



**Socio-Economic Impact
Assessment – Renewable Energy
Proposal at the Finavon Hill
Estate, Angus**

**Final Report for Jeff Sanderson of Finavon Hill
Estate and Construction Partner Kilmac
Construction**

September 2014

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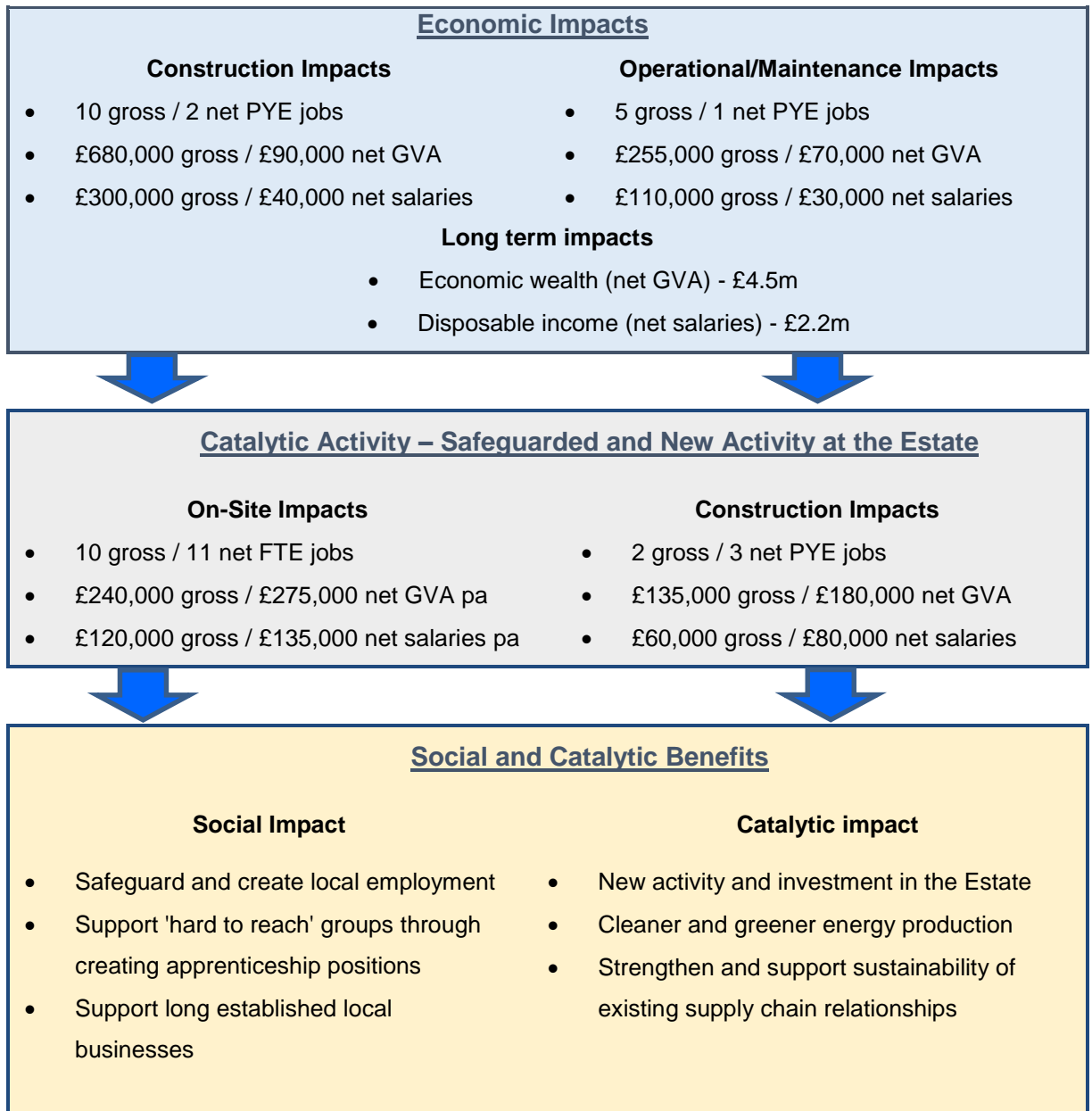
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Contents

Executive Summary	4
1. Introduction	5
2. Socio-Economic Baseline	7
3. Economic Impacts and Benefits	14
4. Social, Catalytic and Environmental Impacts	23
Appendix A: Logic Model	27
Appendix B: Letters of Support	28
Technical Appendix	39

Executive Summary

This Executive Summary presents the key economic, social and catalytic impacts predicted to be generated through the proposed wind turbine development to support the Finavon Hill Estate - impacts are reported at the Angus Council level.



1. Introduction

Finavon Hill Estate and Kilmac Construction Ltd has commissioned EKOS Ltd to undertake an independent assessment that considers the key economic, social and catalytic impacts predicted to be generated/safeguarded through the proposed single wind turbine project within the Finavon Hill Estate, Angus. The report will be used to support the Planning Application.

The development proposal is for a single wind turbine, with a hub height of 40m and an overall tip height of 67m. The turbine will provide a sustainable and more cost-efficient energy source for Finavon Hill Estate. Finavon Hill Estate is a locally owned estate that provides facilities for hunting, fishing and shooting, Arable and Grassland farming and residential premises (11 units accommodating c. 30 people). The estate employs three local people on a full-time basis with a further 20 – 25 on a seasonal basis during peak times. The proposed development will support the sustainability of the Estate over the longer term through reducing energy costs and re-investing income back into the running and development of the Estate from the sale of excess electricity to the Grid.

The proposed development site sits in the Finavon Hill Estate, on the side of the Hill of Finavon and is approximately 6km north-east of Forfar and 13km south-west of Brechin. The site is also in close proximity to the A90, providing a direct route to cities such as; Edinburgh, Perth, Dundee and Aberdeen.

Project Details

The key details of the project are outlined below:

- anticipated output generation of 1,800 MWh of electricity per annum – equivalent to supplying 545 homes in the local area;
- Construction phase:
 - timescales: (two months construction/installation period).
 - total costs - £1.5m;
- Operational phase:
 - timescales: 2016 – 2036.

- total costs (ongoing operation and maintenance) - £0.6m – 1.5% per annum of capital costs; and
- Decommissioning phase:
 - timescales: 2036 to 2037.

The assessment is based on information and data available such as public records, as well as that supplied by the development team. It provides our estimate of the likely economic and social benefits generated through the proposed development. It does not comment on the need for, or business case for the project which has been developed elsewhere.

2. Socio-Economic Baseline

The baseline assessment provides a snapshot of the local area and identifies key economic trends. The policy review discusses the proposal's fit with, and contribution towards a number of local and regional policy documents.

Economic Baseline

The Finavon Hill Estate is developing a successful sporting estate (already established for 20+ years) and attracting 250+ visitors per annum, many of whom come from outwith Angus and abroad. The Estate has had a longstanding relationship with a number of local business that provide complementary services, including:

- the **Finavon Hotel** (located next to the Estate) – the Estate regularly takes visitors for food/drinks, with a modest number also staying overnight during the shooting season. This relationship has generated commercial benefits for both business owners over a number of years; and
- **Finavon Castle Water** (FCW) salmon and sea trout recreational fishery. Their close co-operation has seen 'economies of scale' through income generation and environmental and wildlife management. The result is that the two businesses have established Finavon as a destination and hub for quality country sports.

The Estate therefore helps bring people and importantly expenditure into the Angus area.

Please note that **Appendix B** contains a letter of support for the project from the Finavon Hotel (as well as other suppliers and local businesses) which identifies the importance of the Estate for bringing visitors into Angus and spending money in the local economy.

Tourism is an important part of the Angus economy, with tourism related employment representing 11% of the total employment base.

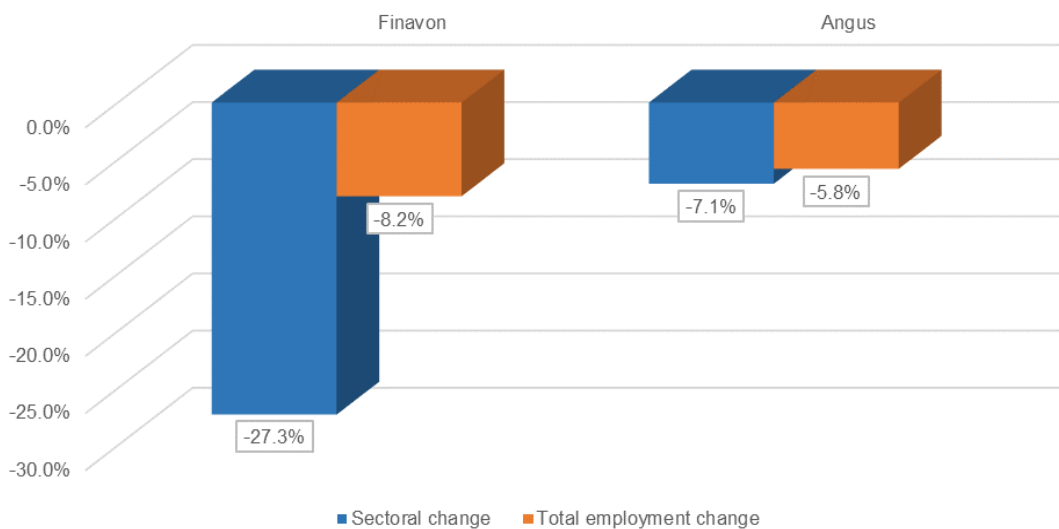
The Estate brings footfall and expenditure to the area, which will have a direct positive affect on a number of tourism related sectors. In this instance we have specifically considered the accommodation and food services sector.

Overall, accommodation and food services represent:

- 6.4% of employment (136 employees) in the local area¹; and
- 7.4% of employment (2,377 employees) in Angus.

Figure 2.1 reports the change within the employment base and also considers the change across accommodation and food services.

Figure 2.1: Change in ‘Accommodation and Food Services’ Employment (2009 – 12)



Source: Business Register and Employment Survey

Overall, Angus is still feeling the effects of the shake-out from the **recession**, with the employment base across the region decreasing by around -6% over the period 2009-12.

