

Mark Hill Windfarm Extension

Our local presence

ScottishPower Renewables leads the UK in development and operation of onshore wind energy. With more than 30 consented and operational projects, our turbines can power the equivalent of more than 600,000 homes*.

In this area we operate Arecleoch Windfarm and Mark Hill Windfarm, and since 2011, these projects alone have contributed more than £1.5million of funding for local initiatives, and will continue to provide community funding throughout their operational lives.

We are currently constructing Harestanes Windfarm near Moffat and are scheduling our recently consented Kilgallioch Windfarm for construction too. It is likely that these projects will create opportunities for local employment in nearby communities in addition to providing a boost to existing local funding and generating cleaner greener power for decades to come.

*Calculated using a UK average capacity factor of 26.06% and an annual domestic usage of 4,266kWh.

Mark Hill Windfarm Extension

We have identified an opportunity to extend our operational Mark Hill Windfarm on land to the south east of the site. We are calling this project Mark Hill Windfarm Extension.

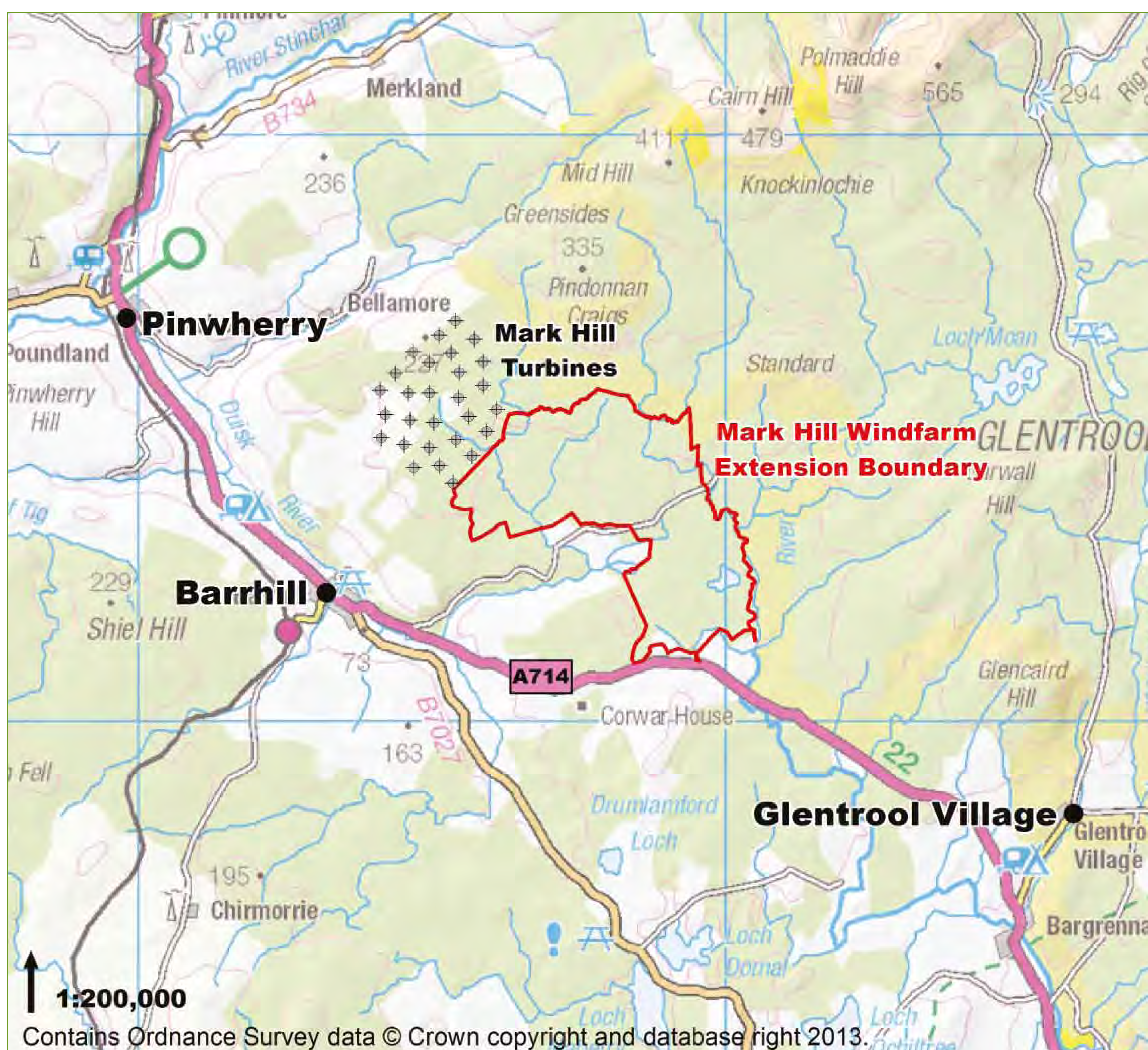
Current progress

We are in the early stages of development and have been undertaking environmental and technical surveys to inform the design of the windfarm. These surveys include examination of the ecology, archaeology, hydrology and ornithology present at the site as well as the traffic routes to site and the existing landscape of the surrounding area.

Next steps

We have already begun consulting with local communities and today we are presenting an initial windfarm design, informed by the results of the survey work we have carried out so far. We will use your feedback, and that of other consultees, to further refine our proposals before submitting an application for consent, anticipated to be early 2014.

