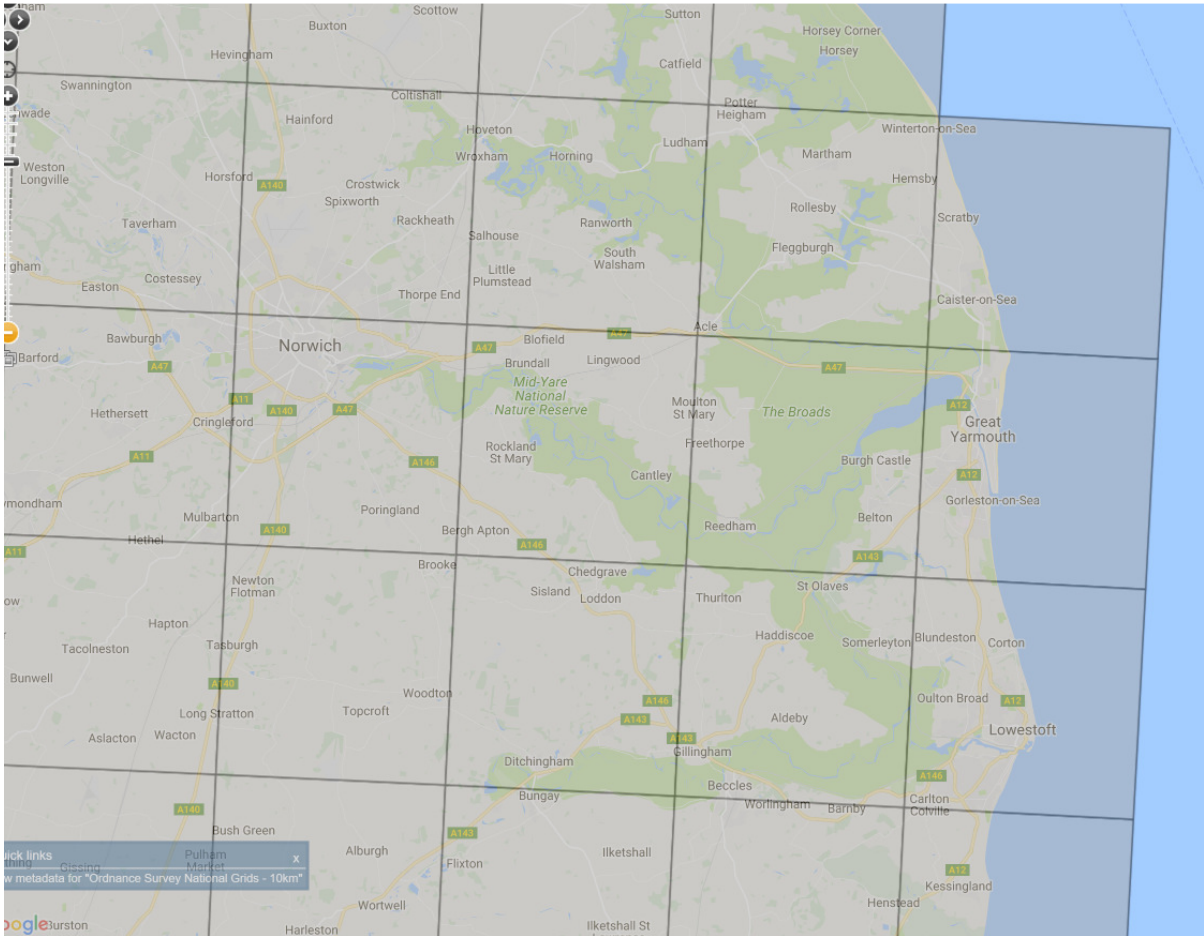


Figure 8. Large scale 10km OS grid squares covering part of Suffolk and Norfolk.