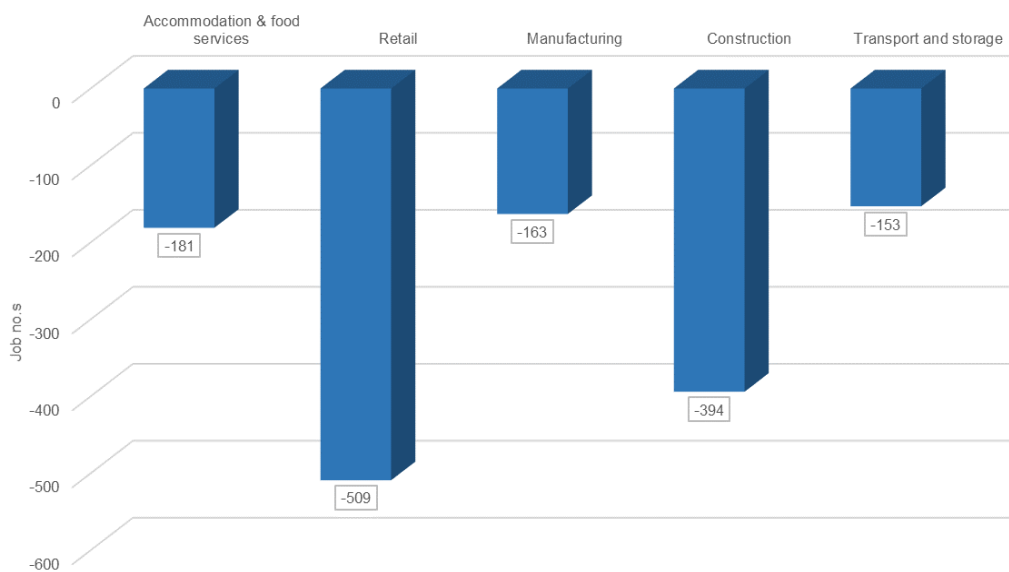
Further review of the data identifies that, over the past three years employment in accommodation and food services has decreased by nearly one third within the local area – disproportionately greater than the decrease in employment across the local area as a whole. Across Angus, employment in the accommodation and food services has fallen by -7.1%.

¹ Local area considered as CAS 2003 Ward: Central Forfar.

It is therefore apparent that this key sub-sector, which plays an important role in the region’s tourism offering has experienced decreases in activity above what we are seeing across the region more generally - highlighting the potential vulnerability of the tourism sector and the need for a strong tourism offering.

Figure 2.2, over highlights where the largest sectoral decreases have occurred across Angus since 2009.

Figure 2.2: Angus Largest Sectoral Decreases in Employment (2009 – 12)



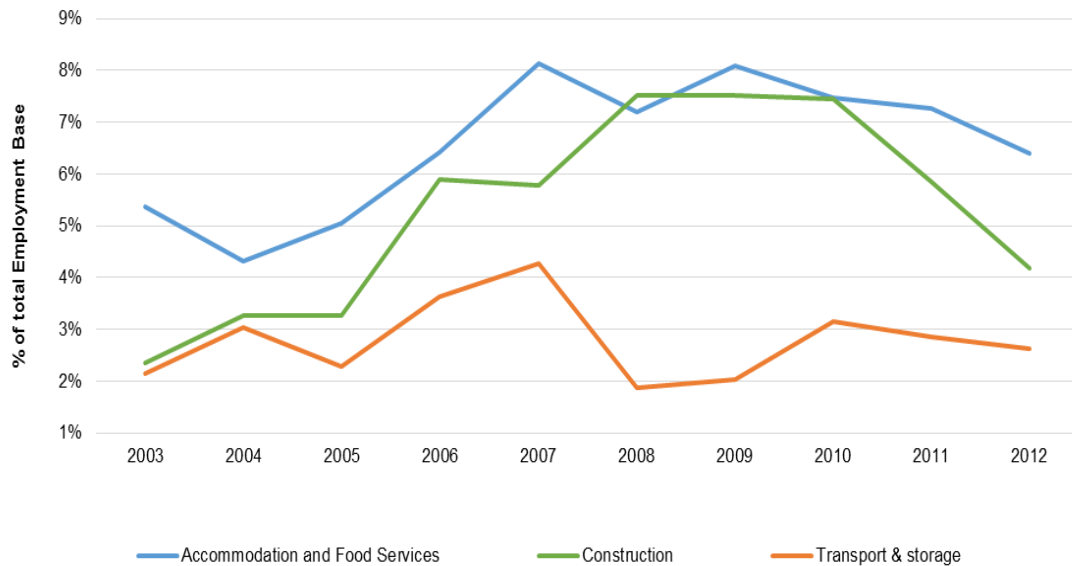
Source: Business Register and Employment Survey

Across Angus, the greatest sectoral decreases have come within the retail and construction sectors (900 jobs in total) representing a decrease of -13% and -18% respectively. Employment within accommodation and food services has decreased by 180 jobs (-7%) over the period 2009 – 12.

Over the last few years, Angus has seen its employment base decrease by around 2,000 jobs, therefore the job losses in the local area (190 job losses) comprise c. 10% of the total losses across Angus.

Figure 2.3, over reports on how the proportionate share of total employment across three key regional sectors that would likely benefit through the project (accommodation and food services, construction, and transport and storage) has fluctuated over a number of years.

Figure 2.3: Change in % Employment Share in Local Area (2003 – 12)



Source: Business Register and Employment Survey and Annual Business Inquiry

The data identifies that the accommodation and food services, and construction sectors showed strong growth until the recession (c. 2008), with accommodation and food services increasing its % share of total employment by c. 3.5% points over the period 2003 – 2008. Since then, employment within accommodation and food services has fluctuated, however, overall, it has experienced a decrease in its proportionate share of employment in the local area.

The wind turbine project presents an opportunity to address this decline by supporting new construction activities and safeguarding activity at Finavon Hill Estate, which will have a positive supply chain impact upon the wider tourism sector in Angus through attracting visitors to the area.

Further, it is important that we consider the impact on the supply chain businesses that support the operation of the Estate itself. For example, agricultural suppliers (food stocks, wood, gravel), and local trades (fencers, builder, and electricians).

Finally, the development would not only benefit the tourism and wider supply chain sectors.

Several other sectors across Angus stand to benefit from a local renewables development of this type during both the construction, operational and decommissioning phases:

- construction (accounted for 6% of local jobs in 2012);
- transport and storage (7.5% of employment base in 2012); and
- mining, quarrying, & utilities (>1% of employment base in 2012).

Summary

The Angus economy has seen a notable reduction in its employment base off the back of the economic recession and has not been as resilient in comparison to other primarily rural areas.

Tourism is a key sector for Angus and is identified within the Economic Development Strategy (2013-20) as a key sector for driving sustainable employment and growth across the region. Within this, activity tourism is identified as an area for growth potential.

The Finavon Estate brings in a fairly regular stream of visitors, mostly from outwith Angus. The Estate therefore attracts additional footfall and expenditure into the region that otherwise might not come to the region. Visitors to the Estate will spend money on food, accommodation and other retail services within the Angus economy.

There is therefore a direct link between the Finavon Hill Estate and the wider tourism sector through attracting visitors to the region and encouraging spend across the tourism supply chain.

It should also be noted that the Estate is active during the traditionally quieter low season for tourism operators (winter months) and provides a boost to local businesses. As considered above, the nearby Finavon Hotel has highlighted the importance of bringing in additional visitors during these months, as has Finavon Castle Water.

Finally, the vast majority of those employed by the Estate are residents of Angus which helps to retain economic activity locally i.e. they will likely spend a large proportion of their wages and salaries in the Angus economy – reducing ‘leaked spend’.

2.1 Strategic Fit

The proposal for a wind turbine development at the Finavon Estate has a strong strategic fit with key national and local policies across a number of key policy themes, including:

Table 2.1: Finavon Estate Turbine Proposal – Strategic Contribution

Routemap for Renewable Energy – Scottish Government 2011	
• Increased target to an output equivalent of 100% of Scotland’s electricity demand to be generated through renewables	✓
• Need for ‘rapid expansion’ of renewable electricity across Scotland	✓
• Securing economic benefits which will underpin national and local economic recovery and continued performance	✓
Strategic Development Plan 2012 – 2032 – Tayplan 2012	
• Significant potential to support growth in the renewable energy industry	✓
• Growing the year-round role of the tourism sector	✓
• Strengthen the economic base to support the renewable energy and low carbon technology sectors	✓
• Promote and enhance places and landscapes as economic drivers and tourist destinations	✓
Angus Local Development Plan – Angus Council 2012	
• Support the region in becoming ‘more sustainable, competitive and vibrant, without creating an unacceptable burden on the planet’	✓
• Support all types of renewable energy development in the area	✓
• Help achieve the ‘significant growth potential’ of the tourism and leisure sectors	✓
Angus Community Plan and SOA – Angus Council 2013	
• Supporting enterprise and infrastructure in key sectors including tourism & hospitality, and energies	✓
• Develop a strong business base within the sustainable energies and tourism sectors over the next 10 years	✓

2.2 Key Policy Targets and Objectives

- A Low Carbon Economic Strategy for Scotland – Scottish Government (2010):
 - target of 80% of Scotland's electricity generated through renewables by 2020
 - development of low carbon processes and services which generate economic wealth and create jobs
 - reduce carbon emissions by 42% by 2020
- Scottish Government's Routemap for Renewable Energy (2011):
 - increased target to an output equivalent of 100% of Scotland's electricity demand to be generated through renewables
 - need for 'rapid expansion' of renewable electricity across Scotland
 - securing economic benefits which will underpin national and local economic recovery and continued performance;
- TAYplan: Strategic Development Plan 2012 – 2032 (2012):
 - 'significant potential to support growth in the renewable energy industry'
 - support the switch to a low carbon and zero waste economy by providing for appropriate infrastructure
 - strengthen the economic base to support the renewable energy and low carbon technology sectors
 - promote and enhance places and landscapes as economic drivers and tourist destinations;
- Angus Local Development Plan (2012):
 - by 2032, the region will become 'more sustainable, competitive and vibrant, without creating an unacceptable burden on the planet'
 - reduction of greenhouse gas emissions
 - support all types of renewable energy development in the area
 - sustainable prosperity across the region
 - 'significant growth potential' of the tourism and leisure sectors; and
- Angus Community Plan and Single Outcome Agreement (2013):
 - supporting enterprise and infrastructure in key sectors including; tourism & hospitality, and energies
 - develop a strong business base within the sustainable energies and tourism sectors over the next 10 years.

3. Economic Impacts and Benefits

The economic impacts are reported as jobs (Person Year Equivalent – PYE and Full Time Equivalent – FTE), Gross Value Added (GVA) and salaries, and have been calculated using a bespoke appraisal model and based on HM Treasury ‘Green Book’ guidance. Impacts are reported at the local (Forfar), regional (Angus) and national (Scotland) level. A full breakdown of the Socio-Economic Impact Assessment (SEIA), including the additionality factors and assumptions used are contained within the **Technical Appendix**.

Our assessment takes account of a range of economic impacts:

- **construction impacts** – captures the one-off impacts associated with the construction of the development;
- **operational/maintenance impacts** – captures the new operational/maintenance jobs that are predicted to be generated. This could include, for example, turbine service works, and insurance costs, etc;
- **safeguarded and new on-site impacts** – captures the activity that will be safeguarded at Finavon as a result of making the business more sustainable in the long term. In addition, the business owner has identified necessary investment plans and upgrades to the Estate lodge (planning consent has been granted). Foundations have already been excavated at a cost in expectation that the proposal would be granted planning permission – the development is dependent on the turbine scheme moving forward. This new sports lodge which will further generate new employment opportunities; and
- **cumulative impacts** – captures the net discounted impacts of the proposed turbine development over a 20 year appraisal period, the serviceable life expectancy of the turbine.

In addition, there will be economic activity and impacts associated with the decommissioning of the turbine after its serviceable lifetime (20 years). However, given the time lag for these impacts to occur and other unknown variables, we have excluded these potential impacts from our assessment.