Location



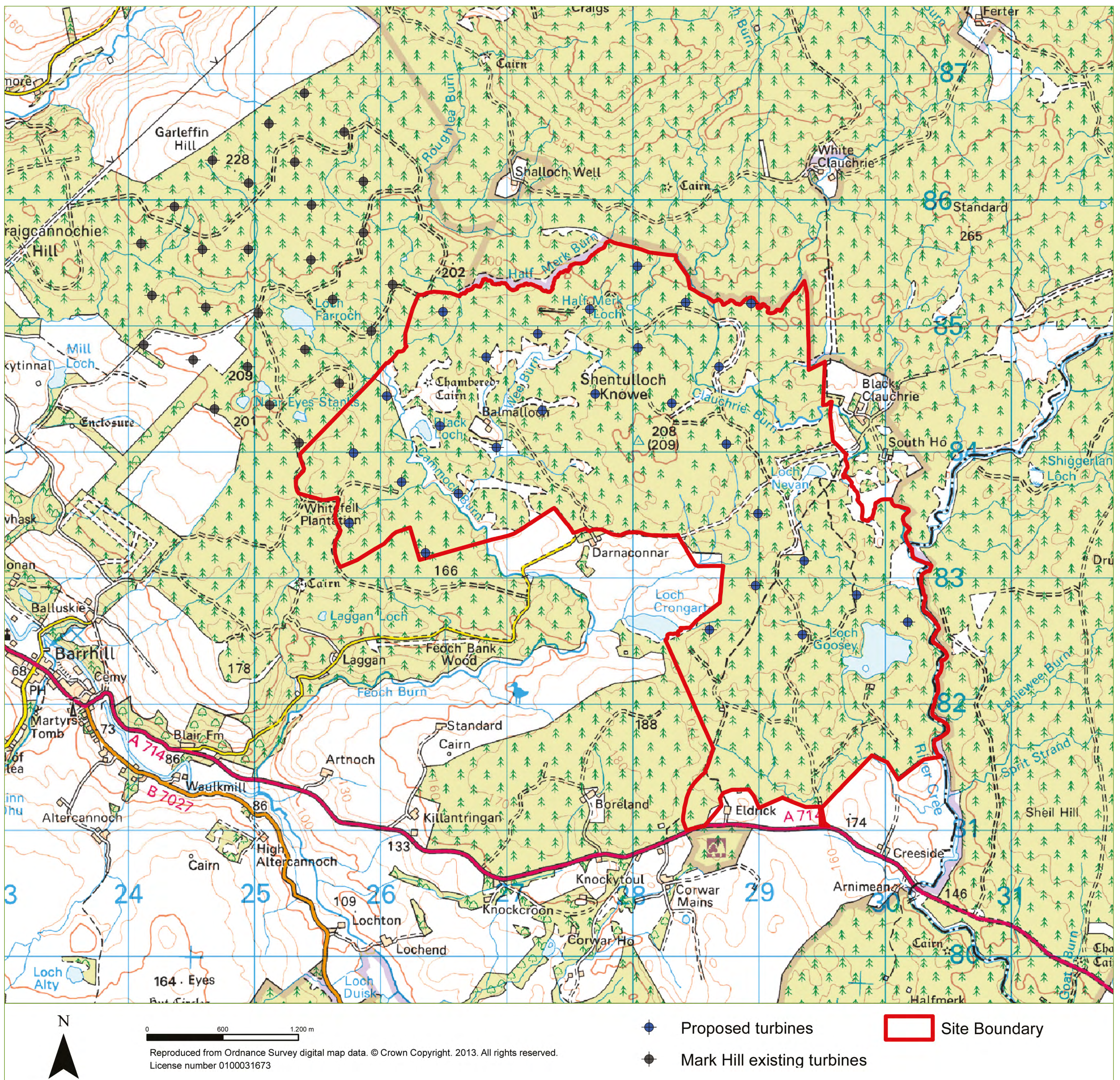
SCOTTISHPOWER
RENEWABLES

markhillextension@scottishpower.com

www.scottishpowerrenewables.com

Mark Hill Windfarm Extension

Proposed turbine layout



What will an extension to Mark Hill Windfarm look like?

Changing views are an obvious effect of an operating windfarm, and, whilst opinions on this are highly individual and varied, a clear and objective assessment can be made using established guidance and procedures.

To demonstrate what the proposed windfarm would look like, a landscape and visual assessment is undertaken. This examines effects on both the landscape and the visual amenity of the people experiencing the views of the landscape. The findings of this assessment will inform the design of this windfarm and will be presented in our planning application.

Consideration is given to the views from settlements and routes throughout the local area when forming the turbine layout and design.

Wireframes

Wireframe diagrams are simulations of the terrain, into which the turbines have been placed. These simulations take into account the curvature of the earth but as they are bare ground terrain models, they do not take account of the screening effect of vegetation, buildings or other structures. Wireframes from four viewpoints in the local area are presented on subsequent boards.

Photomontages

Photomontages are computer generated images that illustrate how Mark Hill Windfarm Extension would appear in the landscape. The colour of the turbines has been rendered to appear as realistic as possible for the time of day, sunlight and weather conditions when the photographs were taken. The turbines will be a similar colour to the turbines at the existing Mark Hill Windfarm. Photomontages from four viewpoints in the local area are presented on subsequent boards.