While it is not ideal, if users wanted to use larger scale maps direct from the NBN Atlas, it would be possible for the maps to be downloaded and rotated (and cropped as required) so that they looked as though the squares were “straight” both horizontally and vertically. The maximum amount of rotation that would be needed is 4° in either direction (figures 9 & 10). This would also be the case for the 1km squares (figure 11).

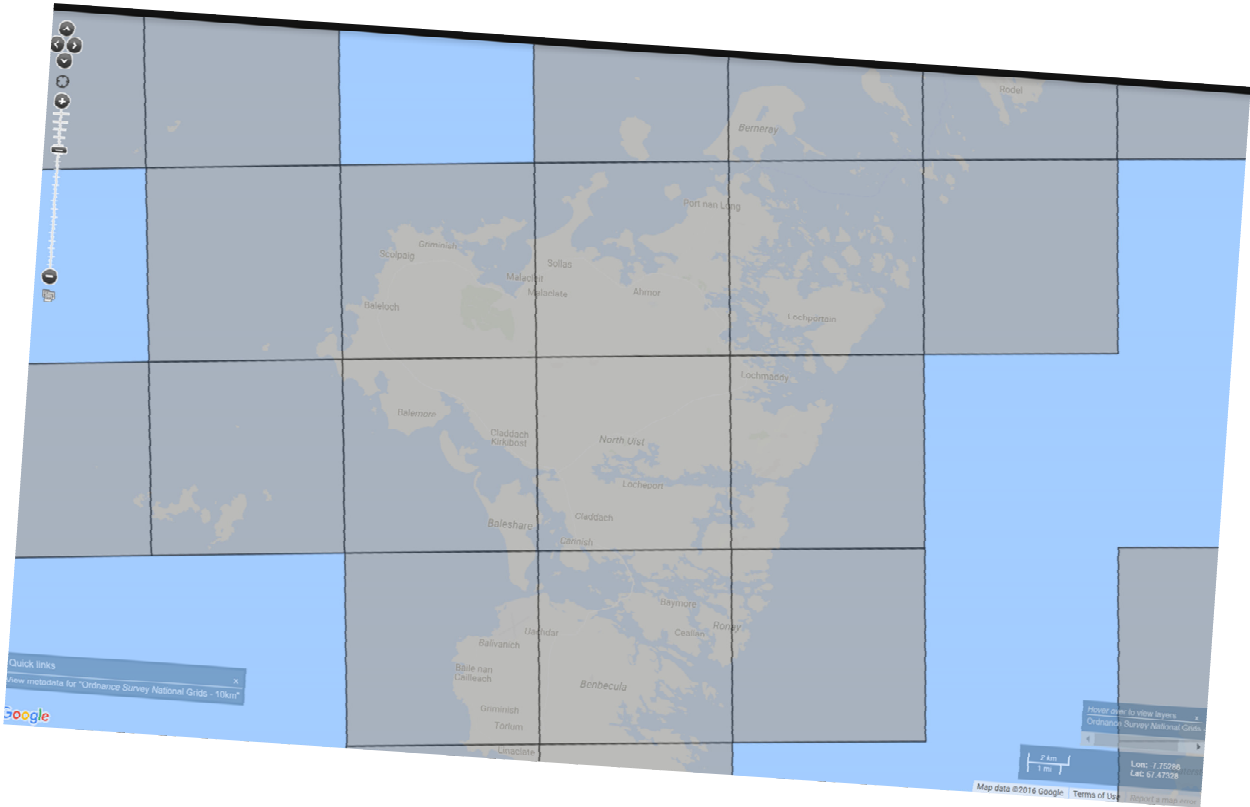


Figure 9. Large scale 10km OS grid squares covering North Uist in the west of Scotland, rotated by 4°.