Technical Note

Throughout this section of the report a number of technical economic terms are used:

- gross jobs: the direct jobs accommodated on-site at the proposed development. The gross operational on-site jobs has been provided by Kilmac Construction, however, the economic output associated with these jobs (salaries and GVA) has been taken as sectoral averages from official published data;
- net jobs – the out-turn of the gross jobs taking account of:
 - the impact the development is estimated to have on other businesses and the labour market (displacement)
 - the proportion of impacts that will benefit those outwith the defined spatial areas (leakage)
 - the positive spin off benefits generated through income and supplier multiplier effects;
- PYEs – the construction and on-site (operational/maintenance) jobs are based on Person Year Equivalentents (PYE). This method allows the number of people on-site over the 20 year lifetime of the project (which will vary over the period between; full-time, part-time, permanent, temporary and contract) to be estimated as an annual equivalent post. Please note, these PYE impacts are one-off;
- FTEs - jobs or posts where the working hours are a minimum of 37 hours a week and last for a period of ten years;
- Gross Value Added – GVA is a measure of the value of goods and services produced before allowing for depreciation or capital consumption. GVA measures the income generated by businesses after the subtraction of input costs but before costs such as wages and capital investment. GVA is the Government's preferred method for measuring economic performance; and
- net cumulative discounted impacts – the total quantified value of the net additional GVA impact over the 20-year project lifetime taking account of the date at which the development will be completed and occupied, and the time value of money i.e. £1 today is worth more than £1 next year. We have used the HM Treasury Social Time Preference Rate (3.5%) to discount the estimated impacts.

Disclaimer Note

Please see **Technical Appendix**.

3.1 Gross Economic Impacts and Benefits

3.1.1 Construction Phase

The economic impacts delivered during the construction phase are based on the expenditure profile provided by Kilmac Construction Ltd. The total project costs are estimated at £1.5m.

Using a bespoke economic model and industry sector co-efficients to calculate the impact of the capital expenditure, we estimate that the turbine development is likely to generate the following gross construction impacts²:

- 10 PYE jobs;
- £300,000 salaries; and
- £680,000 GVA.

Please note that the construction impacts are one-off and will be generated during the estimated 2-month construction delivery period.

3.1.2 Operational and Maintenance Phase

During the lifetime of the turbine there will be additional annual expenditure to support the operation and maintenance, for example upgrades to machine parts and servicing. The total cost of this is estimated at 1.5% per annum of the total capital costs³.

£1.5m * 1.5% = £22,500 per annum or £0.6m (unadjusted costs) over the lifetime of the turbine.

² Note: Gross impacts are assessed based on the development costs and breakdown outlined in the Technical Appendix and are the same at different spatial geographies. Jobs rounded to the nearest 5 and salaries and GVA to the nearest £5,000.

³ Please note this is an estimate based on information from the European Wind Energy Association and Kilmac Construction

The gross economic impacts that are likely to be generated through the operational and maintenance activities are reported below and are new to the economy⁴.

- 5 PYE jobs;
- £110,000 in salaries; and
- £255,000 in GVA.

3.1.3 Safeguarded and New On-Site Impacts

Any electricity not consumed within the Estate will be sold to the national grid and profits re-invested in the Estate. This will help secure the continued operation of the Estate and safeguard the existing activity and employment; this includes the positive spin-off benefits from the Estate attracting new footfall and expenditure into the local area.

In addition, these cost savings will enable the Estate to move forward with necessary upgrades/extension to the premises. The proposed upgrades include; (new lodge facility, game larder, reception area and more storage space. Planning permission has already been secured for the Estate upgrade works, however, it is dependent on the turbine project moving ahead. The groundworks and excavations were carried out at risk, on the expectation that the turbine project would receive planning permission i.e. the turbine project would leverage in additional funding. The total value of this capital investment is £300,000, with work being undertaken by contractors sourced from the Angus economy.

In order to support the planned growth of the Estate, and as part of the business owners wider succession planning, Finavon Hill Estate has plans to recruit a further two full time employees. Again, this is dependent on the business being sustainable and a viable commercial operation which, in part, in the long terms includes the installation of the wind turbine.

Table 3.1 identifies the jobs that will be safeguarded and created on-site at Finavon Estate.

Table 3.1: Gross Safeguarded and New On-Site Impacts

	Safeguarded Impacts	New Impacts
FTE jobs	8	2
Salaries per annum ⁵	£75,000	£45,000
GVA per annum	£150,000	£90,000

In addition to these on-site impacts, the new capital expenditure to upgrade and extend the sporting lodge facilities will generate modest one-off construction impacts, the gross effects are detailed below:

- Construction impacts generated through new lodge facilities:
 - PYE jobs – 2;
 - Salaries – £60,000; and
 - GVA - £135,000.

3.2 Net Economic Impacts and Benefits

In order to undertake a robust assessment of the potential new activity generated through the proposed turbine project, the gross impacts cannot be considered in isolation and must take account of a range of other factors including; displacement, leakage and multiplier effects (as detailed in the **Technical Appendix**). Please note that gross and net impacts are not cumulative, but that net impacts are the outturn of the gross impacts after accounting for additionality factors.

3.2.1 Construction Phase

The turbine will be sourced and manufactured from outwith Scotland. That being said, Kilmac Construction have identified that, where possible they will work with local suppliers to ensure economic activity is retained within the local area.

Consequently, there will be a number of opportunities for Scottish and Angus based suppliers and sub-contractors to tender for contracts for; site preparation, civil engineering works, renting of equipment/machinery etc.

The net construction impacts are reported in **Table 3.2**.

⁵ Note: Salaries for the Finavon Estate are based on information provided by the business owner, GVA is taken as a proportion of salary based on sector benchmarks.

Table 3.2: Net Construction Impacts

	PYE Jobs	Salaries	GVA
Forfar	0	£5,000	£15,000
Angus	2	£40,000	£90,000
Scotland	10	£240,000	£550,000

Note: Salaries and GVA rounded to the nearest £5,000

3.2.2 Operational and Maintenance Phase

Similar to the construction phase there will be opportunities for local businesses during the lifetime of the project to support the operations and maintenance of the turbine.

The net impacts of the operational and maintenance phase are reported in **Table 3.3**.

Table 3.3: Net Operational and Maintenance Impacts

	PYE Jobs	Salaries	GVA
Forfar	0	£5,000	£5,000
Angus	1	£30,000	£70,000
Scotland	7	£380,000	£170,000

3.2.3 Safeguarded and New On-Site Impacts

The majority of the on-site positions are filled by people from the local area, therefore a large proportion of the salaries/wages generated by the Estate remains within Angus.

Table 3.4 outlines the impact of safeguarding existing activity and the creation of additional jobs at the Estate.

Table 3.4: Net Safeguarded and New On-Site Impacts

	Safeguarded Impacts	New Impacts
Forfar		
FTE jobs	6	2
Salaries per annum (£)	£60,000	£35,000
GVA per annum (£)	£120,000	£70,000
Angus		
FTE jobs	9	2
Salaries per annum (£)	£85,000	£50,000
GVA per annum (£)	£175,000	£100,000
Scotland		
FTE jobs	13	3
Salaries per annum (£)	£115,000	£70,000
GVA per annum (£)	£240,000	£140,000

The net construction impacts associated with the upgrade and extension to the lodge facility are identified in **Table 3.5**.

Table 3.5: Net Construction Impacts – Estate Upgrades

	Net Impacts
Forfar	
PYE jobs	1
Salaries	£35,000
GVA	£75,000
Angus	
PYE jobs	3
Salaries	£80,000
GVA	£180,000
Scotland	
PYE jobs	6
Salaries	£140,000
GVA	£315,000

3.2.4 Off-Site Impacts

The Estate attracts footfall and expenditure in Angus from outwith the region. Whilst the off-site spend (e.g. buying lunch, and using the local shops, etc) has been captured within our assessment of net impacts (through supply chain indirect multiplier effects), it is important to quantify this local impact.

As an example, the Finavon Estate has a long standing relationship with the nearby Finavon Hotel, and uses the hotel to take visitors for meals, drinks, etc.

In total this is around 250 meals per season (October – February) with around 25 overnight stays. This equates to an additional £6,000 per annum, during the predominantly quieter months for the hotel, and provides a welcome boost that helps support this local business through the winter months.

This extends to the seasonal staff who benefit from the shooting business e.g. local woman supplying the baking through the shooting season, the beaters, the pickers up, and tradesmen all gain regular seasonal employment.

The Estate has also had a long standing relationship with Finavon Castle Water (FCW) salmon and sea trout recreational fishery over the last 15 years. Their close cooperation has seen appropriate marriage value through income generation and environmental and wildlife management. The result is that the two businesses have established Finavon as a destination and hub for quality country sports.

3.3 Cumulative Impact

The estimated serviceable lifetime of the turbine is 20 years. Whilst the construction impacts will be a one-off, there will be ongoing economic activity associated with the operation and maintenance of the project during the 20 year period, plus the safeguarded and new activity on-site to consider.

It is therefore important that we measure the longer term cumulative economic impact of the project.

When considering the longer term effects, it is important to understand wider market factors such as the time periods over which new economic activity is generated and the 'present value' of impacts i.e. adjusting historical and future impacts into today's values⁶. Cumulative impacts have therefore adjusted/discounted the economic and financial impacts using the HM Treasury recommended rate of 3.5%.

⁶ See HM Treasury Green Book for more information
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/220541/green_book_complete.pdf

Below we have considered the net cumulative effects over a 20 year period - please note that this accounts for the; construction, operational and maintenance and safeguarded and new on-site activity.

Table 3.3: Net Cumulative Impacts of Turbine Project (20 years)

	Salaries	GVA
Forfar	£1.5m	£3.0m
Angus	£2.2m	£4.5m
Scotland	£3.3m	£6.8m

Note: Salaries and GVA rounded to nearest £0.1m

A review of the cumulative impacts identifies the significant scale of the economic activity that the proposal could generate within the Angus economy.

Over the 20-year lifetime the proposed turbine project is estimated to support **10 FTE jobs, 20 construction/operational/maintenance PYE jobs** and generate net additional **economic output (GVA) of £4.5m** and **expendable income (salaries) of £2.2m** within the Angus economy.

In addition, a considerable level of economic activity will be retained within the Scottish economy - **£6.8m in GVA**.

4. Social, Catalytic and Environmental Impacts

One of the key issues to consider over and above the quantifiable economic impacts reported above is the likelihood of additional social and catalytic impacts/benefits for the local area, and Angus more generally.

4.1 Social Impacts

Safeguard Local Employment and Generate New Opportunities

Key Points

The Estate employs three full time staff and around 20 – 25 seasonal staff that work during the peak season. The seasonal staff all live locally and there is a range of ages and backgrounds, part of which adds to the Estates friendly and welcoming atmosphere.

The turbine project, through reducing overheads will support the longer term sustainability of the Estate (safeguarding these existing jobs). Many other similar shooting estates have scaled back considerably in recent years or have ceased to exist.

In addition, the Estate owners have identified that if the project goes ahead this will encourage further investment in the Estate, in particular, making improvements to the lodge facilities. These upgrade works will be undertaken by local contractors.