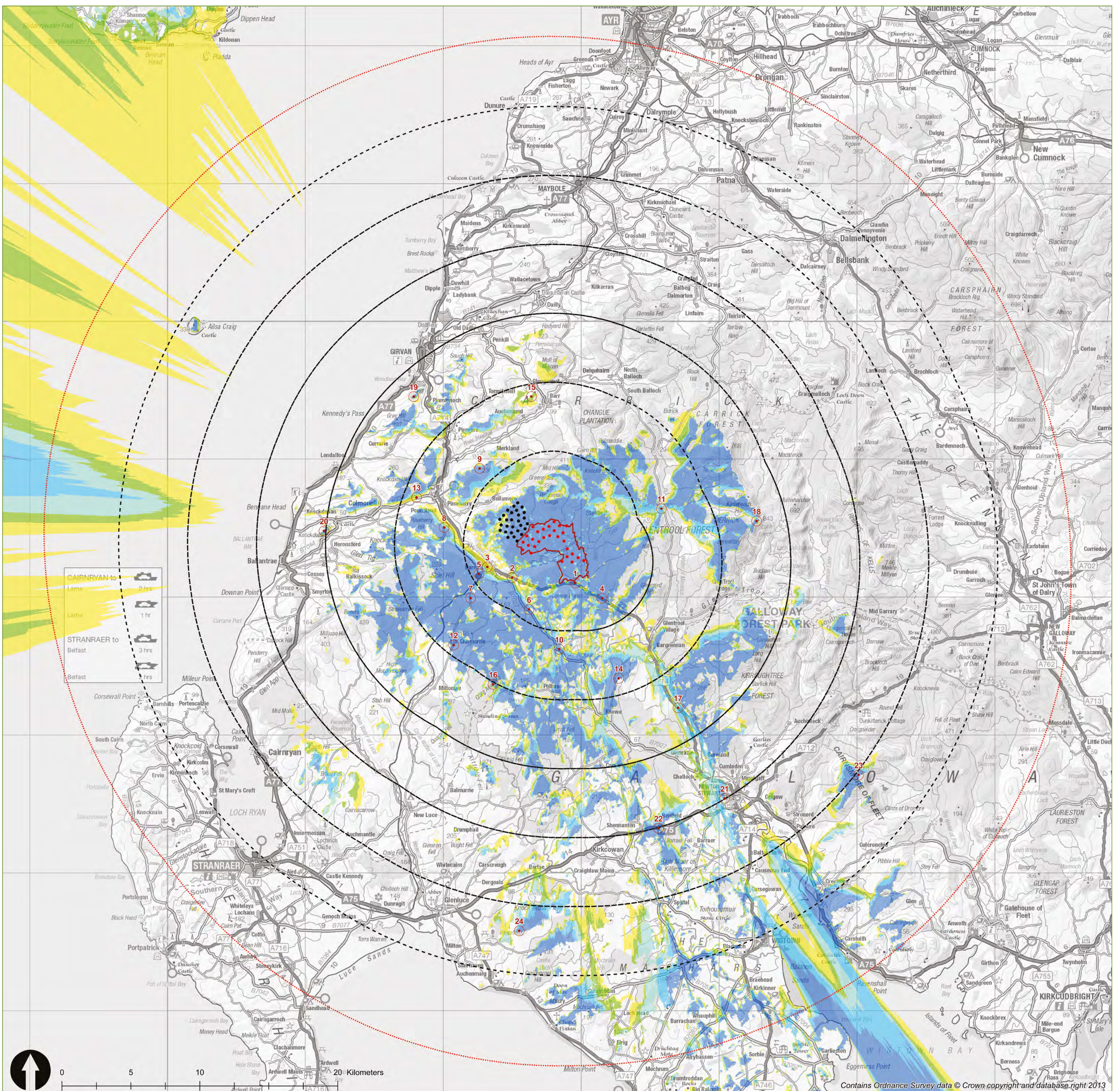
SCOTTISHPOWER
RENEWABLES

markhillextension@scottishpower.com

www.scottishpowerrenewables.com

Mark Hill Windfarm Extension

Zone of Theoretical Visibility



Zone of Theoretical Visibility & Viewpoint Locations

- Mark Hill Operational Turbines
- Mark Hill Extension Proposed Turbines
- ▭ Mark Hill Extension Site Boundary
- - - 5km Radii
- ⋯ 35km Study Area
- Blade Tip Zone of Theoretical Visibility
- No. of Turbines Theoretically Visible
- 0
- 1 - 6
- 1-12
- 13 - 18
- 19 - 24
- 25 - 28

- Viewpoint Locations:
- 1. A714, Creeside
- 2. A714, Feoch Burn
- 3. Barrhill, Gowlands Terrace
- 4. A714, near Cairnderry Cairn
- 5. Barrhill Station
- 6. B7027, Knockycoid/Craigance
- 7. Barrhill Road (C72), Cross Water
- 8. Core Path, Duisk Valley near Pinwherry
- 9. Footpath, Pinmore-Muck Water
- 10. B7027, Loch Mabery
- 11. Kirrieroch
- 12. Chirmorie
- 13. B734, Poundland
- 14. Glenvenoch Fell (SUW)
- 15. Auchensoul Hill
- 16. Craig Aine Fell (SUW)
- 17. A714, Cree Valley
- 18. Merrick
- 19. Byrne Hill
- 20. Knockdolian
- 21. Newton Stewart, Blair Monument
- 22. A75, near Kirkcowan
- 23. Cairnmore of Fleet
- 24. Knock Fell

Notes:
 The ZTV is calculated from a blade tip height (121.5m) to a view height of 1.8m above a bare ground terrain model.
 A terrain model was derived from OS Landform Panorama DTM data.
 The earth curvature and atmospheric refraction have been taken into account.

Zone of Theoretical Visibility

This 'Zone of Theoretical Visibility' (ZTV) illustrates the theoretical visibility of the proposed Mark Hill Windfarm Extension, based on bare ground landform. It does not include the screening effect of ground cover features, such as vegetation and buildings, which can significantly reduce the amount of actual visibility of the windfarm and therefore it represents the maximum potential visibility scenario.

It is important to remember that the ZTV is for illustrative purposes only and, whilst useful in the prediction of the appearance of the proposed windfarm, it may not be completely representative of what will be apparent to the human eye, particularly in relation to different weather conditions.

Viewpoint locations

The viewpoint locations shown on the ZTV diagram have been agreed with Scottish Natural Heritage (SNH) and will be considered in the Landscape and Visual Assessment being undertaken.

Wireframes and Photomontages from four of the viewpoints in the local area are presented here today.



SCOTTISHPOWER
RENEWABLES

markhillextension@scottishpower.com

www.scottishpowerrenewables.com

What would Mark Hill Windfarm Extension look like?

Viewpoint 1: A714, Creeside

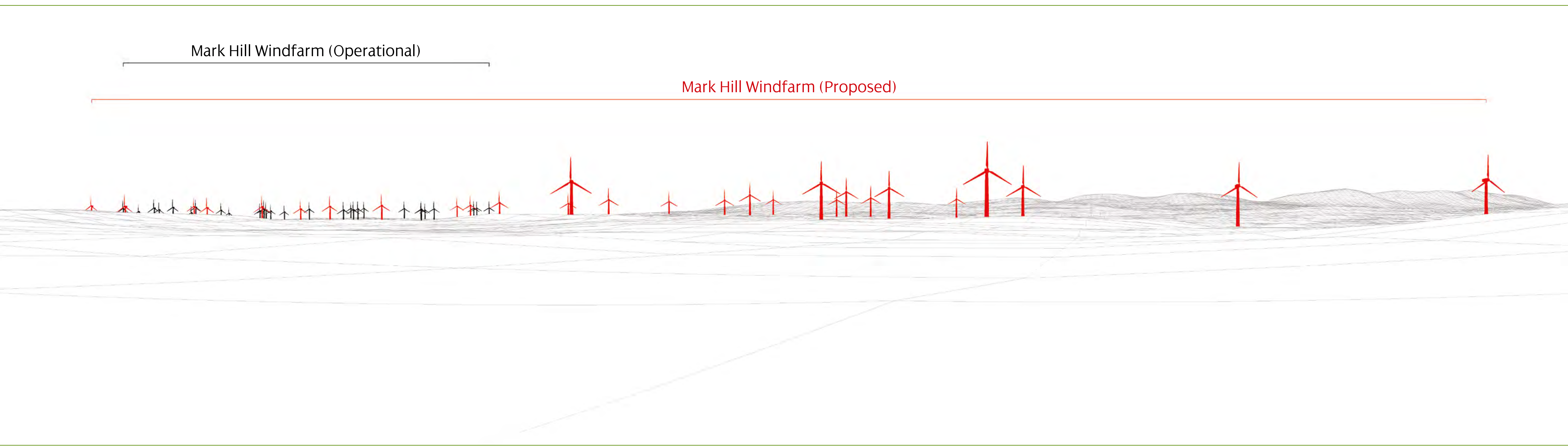
Photo: Existing view from A714, Creeside