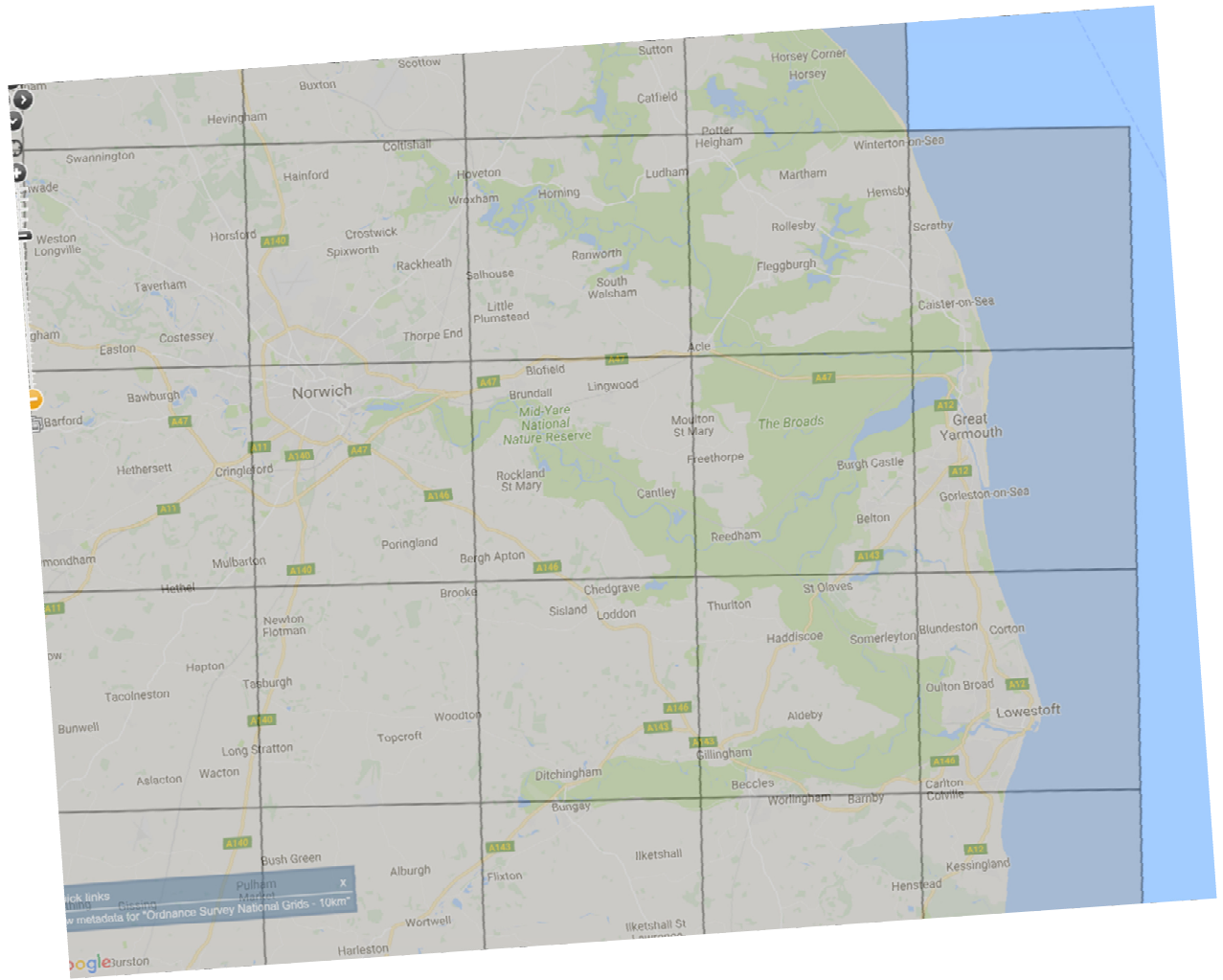


Figure 10. Large scale 10km OS grid squares covering part of Suffolk and Norfolk rotated by -4° .



Figure 11. Large scale 1km OS grid squares covering part of Great Yarmouth rotated by -4° .