The Estate's main business is very seasonal in nature; there are c. 150 shooting days per annum over the months of October to February. There is price sensitivity in the shooting market with the Estate currently offering competitive shooting packages to meet the demands of the client. Reducing costs and overheads, etc is therefore important for the commercial sustainability of the business. For example, a few bad seasons could have a significant detrimental impact on the viability of the Estate.

The turbine will not only reduce energy costs (which have been increasing year on year) but is also likely to generate surplus electricity which can be sold back to the Grid, adding another (modest) income stream for the Estate and supporting the longer term viability. This will therefore help safeguard the existing jobs at the Estate.

In addition, proposals (for which planning permission has already been received) for upgrades and improvement to the lodge facilities have been delayed and are dependent on the turbine project going ahead. The improvement works would make the Estate more competitive and bring it into line with the new standards. This would likely necessitate the Estate taking on new employees and expanding its current offering to shooters, for example delivering a wider number of drives.

On top of simply safeguarding jobs, a number of the staff that work on a seasonal basis are older and live in the local area. Working at the Estate provides them with an opportunity to socialise, earn a wage, and continue to be involved with the local community, particularly during the winter months where there may be limited activities for them to engage with.

This includes people with their working dogs and those making/selling hand crafts, etc. There is therefore a 'community' and social aspect to the Estate that should be considered as it acts as a hub for a number of local people.

Supply Chain Opportunities

Key Points

There is an opportunity for local businesses to work with and benefit from the proposed development through supply chain linkages during the construction stage of the turbine and proposed lodge upgrades. As well as during the ongoing operational/maintenance phase during the lifetime of the project.

Appendix B contains letters of support for the project from five local suppliers which helps demonstrate the supply chain linkages.

Kilmac Construction have a strong track record in working with local contractors and suppliers during the assembly and installation stages. Furthermore, they have made a commitment to offer training and apprenticeship schemes to help ensure that local people have access to these employment opportunities. The proposed training and apprenticeship schemes are specifically geared towards 'hard to reach' groups.

During the construction phase we can split the supply chain impacts into two broad categories:

- **direct supply chain impacts** – associated with the construction/installation of the turbine this could include; site preparation works, site security, civil/electrical/mechanical engineers works, tradesman and labourers.

In addition, the Estate has indicated that it would look to employ a local construction company to undertake the improvements/upgrades to the lodge; and

- **indirect supply chain impacts** – the Estate has a long standing relationship with the Finavon Hotel, bringing visitors for breakfast and lunches with a small number also staying overnight.

The total cost of the turbine project is estimated at c. £1.5m, there will be an opportunity for local suppliers to support the installation and operation of the turbine throughout its 20 year serviceable lifetime.

A key way in which the project can positively impact the local economy is through facilitating local employment training and apprenticeship schemes during the; construction, operational and maintenance phases. These schemes can be targeted at particular groups e.g. young people and, in addition to helping develop new skills etc, will also help to build confidence in supported individuals.

For example, a recent civil engineering project undertaken by Kilmac Construction (upgrade of the South Inch play park project, Perth), included working in partnership with the local authority to provide work experience/apprenticeship positions to nine unemployed young offenders (considered by the local authority as persons most difficult to find jobs for due to the scope and scale of barriers they face to access employment opportunities).

After successful completion of the scheme, five of the young people were offered permanent employment with Kilmac Construction as apprentice ground workers. In addition, through working with other local businesses, Kilmac were able to support three of the young people into employment as trainee greenkeepers at Craigiehill golf club. The scheme not only provided basic training and work experience, which ultimately helped open up new employment opportunities, but also helped get the young people enthused about working.

Please see the following link within the Perth and Kinross Council website for further details (<http://www.pkc.gov.uk/article/7323/New-South-Inch-play-area-celebrates-environment-and-community>).

Such was the success of this scheme that Kilmac have committed resources to continue this programme on future projects throughout Tayside where possible and have given commitment to Angus Council to offer similar opportunities through the project, this includes renewable and more traditional civils based projects.

While it is too early to comment on the extent of any local training and apprenticeship scheme being employed in the context of the proposed development, it is clear there is an opportunity for the proposed development to work with local employability partners, support the local youth employment agenda and contribute to the objectives of the Single Outcome Agreement through a focused training initiative.

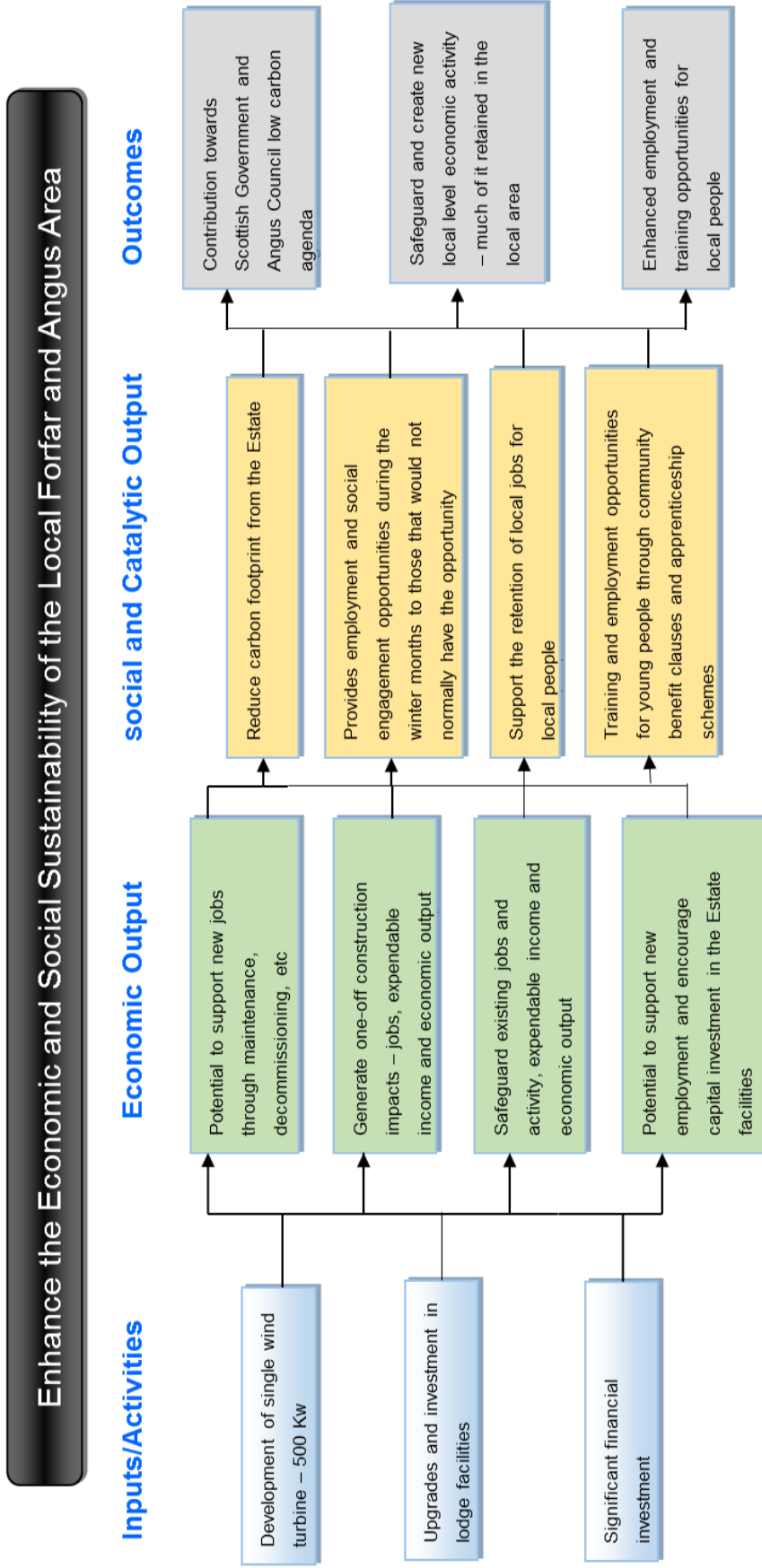
Finally, consultation with the Finavon Hotel (and as highlighted in the letter of support) has identified that the Estate, through bringing visitors for; lunches, overnight stays, etc brings additional revenue during the quieter winter months.

4.2 Environmental Impacts

As already considered above, green energy, reducing carbon intensity and CO₂ emissions is a significant policy driver at the national and regional levels.

The project (when working at the expected operational capacity) will generate 1,800 MWh of electricity per annum. This is equivalent to providing electricity for 545 homes every year and will generate CO₂ savings.

Appendix A: Logic Model



Appendix B: Letters of Support

This Appendix contain letters of support from 10 suppliers to the Finavon Estate and other local businesses. These letters are appended below and include:

1. Finavon Hotel
2. Milton of Finavon House
3. I&E Crichton Bogindollo Farm
4. J&A Liard Ltd
5. Laird Brothers (Forfar) Ltd
6. Cotside Quarry
7. Keyline Building Merchants
8. LJ Copland
9. GAP Group Ltd
10. Nixon Hire



FINAVON HOTEL, BY FORT-PAUL, ANGLAS DOR 5QD Tel: 01307 850234 Fax: 01307 850435
www.finavonhotel.co.uk Email: mail@finavonhotel.co.uk

11 March 2014

Dear Sir/Madam

Re: J Sanderson Wind Turbine Application at Finavon Hill

I would like to add my support to the Wind Farm Application by Mr J Sanderson for Wind Turbines at Finavon Hill.


Being the owner of this small business since 1995, I fully appreciate and understand how difficult it is to maintain profitability and sustainability in this economic climate. Small businesses, especially in rural areas, bring much needed income into the area and create employment for local people.

My business is a typical example of this. Throughout the shooting season (1st November – 31st January) we serve approximately 250-275 lunches to shooting clients from Finavon Hill. In addition to this, we also serve breakfast to people travelling to the shoots and provide overnight accommodation for shooting guests. This income is extremely important and beneficial to us in what is traditionally a quiet trading period.

I think it is vitally important that all businesses, whether large or small, find ways to maintain profitability and more importantly long term sustainability otherwise, in my opinion, they will not survive.

This, presumably, is what Mr Sanderson is trying to achieve.

Yours Faithfully


David Howatson
Owner

Milton of Finavon House
By FORFAR
Angus
DD8 3PY

3rd March 2014

TO WHOM IT MAY CONCERN

Finavon Hill Wind Turbine Proposal

I am writing to support the application by Finavon Hill Estate for a wind turbine to be located on Finavon Hill. The basis of my support is the socio-economic and environmental effects of a new sustainable revenue stream at Finavon.

As owner and manager of the Finavon Castle Water (FCW) salmon and sea trout recreational fishery business, I value the close cooperation in income generation and environmental and wildlife management, between Finavon Hill Estate and FCW over the last 15 years. The result is that the two businesses have established Finavon as a destination and hub for quality country sports. The reputation of this tourist hub continues to grow.

In terms of employment, the two businesses provide full-time and seasonal work for up to 50 local people, as well as income into the local community. Together they attract over 300 tourists to the area annually, many of whom are high income earners.