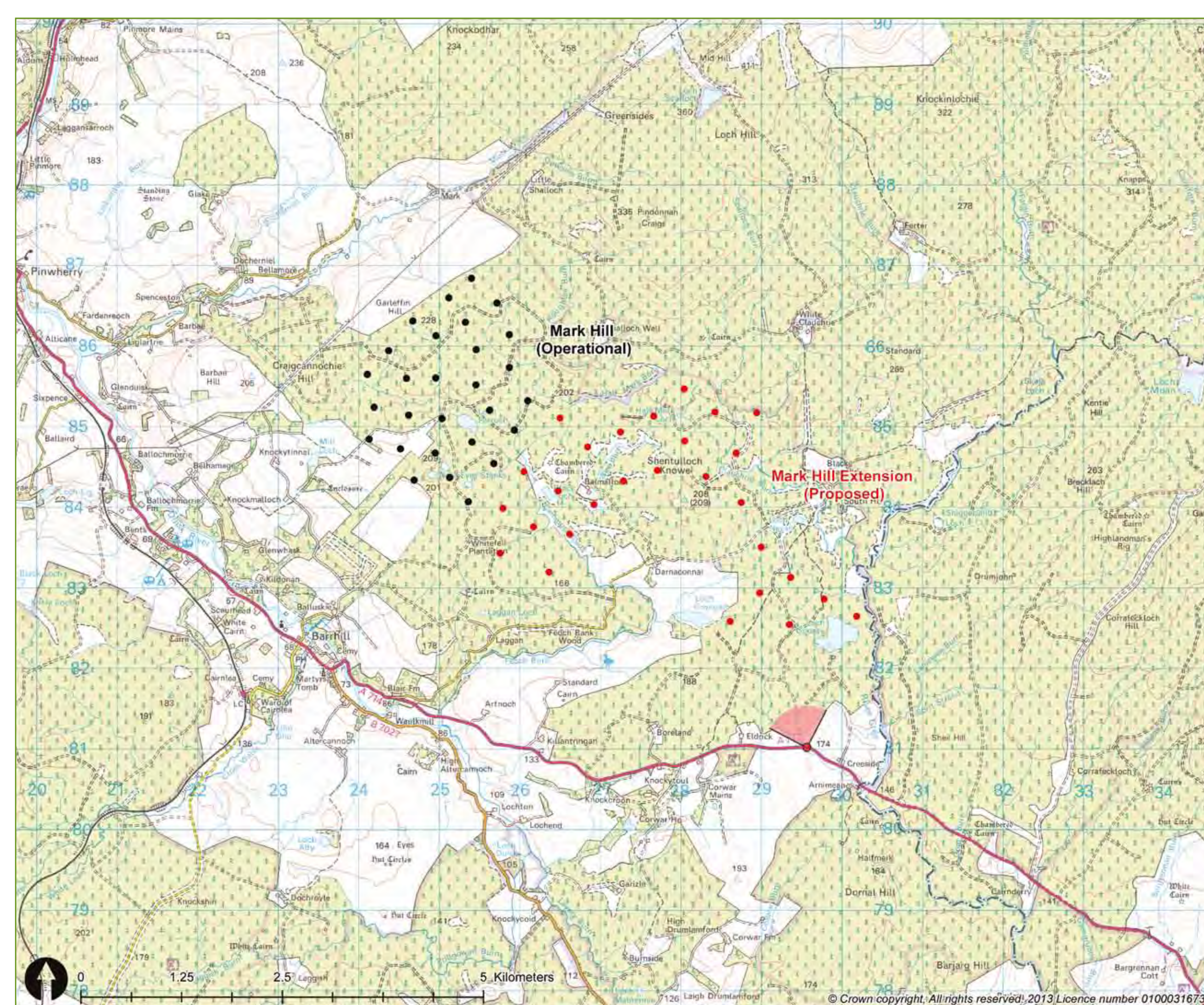
Photomontage of Proposed Turbines: View from A714, Creeside



Wireframe of Proposed Turbines: View from A714, Creeside



Map overview



Technical note

Grid Reference: E 229505 N 581025

Bearing to Site: 342°

Included Angle of View: 90°

Distance to closest proposed turbine: 1.53km

Viewing Distance: 50cm

Turbine Dimensions: Blade Tip 121.5m

Date and Time of Photo: 09/08/13, 13:52



SCOTTISHPOWER
RENEWABLES

markhillextension@scottishpower.com

www.scottishpowerrenewables.com

What would Mark Hill Windfarm Extension look like?

Viewpoint 3: Barrhill, Gowlands Terrace

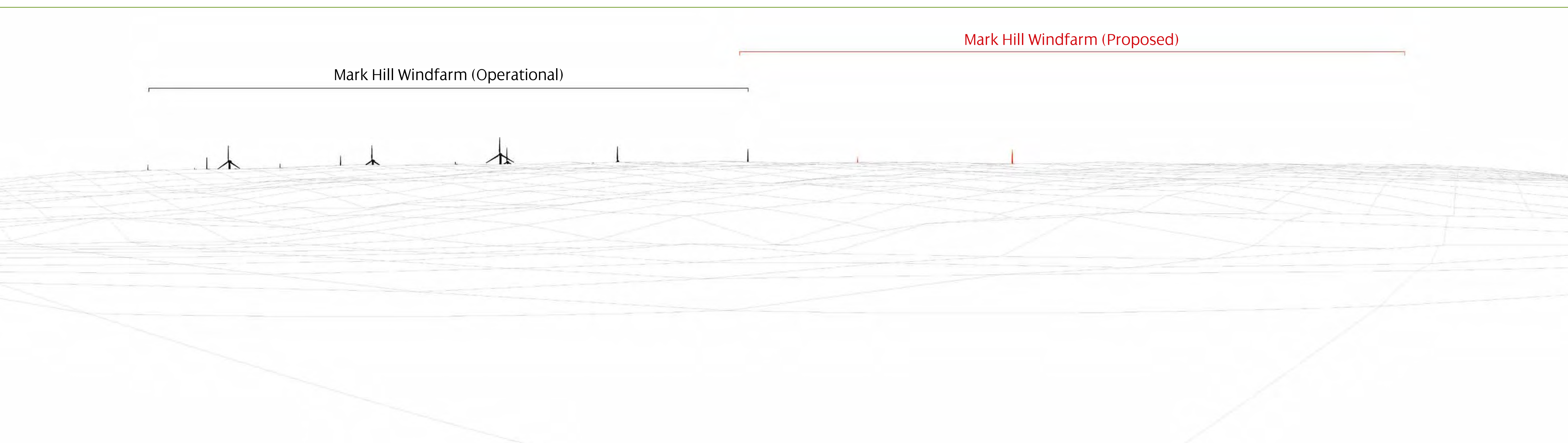
Photo: Existing view from Barrhill, Gowlands Terrace