An important social aspect of driven game bird shooting is the opportunities it provides for beaters, pickers-up and administrative staff during the winter months. A typical day on Finavon Hill, of which there are twenty or more during the winter, is the employment and social interaction it provides for up to 50 local people of all ages, some of whom have no other regular social contact. Finavon Hill shoot also provides these people with an important contribution to their household incomes.

The construction of a single wind turbine at Finavon Hill will make a vital financial contribution to the income of Finavon Hill Estate. That income will underpin the estate business and ensure that, even in times of economic hardship or adverse natural conditions, there are sufficient resources to ensure that the business remains viable. From the viewpoint of a neighbour, I applaud the outstanding improvements to habitats and wildlife achieved by Finavon Hill Estate.

On that basis, and taking into account the other benefits to the locality provided by the Estate, I fully support the application for permission to erect a single wind turbine at Finavon.

Yours sincerely


A.P.H.Andrews
Finavon Castle Water
www.finavoncastlefishing.co.uk
Mobile: 07748 634 658

I & E Crichton
Bogindollo Farm
Finavon
Forfar
Angus
DD8 3PL
Tel: 01307 850202
Mobile: 07801 418918

20/03/2014

Wind Turbine at Finavon Hill Estate

To whom it may concern,

I feel that the proposed siting of a turbine at Finavon Hill would be of benefit to my business at Bogindollo Farm.

Over the past seven years a relationship with Finavon Hill has been forged which delivers benefits to both sides. This has allowed the estate to grow further in terms of their sporting enterprise whilst granting me access to a considerable area of land.

I believe, through discussing the matter with Finavon Hill Estate, that this turbine will help increase the chances of our relationship surviving. The generation of a new income stream will allow further expansion of the estate and succession planning to be carried out without jeopardising my business.

This is extremely important to me. Since starting with the estate I have had more confidence to invest in both more modern machinery and farm infrastructure. This has been the result of increased scale and business output.

I have also been able to take on one full time employee and one harvest staff member. This was not justifiable before I became involved with Finavon Hill Estate.

If a wind turbine at Finavon Hill Estate will help maintain my business involvement and structure I hope you will give it serious consideration.

Yours truly,

Euan Crichton





READYMIX CONCRETE

J. & A. LAIRD LTD.

Lunanhead, Forfar, Angus DD8 3NQ
Telephone: 01307 466577 Fax: 01307 468642

21.7.14

Angus Council
Angus House
Orchardbank Business Park
Forfar
DD8 1AX

Dear Sir,

We believe that the proposed Single Turbine on Finavon Hill Estate will provide a boost to the local economy by supporting businesses in Angus.

We are therefore writing to express our hope that, when reviewing the application from Finavon Hill Estate that Angus Council will consider the benefits that this project would bring to the local area and grant planning permission for the Finavon Hill Estate single turbine.

Yours Sincerely



John Laird

Sales Manager

Directors: J. Laird, A. Laird Registered in Scotland No. 95365



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FINAVON HEAD FORFAR, DUNDEE ENGL. TEL: 01307 488677
FAX: 01307 488642

21.7.14

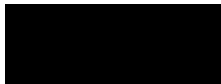
Angus Council
Angus House
Orchardbank Business Park
Forfar
NN18 1AX

Dear Sir,

We believe that the proposed single turbine on Finavon Hill Estate will provide a boost to the local economy by supporting businesses in Angus.

We are therefore writing to express our hope that, when reviewing the application from Finavon Hill Estate that Angus Council will consider the benefits that this project would bring to the local area and grant planning permission for the Finavon Hill Estate single turbine.

Yours Sincerely



Jamie Laird

Production Manager

DIRECTORS: L. LAIRD, A. LAIRD Registered in Scotland No. J6032

William Clark (Barry) Ltd.
Outside Quarry
Barry
Angus
DD7 7RK

Date: 15/08/14

Angus Council
Angus House
Orchardbank Business Park
Forfar
DD8 1AX

Dear Sir,

We believe that the proposed Single turbine on Finavon Hill Estate will provide a boost to the local economy by supporting businesses in Angus.

We are therefore writing to express our hope that, when reviewing the application from Finavon Hill Estate that Angus Council will consider the benefits that this project would bring to the local area and grant planning permission for the Finavon Hill Estate single turbine.

Yours Sincerely



Archic Clark
Managing Director



DUNDEE BRANCH
Mid Craigie Road,
Dundee,
DD4 7RH
TEL 01382 448000
FAX 01382 449901
EMAIL 000121@keyline.co.uk
www.keyline.co.uk

Date: 18th August 2014

Angus Council
Angus House
Orchardbank Business Park
Forfar
DD8 1AX

Dear Sir,

I David Grandison of Keyline Builders Merchants wish to express support for the Finavon Estate Wind Farm and believe that the local area would stand to benefit greatly from the project.

We also feel that the supply chain opportunities would boost local businesses in the immediate area and also create benefits in the wider region.

Consequently we are writing to reiterate the support in this area for the project.

Yours sincerely,


David Grandison

Regional Sales Manager - Scotland North
Keyline Builders Merchants
Contract Merchandising Division
Dunkeld Road, Perth, PH1 3AA

M 07712 878 265

E david.grandison@keyline.co.uk



Keyline Builders Merchants Ltd. Registered Office: Southbank House, 1 Southbank Place, Kirkcaldy, Dundee, DD5 1RH. Registered in Scotland No. 48425.
The Prostate Cancer Charity is a charity registered in England and Wales (10125947) and in Scotland (SC035532).

Supporting
THE
PROSTATE
CANCER CHARITY

L. J. COPLAND
Commercial Vehicle & Plant Sales

TO WHOM IT MAY CONCERN

Unit 8, Stratton Place
Forfar, DD8 3TB
Tel/Fax: 01307 467959
Mobile: 07850 755532



VAT Reg. No. 724 2164 60

Office: 3 Findlay's Land
Forfar
DD8 3EU

Date: 21 May 2014

I have known Jeff Sanderson for around 25 years. In 1999 I started up my current business and shortly afterwards became a supplier to Finavon Hill Estate vehicles, service and repair work.

Records from 1999 – 2007 no longer kept.

Value of business from 2008 – end of 2013

£72250.00

Value of current business from January – May 2014

£13019.42

My business with Finavon Hill Estate has steadily increased over the years as Finavon has developed. I support the windmill application as hopefully it will guarantee the long term future success of Finavon Hill Estate.



Leslie J Copland



Date:18/8/14

Angus Council
Angus House
Orchardbank Business Park
Forfar
DD8 1AX

Dear Sir,

Finavon Hill Estate Single Turbine proposal

We are writing to inform you that we fully support Finavon Hill Estate's application for a single wind turbine at Finavon Estate, Angus and believe that the project could provide a boost to the local economy by supporting businesses in Angus.

We wish to express our hope that the Angus Council will consider the benefits that this project would bring to the local economy when reviewing any decision.

A single turbine at Finavon Hill Estate would offer much-needed opportunities for local businesses to be part of the growing renewable energy industry.

"I support Finavon Estate's application for a wind farm at Finavon Estate, Angus. The project will bring a substantial boost to the local economy and will bring benefits for local community and businesses."

"I feel it is a good location for a single turbine to make use of wind which is a free resource. The Finavon Hill project will bring a much needed boost to local economy."

"I have examined the plans and strongly support the planning application which would maximise the use of local organisations like ours to develop a local supply chain."

We the undersigned support Finavon Wind farm project and hope that Angus Council approves the application.

Yours faithfully

Douglas Smith
GAP Group Limited.



John Nixon Ltd
Longtown Steet
Dundee
DD4 8LF

Angus House
Angus Council
Orchardbank Business Park
Forfar
DD8 1AX
Monday, 28 July 2014

Dear Sir,

John Nixon Ltd wish to express support for the Finavon Estate Wind Farm and believe that the local area would stand to benefit greatly from the project.

We also feel that the supply chain opportunities would boost local businesses in the immediate area and also create benefits in the wider region.

Consequently we are writing to reiterate the support in this area for the project.

Yours sincerely


Jim Jones
Regional Sales Director



Registered Office: City West Business Park, Scotswood Road, Newcastle upon Tyne, NE4 7DF
Registered in England No. 921639. Nixon Hire is a trading name of John Nixon Limited
Tel: 0844 3722210 Fax: 0191 2986750
nixonhire.com



Technical Appendix

Disclaimer Note

The SEIA has been undertaken based on information provided by Kilmac, and based on EKOS' professional judgement and assumptions, outlined below in the Technical Appendix. It does not constitute a detailed market demand assessment but outlines the potential impacts that could be delivered through proposals.

Our review is based on current economic conditions and identifies the potential impacts and benefits that could be generated from the development if completed in full, and occupied as per our detailed assumptions.

The actual results, however, will likely vary from those projected as they will be subject to future market conditions and other economic influences, as well as performance against the assumptions adopted by EKOS.

Variances from our projections could be material (positive or negative), but it should be noted that EKOS has adopted a robust appraisal methodology in the estimation of the economic impacts for this development proposal.

We do not anticipate substantial variation, unless there is major change in the economic structure, change in market profiles, and/or competition from other developments in the local, regional or national area.

Introduction

This appendix provides the detailed socio-economic impact appraisal (SEIA) and assumptions used within our assessment. This assessment has included an ex-ante EIA and has been undertaken in line with HM Treasury 'Green Book' guidance and using a bespoke appraisal model to assess gross and net outputs.

The impact assessment considers the on-site impacts, one-off construction impacts, operational/maintenance impacts, financial impacts and the longer term economic impacts.

A copy of the detailed Excel model used within our assessment can be obtained through contacting the report author direct.

Gross Impacts

The gross economic impacts i.e. jobs, Gross Value Added (GVA) and salaries have been calculated based on information provided by the development team and using sectoral co-efficients, specifically turnover/capital expenditure/ per employee for the wider sector.

Construction and Operational/Maintenance Impacts

The construction phase of the development will generate additional one-off construction impacts associated with the new investment and development, whilst there will also be on-going activity associated with the operation and maintenance of the turbines.

Our analysis of the renewable sector employment impacts are based on Scottish Annual Business Statistics data. The analysis uses an employment co-efficient of £122,478 spend required to sustain one full-time employee for a period of one year – a Person Year Equivalent post (PYE).

The renewables co-efficient is derived from Scottish Annual Business Statistics (2011, and adjusted using the GDP Deflator to reflect 2013/14 prices)⁷, which provides data on the average construction spend per employee.

The jobs are based on PYEs, and this method allows the number of people on-site over the whole delivery period (which will vary over the period between full-time, part-time, permanent, temporary and contract) to be estimated as an annual equivalent post – PYE.

Gross jobs are derived from dividing the total costs, (estimated at £1.6m for the construction element and £0.6m during the operational and maintenances phases respectively) by the renewable sector employment co-efficient (regional figures provided).

Table A1: Gross On-site Job Assumptions

Construction costs	Costs	£ T/O per employee	Gross jobs
Capital cost	£1.5m	£122,478	12
Maintenance costs	£0.5m	£122,478	5

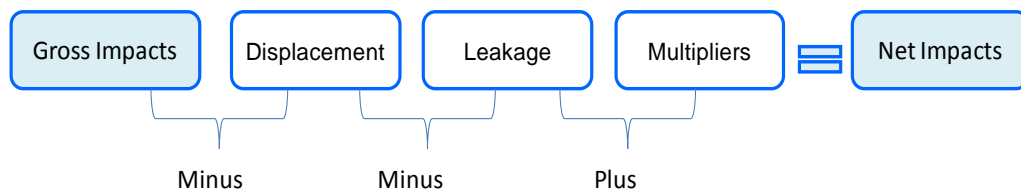
⁷ Please note that at the time of finalising this report, the most up-to-date information with regards price adjustment (using the GDP Deflator) was for 2013 prices (updated on 8 January 2014).

Gross PYE job impacts are then taken through the gross to net calculation as outlined below.

Net Impacts

However, in order to assess the true economic impact, the gross employment is considered in terms of displacement, leakage and multiplier effects – the logic chain, see Figure A1. Please note, the net impacts are assessed at the Forfar, Angus, and Scotland levels.

Figure A1: Moving From Gross to Net Impacts



Gross Value Added (GVA) and Salaries

Gross Value Added (GVA) is a measure of the value of goods and services produced before allowing for depreciation or capital consumption⁸.

GVA measures the income generated by businesses after the subtraction of input costs, but before costs such as wages and capital investment is paid prior to arriving at a figure for profit.

Salaries measure the employment costs (not including employer's contributions to NI, etc) for labour, this can be considered as the gross expendable income i.e. 'take home gross pay'.

GVA and salaries per employee are calculated for the renewable sector based on data from the Scottish Annual Business Statistics.

Latest data was for 2011 and therefore, this was adjusted to 2013/14 prices using the GDP Deflator, see Table A2.

⁸ Gross Value Added (GVA) is equivalent to Gross Domestic Product (GDP) at basic prices.

Table A2: Average GVA and Salary per Employee Assumptions

	Average	Uprated to 2014
Angus		
GVA	£53,434	£55,643
Salaries	£23,563	£24,537
Scotland		
GVA	£60,957	£63,477
Salaries	£29,185	£30,391

Source: Scottish Annual Business Statistics

The GVA and salary impact is derived from multiplying the jobs by the average GVA/salary per employee figure – for both gross and net impacts.

Activity at Finavon

The turbine project will help to safeguard and secure/safeguard the existing activity at Finavon Estate. In addition, the Estate owner has identified that should the project proceed, this will encourage additional investment and upgrade works at the Estate (c. £300,000 investment).

For the purposes of the appraisal we have calculated the wider impacts that the project will help safeguard and create through sustaining the current levels of activity and encouraging new investment.

The gross jobs are based on information provided by the Finavon Estate – 10 FTEs. The salary costs for employees has been provided by Finavon Estate and GVA to salary co-efficients for the wider tourism sector have been used to calculate the economic activity associated with these jobs. Figures are for 2011 and therefore have been updated to 2014 prices and to FTEs, see Table A3.

Table A3: Average GVA and Salary per Employee Assumptions –

	Safeguarded jobs	New jobs
GVA	£19,076	£45,000
Salaries	£9,375	£22,500

Note: New jobs assumed to be senior management positions

Long Term Impacts

In order to assess fully the impact of the proposed activity, it is important to consider the longer term impact it is likely to have on the local economy, both directly through the turbine project, but also through safeguarding activity and creating new jobs.

In order to accurately gauge the impact we must consider the total quantified value of the development impact over the 20 year serviceable lifetime of the project, taking account of the date at which the development will be completed, and the time value of money i.e. (£1 today is worth more than £1 next year). We have used the HM Treasury Social Time Preference to discount the estimated impacts at 3.5%.

Full details of the cumulative impacts and the adjustments taking account of the 3.5% discounting factor can be obtained by contacting the report author direct.

Finavon Hill Estate Wind Turbine Landscape Figures

to accompany

Finavon Hill Estate Wind Turbine Environmental Report

Chapter 7: Landscape and Visual Impact

for

**Mr. J Sanderson (Finavon Estate) & Construction Partner
Kilmac Construction Ltd**



produced by

Green Cat Renewables Ltd.



Finavon Hill Estate Wind Turbine Landscape Figures

Table of Contents

Figure No.	Title	Figure No.	Title
7.0	Study Area	7.8w	Tip Height CZTV - Arbikie (In Planning)
7.1	Landscape Character Types	7.8x	Tip Height CZTV - Balnacake (In Planning)
7.2	Landscape Planning Designations	7.8y	Tip Height CZTV - Cotton of Pitkenedy (In Planning)
7.3	Hub Height ZTV (40m) - 35km radius	7.8z	Tip Height CZTV - Crofts Farm (In Planning)
7.4	Tip Height ZTV (67m) - 35km radius	7.8aa	Tip Height CZTV - East Drums (In Planning)
7.5a	Detailed Tip Height ZTV - North East	7.8ab	Tip Height CZTV - Forfar Golf Course (In Planning)
7.5b	Detailed Tip Height ZTV - East	7.8ac	Tip Height CZTV - Kalula House (In Planning)
7.5c	Detailed Tip Height ZTV - South East	7.8ad	Tip Height CZTV - Nathro Hill (In Planning)
7.5d	Detailed Tip Height ZTV - South West	7.9	VP01 – Balmashanner
7.5e	Detailed Tip Height ZTV - West	7.10	VP02 – Forfar
7.5f	Detailed Tip Height ZTV - North West	7.11	VP03 – Howmuir
7.6	Residential Assessment ZTV	7.12	VP04 – Borgado
7.7a	Cumulative Base Map - Operational	7.13	VP05 – West Mains of Finavon
7.7b	Cumulative Base Map - Consented	7.14	VP06 – Bogindollo
7.7c	Cumulative Base Map - In Planning	7.15	VP07 – Finavon Hill Fort
7.8a	Tip Height CZTV - Ark Hill (Operational)	7.16	VP08 – Tannadice
7.8b	Tip Height CZTV - Balhall Lodge (Operational)	7.17	VP09 – Turin Hill Fort
7.8c	Tip Height CZTV - Drumberg (Operational)	7.18	VP10 – A932
7.8d	Tip Height CZTV - East Memus (Operational)	7.19	VP11 – Brechin
7.8e	Tip Height CZTV - Hill of Stracathro (Operational)	7.20	VP12 – White Caterthun Fort
7.8f	Tip Height CZTV - Meathie Farm (Operational)	7.21	VP13 – Airlie Monument
7.8g	Tip Height CZTV - North Mains of Cononsyth (Operational)	7.22	VP14 – Cat Law
7.8h	Tip Height CZTV - Pickerton (Operational)	7.23	VP15 – Kirriemuir
7.8i	Tip Height CZTV - Scotston Hill (Operational)	7.24	VP16 – Kinpurney
7.8j	Tip Height CZTV - Tealing (Operational)	7.25	VP17 – Glamis Castle
7.8k	Tip Height CZTV - Tullo (Operational)	7.26	VP18 – A90 Bridge North of Forfar
7.8l	Tip Height CZTV - White Top (Operational)	7.27	Route Assessment
7.8m	Tip Height CZTV - Afflochie Farm (Consented)	7.28	Comparisson Viewpoints
7.8n	Tip Height CZTV - Broom Farm (Consented)		
7.8o	Tip Height CZTV - Carsgownie (Consented)		
7.8p	Tip Height CZTV - Crainathro Farm(Consented)		
7.8q	Tip Height CZTV - Dunswood (Consented)		
7.8r	Tip Height CZTV - Frawny (Consented)		
7.8s	Tip Height CZTV - Gallow Hill (Consented)		
7.8t	Tip Height CZTV - Govals (Consented)		
7.8u	Tip Height CZTV - Hillhead of Ascurry (Consented)		
7.8v	Tip Height CZTV - Whitefield Dun(Consented)		

Project Name: **Finavon Hill Estate Wind Turbine**
 Document Title: **Study Area Map**
 Scale: **1:250,000 @ A3**

Key:

- Proposed Wind Turbine Location
- 5, 10, 15, 20, 25 & 30km Radii from Wind Turbine
- 35km Landscape and Visual Study Area



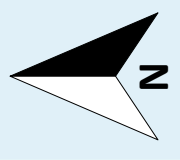
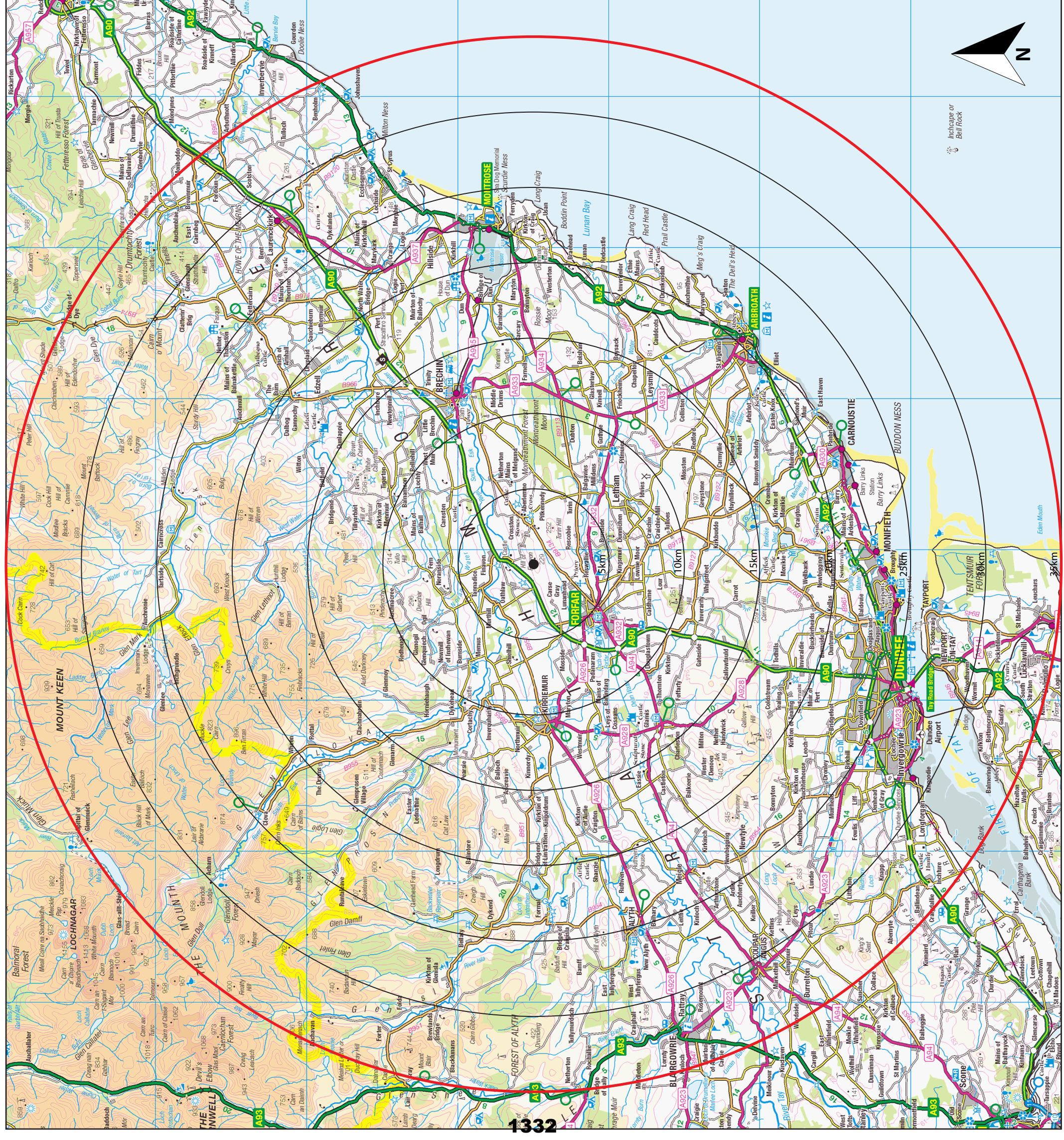
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Client: **Mr. J Sanderson (Finavon Estate) & Construction Partner**
 Kilmac Construction Ltd