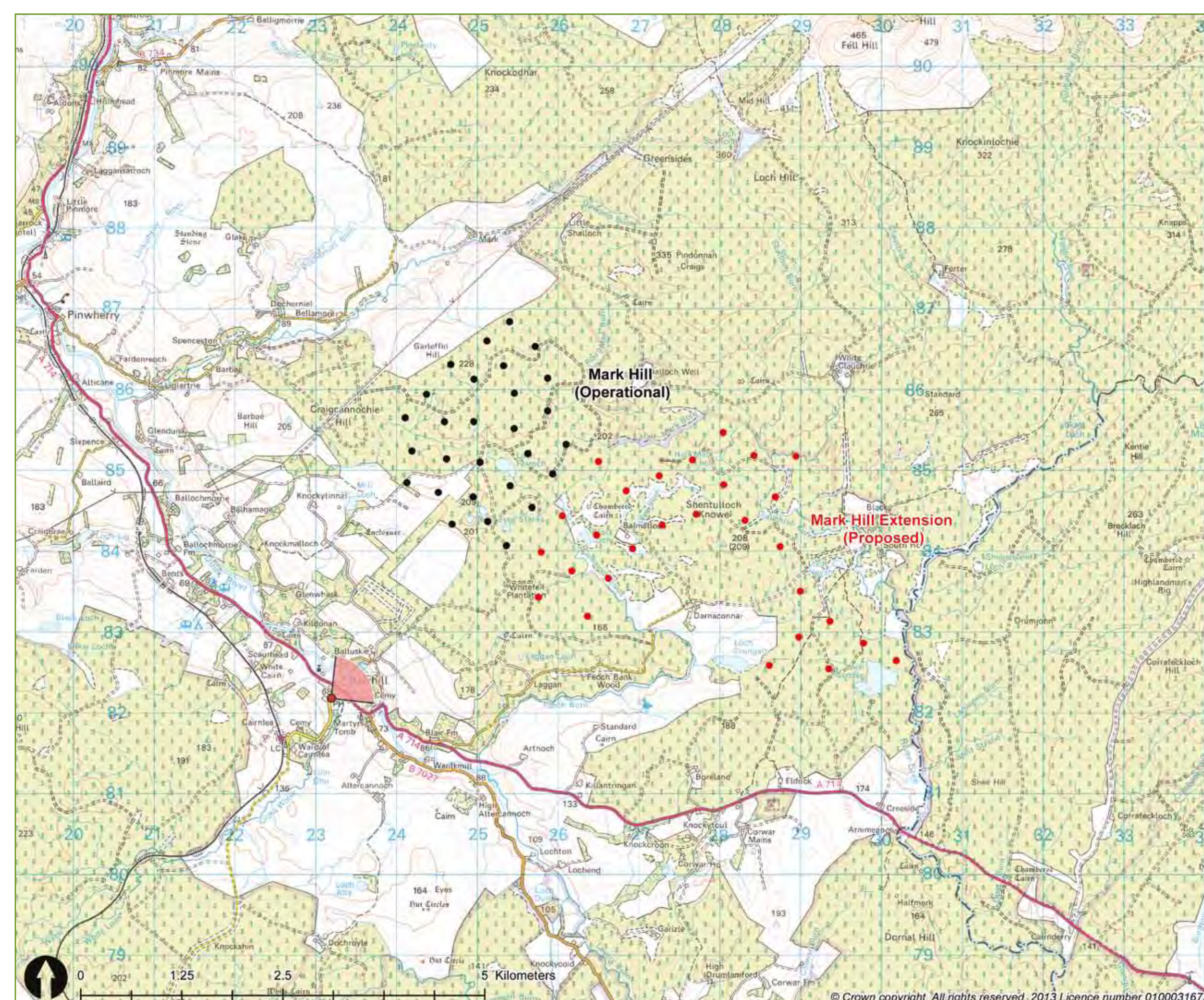
Photomontage of Proposed Turbines: View from Barrhill, Gowlands Terrace



Wireframe of Proposed Turbines: View from Barrhill, Gowlands Terrace



Map overview



Technical note

Grid Reference: E 223189 N 582195

Bearing to Site: 51°

Included Angle of View: 90°

Distance to closest proposed turbine: 2.85km

Viewing Distance: 50cm

Turbine Dimensions: Blade Tip 121.5m

Date and Time of Photo: 09/08/13, 15:05



What would Mark Hill Windfarm Extension look like?

Viewpoint 6: B7027, Knockycoid/Craigance

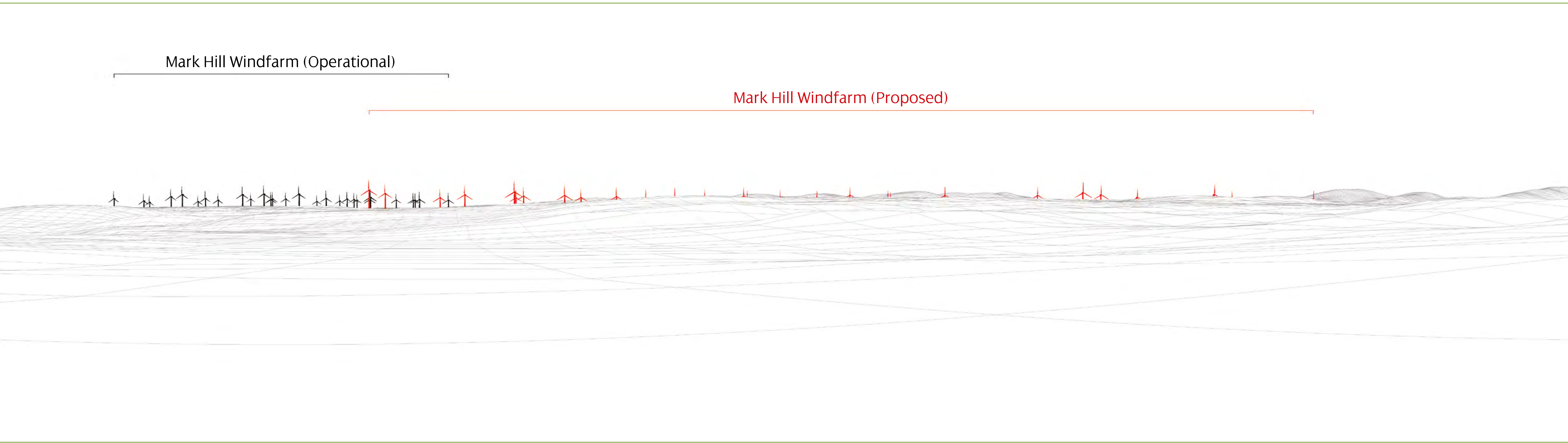
Photo: Existing view from B7027, Knockycoid/Craigance