Drawing by: **Green Cat Renewables Ltd**

Document Number: **C0256-163/FIG 7.0**
 Version: **1.0**
 Author: **AM**
 Checked by: **AW**
 Approved By: **AW**
 Date: **11/08/2014**

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Inchcape or Bell Rock

Project Name: **Finavon Hill Estate Wind Turbine**
 Document Title: **Landscape Character Types surrounding Hill of Finavon**
 Scale: **1:250,000 @ A3**

Key:
 ● Proposed Wind Turbine Location
 — 5, 10, 15, 20, 25 & 30km Radii from Wind Turbine
 — 35km Landscape and Visual Study Area

- Landscape Character Types:**
- | | | | |
|---|--------------------|----|-----------------------------|
| 1 | Coast with Sand | 7 | Broad Valley Lowlands |
| 2 | Coast with Cliffs | 8 | Highland Foothills |
| 3 | Dipslope Farmland | 9b | Mid Highland Glens |
| 4 | Igneous Hills | 9a | Upper Highland Glens |
| 5 | Low Moorland Hills | 10 | Highland Summits & Plateaux |
| 6 | Lowland Basins | | |

- South & Central Landscape Assessment**
- | | |
|---|----------------------|
| 1 | Kincardine Links |
| 2 | Howe of the Meams |
| 3 | Garvock & Glenbervie |
| 4 | The Mounth |

- Cairngorms Landscape Assessment**
- | | |
|---|-------------------------|
| 1 | The North-Eastern Hills |
| 2 | The White Mounth |

- Fife Landscape Assessment**
- | | | | |
|---|-----------------------------------|---|-------------------------|
| 1 | Coastal Flats | 4 | Upland Foothills |
| 2 | Coastal Terrace | 5 | Coastal Hills |
| 3 | Lowland Glacial Meltwater valleys | 6 | Lowland Hills & Valleys |



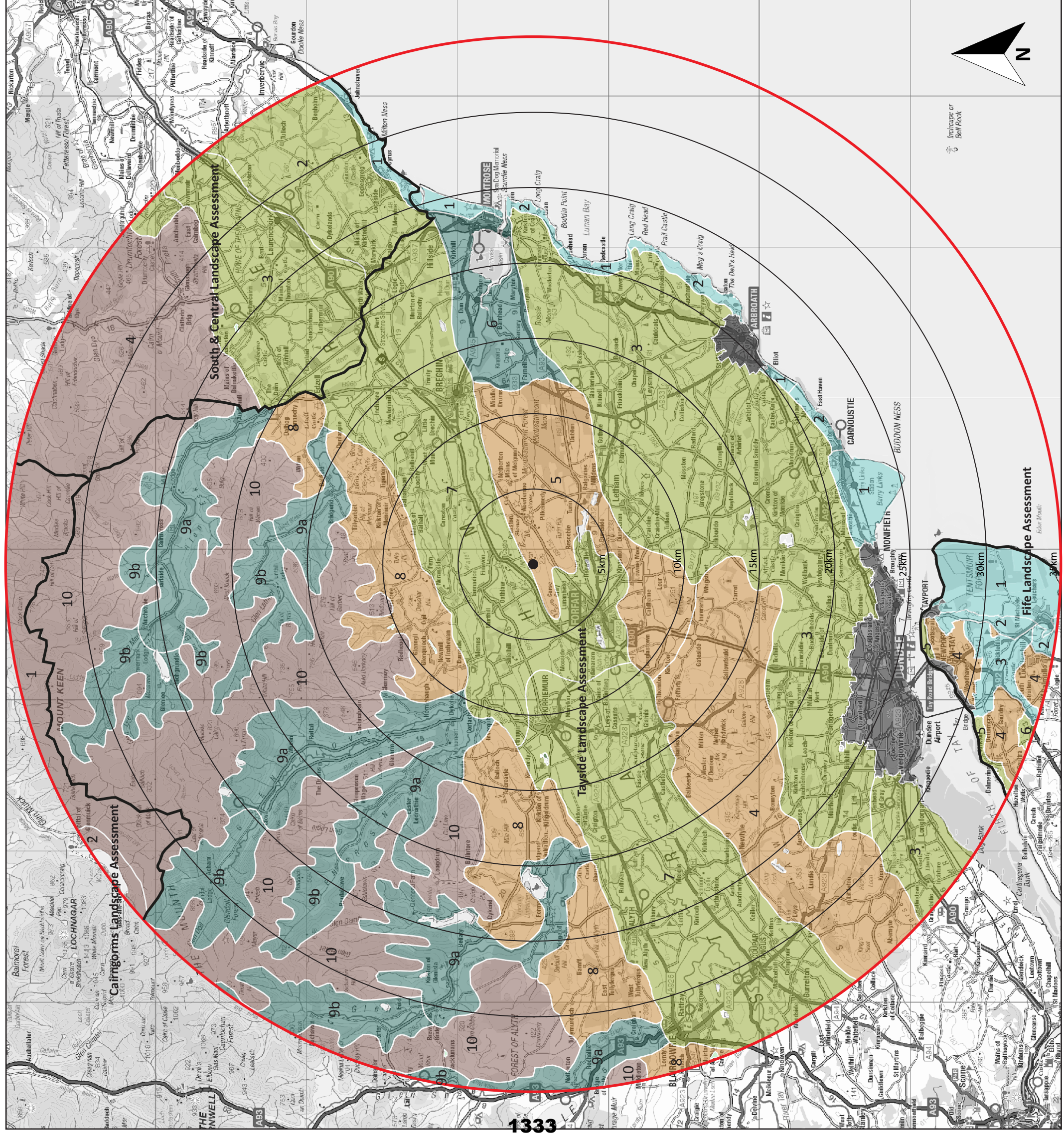
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 Kilmac Construction Ltd

Drawing by: **Green Cat Renewables Ltd**

Document Number: **C0256-163/FIG 7.1**
 Version: **1.0**
 Author: **AM**
 Checked by: **AW**
 Approved By: **AW**
 Date: **11/08/2014**

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Project Name: Finavon Hill Estate Wind Turbine
 Document Title: Landscape Designation Map

Scale: 1:250,000 @ A3

Key:
 ● Proposed Wind Turbine Location
 — 5, 10, 15, 20, 25 & 30km Radii from Wind Turbine
 — 35km Landscape and Visual Study Area

Local Authority Boundary
 Cairngorms National Park
 Areas of Landscape Significance
 Special Landscape Areas
 National Scenic Area
 GDL Area and Identifier

- 1 - Guthrie Castle
- 2 - House of Pitmuies
- 3 - Brechin Castle
- 4 - Kinnaird Castle
- 5 - House of Dun
- 6 - Craig House
- 7 - Dunninald
- 8 - The Gynnd
- 9 - Glamis Castle
- 10 - Cortachy Castle
- 11 - Ascreavie
- 12 - Airlie Castle
- 13 - Drumkilbo
- 14 - Craighall Rattray
- 15 - Rossie Priory
- 16 - Camperdown House
- 17 - Ballygay Park
- 18 - Baxter Park
- 19 - Naughton
- 20 - Earlshall
- 21 - Edzell Castle
- 22 - The Burn
- 23 - Fasque House

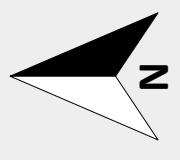
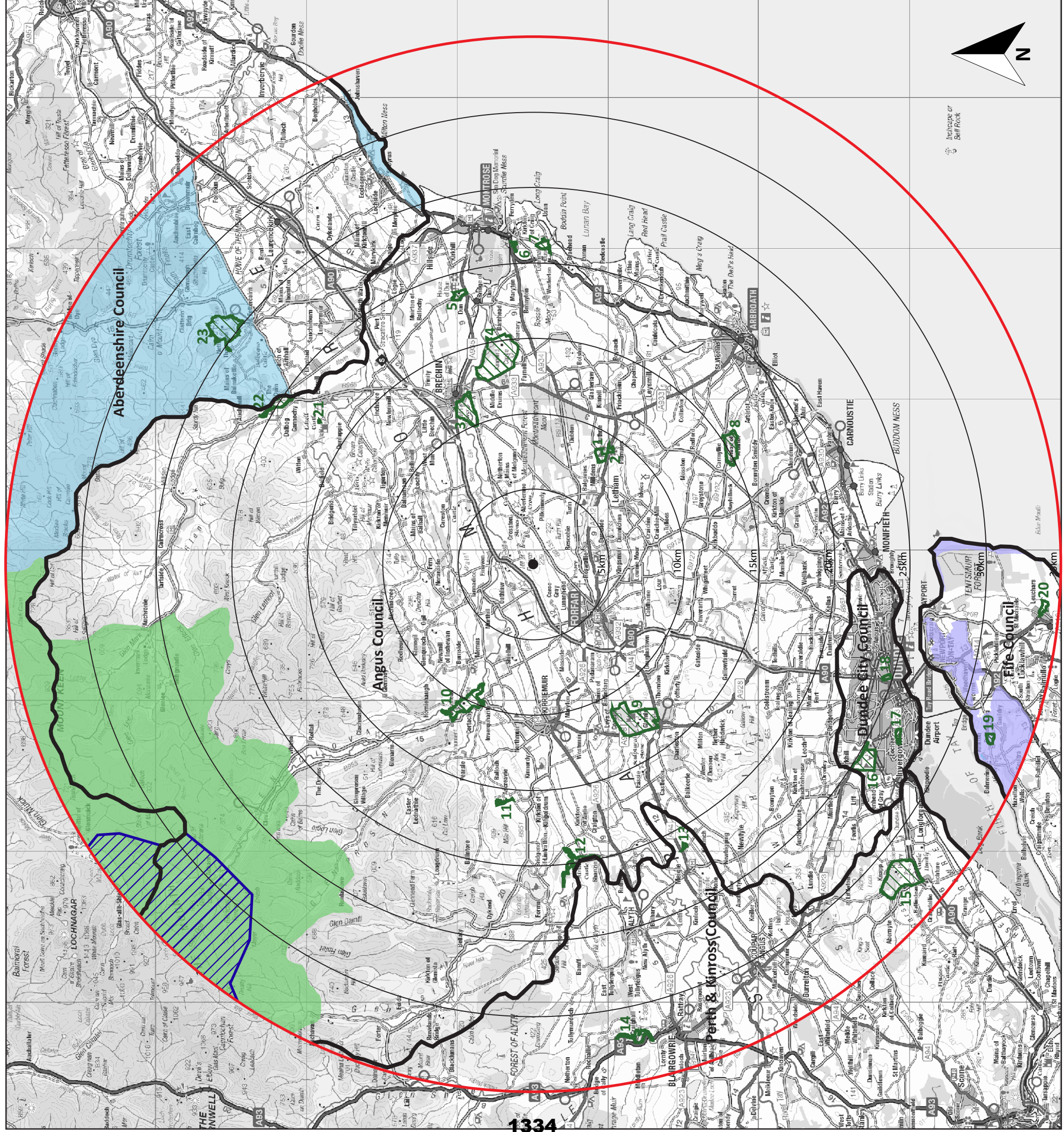