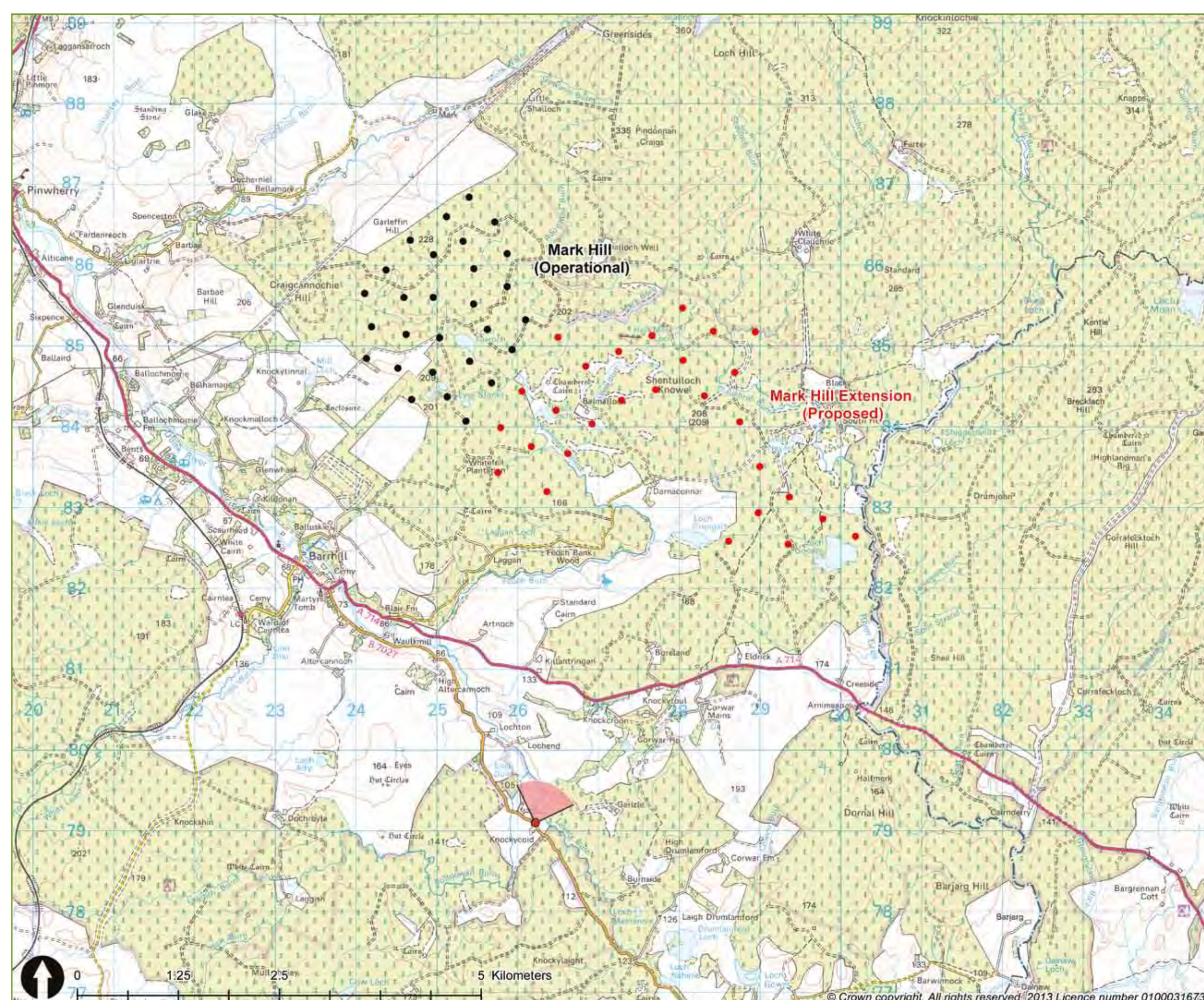
Photomontage of Proposed Turbines: B7027, Knockycoid/Craigance



Wireframe of Proposed Turbines: B7027, Knockycoid/Craigance



Map overview



Technical note

Grid Reference: E 226081 N 579169

Bearing to Site: 19°

Included Angle of View: 90°

Distance to closest proposed turbine: 4.04km

Viewing Distance: 50cm

Turbine Dimensions: Blade Tip 121.5m

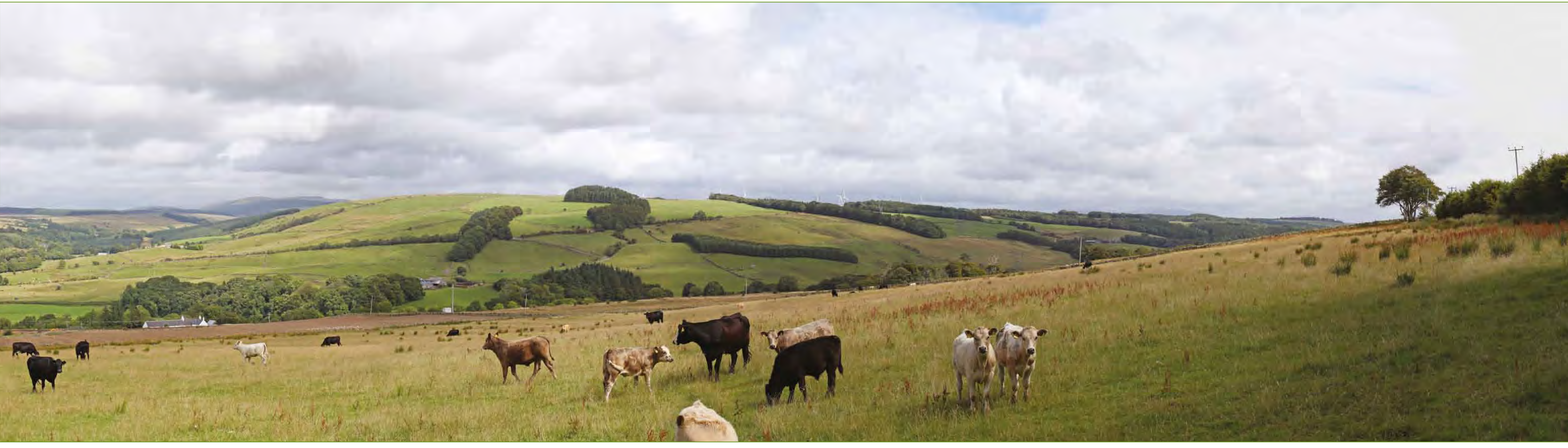
Date and Time of Photo: 09/08/13, 15:19



What would Mark Hill Windfarm Extension look like?

Viewpoint 8: Core Path, Duisk Valley

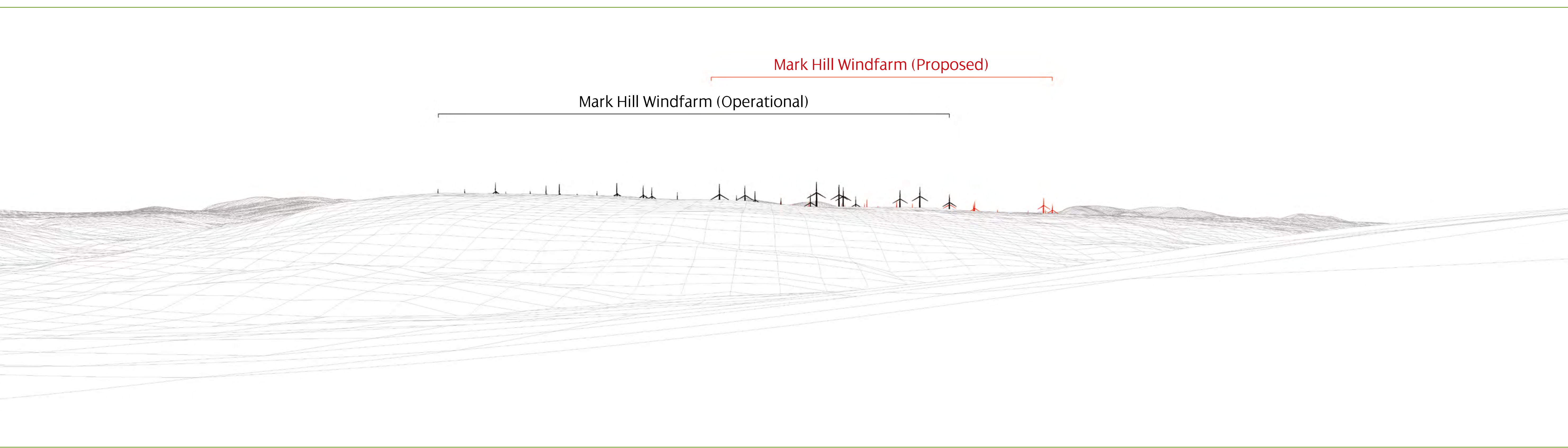
Photo: Existing view from Core Path, Duisk Valley



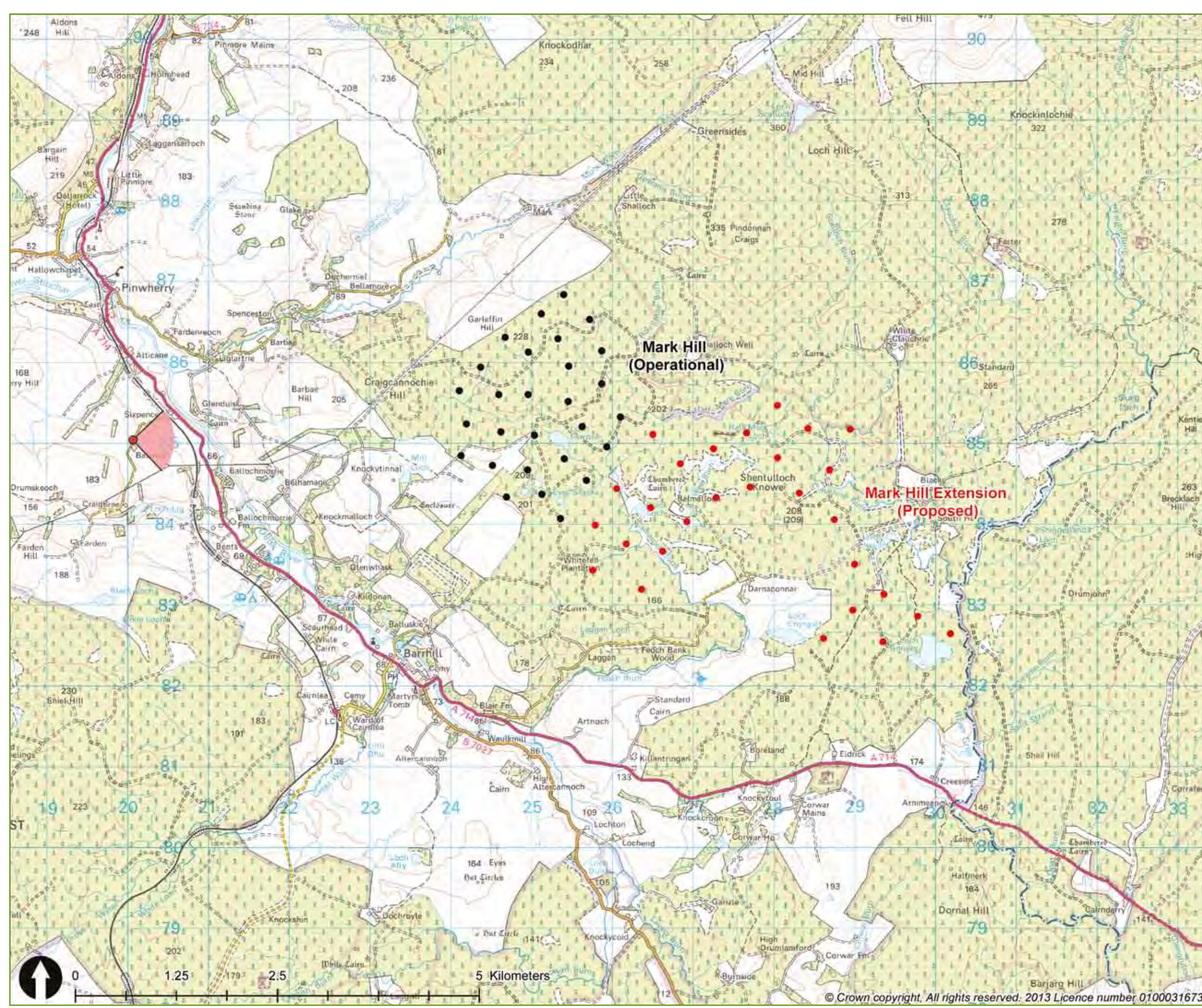
Photomontage of Proposed Turbines: Core Path, Duisk Valley



Wireframe of Proposed Turbines: Core Path, Duisk Valley



Map overview



Technical note

Grid Reference: E 220101 N 585069

Bearing to Site: 91°

Included Angle of View: 90°

Distance to closest proposed turbine: 5.79km

Viewing Distance: 50cm

Turbine Dimensions: Blade Tip 121.5m

Date and Time of Photo: 09/08/13, 13:52



Mark Hill Windfarm Extension

Environmental survey work

Ecology

Building a detailed ecological record of the site enables us to develop the layout in a manner that reduces or avoids adverse effects on habitats and protected species. To do this we are undertaking detailed habitat and protected species surveys and we are consulting with organisations such as Scottish Natural Heritage (SNH) and the Scottish Environment Protection Agency (SEPA).

The majority of the site is plantation forestry and mire bog with some areas of active bog. Otter, badger, adder, common lizard and bats are active in the area and the presence of these species is being taken into account in the design of the windfarm. The results of fish surveys being carried out will also be considered.

Ornithology (birds)

Bird surveys have been undertaken at the site and surrounding land. The information collected during surveys will be used to identify areas of the site used by breeding birds and to quantify flight activity in the site area to inform the design of the windfarm.

Birds noted during surveys on the site and surrounding area included hen harrier, merlin, goshawk, peregrine, barn owl and osprey. Flights of whooper swan, greylag goose, pink-footed goose and pale-bellied brent goose along with golden plover were also noted and the windfarm layout will be developed to avoid significant impacts on these species.



Whitelee Windfarm, turbines 110 metres tall, turbines proposed for this development are up to 122 metres.

Cultural heritage

Desk and field studies have been undertaken to identify the presence and quality of cultural heritage features within and surrounding the site. Within the site, there is one Scheduled Monument, Balmalloch Chambered Cairn, and two further cairns at Darnaconnar and at Half Merk. The other cultural heritage sites within the site boundary relate to the agricultural landscape and include farmsteads and associated field systems.

Noise

Monitoring of existing background noise is being undertaken at representative properties surrounding the site. The data obtained will be analysed using specialist software to inform an assessment of potential noise generation during both the construction and operation of the windfarm.



Beinn Tharsiunn Windfarm, turbines 81 metres tall, turbines proposed for this development are up to 122 metres.



SCOTTISHPOWER
RENEWABLES

www.scottishpowerrenewables.com

markhillextension@scottishpower.com

Mark Hill Windfarm Extension

Environmental survey work

Surface hydrology and peat stability

Obtaining an understanding of the ground conditions and surface waters at the site will inform the layout of the windfarm and minimise the risk of groundwater and surface water being adversely affected.

Desk and field based hydrological assessments are being undertaken and public and private water supplies in the area will be identified and mapped. Consultation with the Scottish Environment Protection Agency will also be undertaken.

Detailed peat probing is being undertaken across the proposed development area to establish peat type, depth and condition for the assessment of peatland habitats.

Traffic and transport

Access to the site could be via Mark Hill Windfarm but could also be via a new site entrance on the A714 south east of Barrhill.

Delivery of the larger turbine components to site during construction will require careful management and scheduling. All heavy goods vehicles and abnormal load traffic will use agreed access routes.

Once operational, impacts on traffic and transport from this windfarm will be reduced considerably.

Aviation

Wind turbines have the potential to impact upon military and civil aviation operations, primarily through effects on radar, but also if they are sited within military low flying areas. We are consulting with the relevant aviation authorities to take this into account.

Telecommunications and television

All telecommunications and television agencies are consulted as part of the Environmental Impact Assessment (EIA) process. Careful siting and positioning of turbines, together with other technical measures, can address any potential interference problems should these be identified during the design of the windfarm.



SCOTTISHPOWER
RENEWABLES

markhillextension@scottishpower.com

www.scottishpowerrenewables.com

Benefits for local businesses

As a leading operator of onshore wind energy with 12 projects* located in South Ayrshire and Dumfries & Galloway, we understand the importance of maximising opportunities for local benefit.

At ScottishPower Renewables we work with local contractors to service and maintain our current projects and are keen to work with local businesses during both the construction and operational life of our future projects, anticipated to be for 25 years.

* Arecleoch Windfarm, Dersalloch Windfarm, Eucharhead Windfarm, Ewe Hill Windfarm, Glen App Windfarm, Harestanes Windfarm, Harestanes Windfarm Extension, Kilgallioch Windfarm, Mark Hill Windfarm, Mark Hill Windfarm Extension, Wether Hill Windfarm, Wether Hill Windfarm Extension.

Interested in working on one of our windfarms? Speak to a member of staff today.

During construction there are opportunities for:

- Bricklayers
- Bulldozer operators
- Cable jointers and pullers
- Chainsaw operators
- Concreters
- Crane operators
- Excavator operators
- Drill rig operators
- Dump truck drivers
- Electrical engineers
- Electricians
- Steel erectors
- Steel fixers
- Stone crushing machine operators
- Fibre optic networking technicians
- Ground testers
- HGV drivers (some with loader crane tickets)
- Joiners
- General labourers, labourers with roller driver ticket and labourers with slinge/banksman tickets
- Loading shovel operators
- Mulching machine operators
- Plasterers
- Plumbers
- Roofers
- Shuttering joiners
- Timber forwarding operators
- Timber harvester operators
- Tractor drivers (with fuel bowser ticket)

During operation there are opportunities for:

- Site supervisors
- Turbine technicians
- Support staff for equipment storage, environmental activities and health and safety activities
- Statutory turbine inspectors
- Transport companies to provide courier and haulage services for turbine components
- Crane companies to provide lift capability on site
- Hire companies for tooling and equipment hire
- Building and civil engineers
- Civil contractors for road maintenance, ditching, crane pad repairs and testing, grass cutting, weed control, road furniture installation and repair, gate installation and repairs
- Waste management companies to provide waste management services for hazardous (oil filters/rags etc) and non hazardous (domestic type) waste including recycling
- Cleaning companies to service our substation premises including office space and toilets
- Building repair companies to provide local electricians, painters and decorators, flooring contractors, plumbers etc to maintain the buildings
- Catering services for meetings and visits on site



SCOTTISHPOWER
RENEWABLES

www.scottishpowerrenewables.com

markhillextension@scottishpower.com

ScottishPower Renewables

Powering communities in south west Scotland

As responsible developers of renewable energy we strive to be good neighbours in all aspects of our work. We are committed to south west Scotland and to maximising opportunities for local communities to benefit from our projects.

We are proud to be powering local communities across the UK, helping to deliver long term aspirations and supporting local projects with more than £8 million of funding to date.

Since becoming operational in 2011, our Arecleoch and Mark Hill windfarms have already contributed more than £1.5 million of community funding for those living in this area.

Funding local projects

The projects we have funded in this region are enabling communities to achieve the goals set out in their local development plans. Examples include:

- The development and launch of a local tourism strategy
- Bursaries to assist local people cover study costs and gain new skills to enter employment within the renewables industry
- Community owned transport to assist with rural connectivity for a wide range of age groups and activities
- Winter fuel payments to assist in lowering the cost of heating bills for local households

Enhancing local skills

Working with the Energy Skills Partnership, Ayr College and Dumfries & Galloway College, we have been pivotal in the creation of a new industry recognised qualification for Turbine Technicians.

We hope this will maximise potential employment opportunities for local people arising from the established and developing renewable energy industry in the region.

Our community benefit funds are even being used to provide a bursary for students to support them through their studies and we are keen to see our funds support long term employment in the communities where we operate.

Creating long term employment

Within Dumfries & Galloway and Ayrshire, our windfarm construction activities have supported the equivalent of 400 full time posts, each year, for five years. Additionally, our operational windfarm sites support an equivalent of 80 full time posts and have done so for the last three years.

Development of new windfarms can bring increased opportunities for local companies to gain new business by providing some of the wide range of services required during construction and the 25 year operational phase.

We are interested in working with local businesses with a variety of skills and services including ground and road maintenance, catering, building trades and plant hire. Speak to a member of our staff today for more information.

Wider opportunities with ScottishPower

The wider ScottishPower group has a strong focus on creating employment opportunities and ensuring the correct skill set is available in the south west of Scotland.

ScottishPower Energy Networks has joined forces with Dumfries & Galloway College and contractor CIET to deliver a unique 12 week course. On completion of the course all successful participants gain immediate employment as trainee electrical overhead linepersons with CIET, one of ScottishPower Energy Networks main overhead line contractors in the Dumfries & Galloway area.

ScottishPower Energy Networks recently announced that it anticipates creating up to 4,000 new roles in the energy industry over the next decade. Providing new and refresher courses along with recruitment drives, both directly and with its contractors, is helping to ensure the skilled workforce is in place to deliver billions of pounds of planned investment in our electricity networks.



Trainee Turbine Technicians at Whitelee Windfarm with Angela Constance MSP; turbines 110 metres, turbines proposed for this development are up to 122 metres.



SCOTTISHPOWER
RENEWABLES

markhillextension@scottishpower.com

www.scottishpowerrenewables.com