Client: Mr. J Sanderson (Finavon Estate) & Construction Partner
 Kilmac Construction Ltd

Document Number: C0256-163/FIG 7.2
 Version: 1.0
 Author: AM
 Checked by: AW
 Approved By: AW
 Date: 11/08/2014



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Inchcape or
 Bell Rock

Project Name: Finavon Hill Estate Wind Turbine
Document Title: Hub Height ZTV (40m) - 35km Radius
Scale: 1:250,000 @ A3

Key:

- Proposed Wind Turbine Location
- 5, 10, 15, 20, 25 & 30km Radii from Wind Turbine
- 35km Landscape and Visual Study Area
- Zone of Theoretical Visibility
- Viewpoint Locator & Identifier

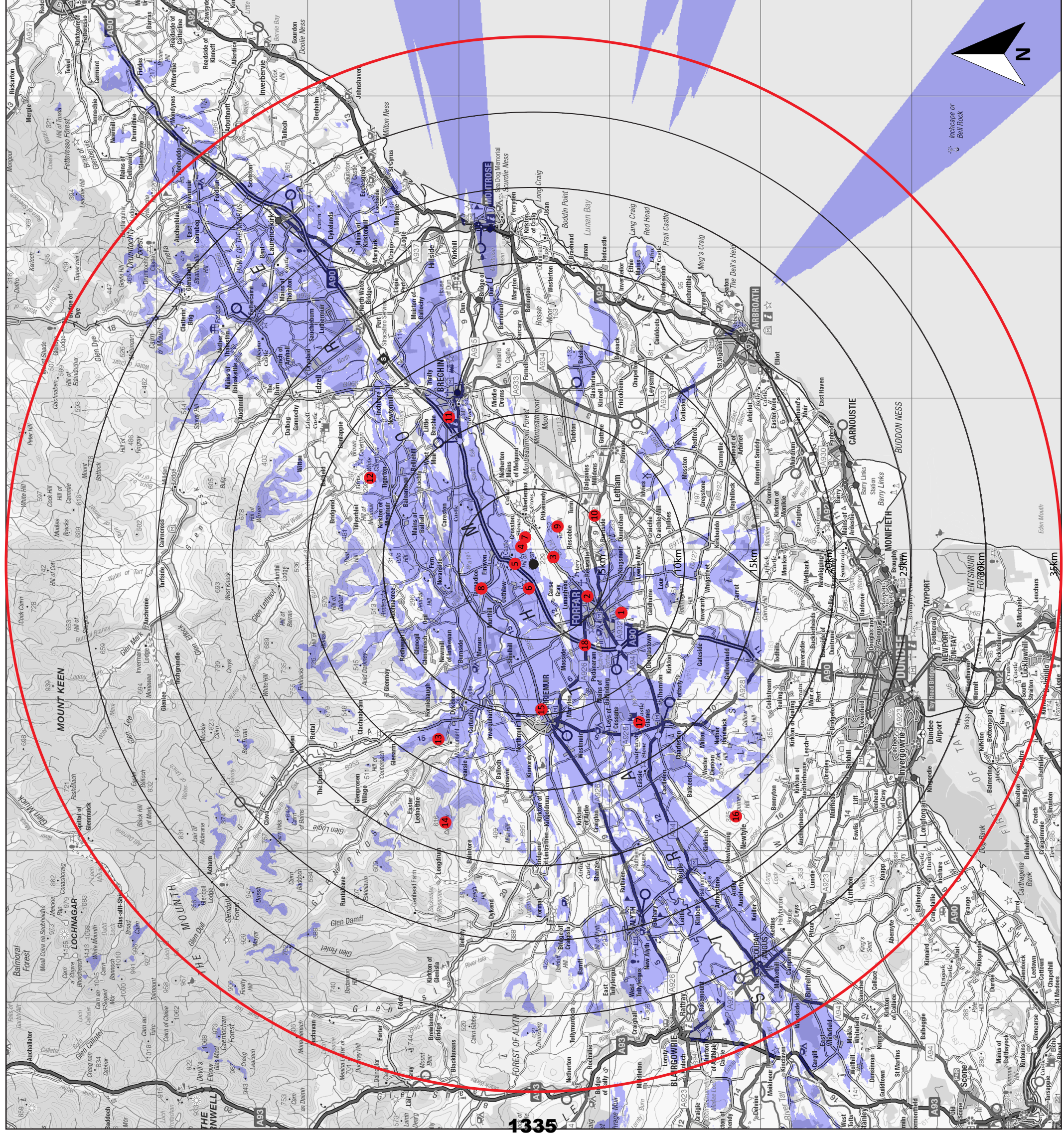
- Viewpoint Name:**
- 1 - Balmashanner
 - 2 - Forfar
 - 3 - Howmuir
 - 4 - Borgado
 - 5 - West Mains of Finavon
 - 6 - Bogindollo
 - 7 - Finavon Hill Fort
 - 8 - Tannadice
 - 9 - Turin Hill Fort
 - 10 - A932
 - 11 - Brechin
 - 12 - White Catherthun Fort
 - 13 - Airie Monument
 - 14 - Cat Law
 - 15 - Kirriemuir
 - 16 - Kinpurney Hill
 - 17 - Glamis Castle
 - 18 - A90 Bridge North of Forfar



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Document Number: C0256-163/FIG 7.3
Version: 1.0
Author: AM
Checked by: AW
Approved By: AW
Date: 11/08/2014
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Project Name: **Finavon Hill Estate Wind Turbine**
 Document Title: **Tip Height ZTV (67m) - 35km Radius**
 Scale: **1:250,000 @ A3**

Key:

- Proposed Wind Turbine Location
- 5, 10, 15, 20, 25 & 30km Radii from Wind Turbine
- 35km Landscape and Visual Study Area
- Zone of Theoretical Visibility
- Viewpoint Locator & Identifier

- Viewpoint Name:**
- 1 - Balmashanner
 - 2 - Forfar
 - 3 - Howmuir
 - 4 - Borgado
 - 5 - West Mains of Finavon
 - 6 - Bogindollo
 - 7 - Finavon Hill Fort
 - 8 - Tannadice
 - 9 - Turin Hill Fort
 - 10 - A932
 - 11 - Brechin
 - 12 - White Catherthun Fort
 - 13 - Airie Monument
 - 14 - Cat Law
 - 15 - Kirriemuir
 - 16 - Kinpurney Hill
 - 17 - Glamis Castle
 - 18 - A90 Bridge North of Forfar

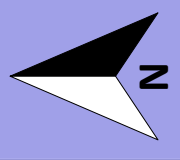
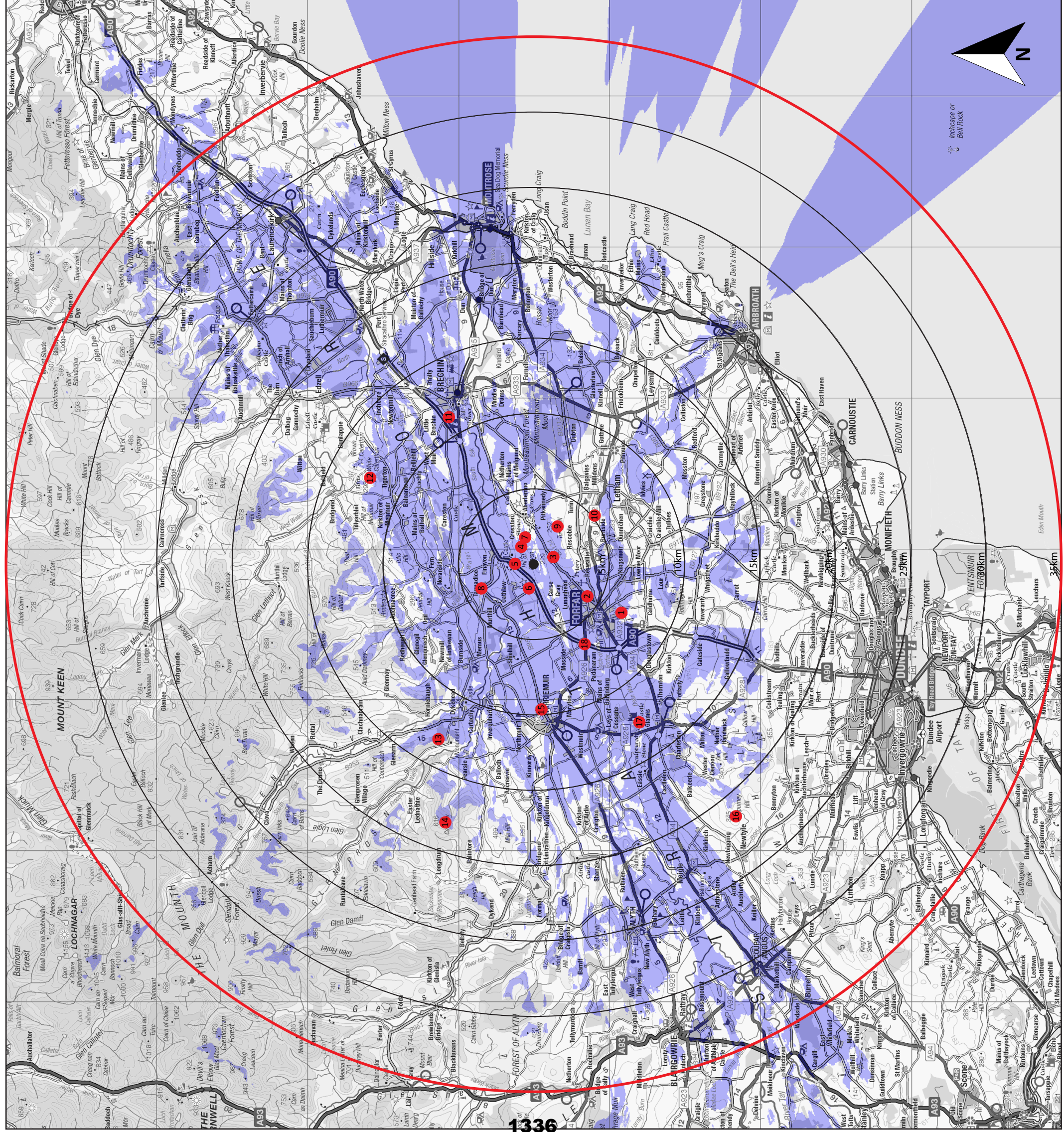


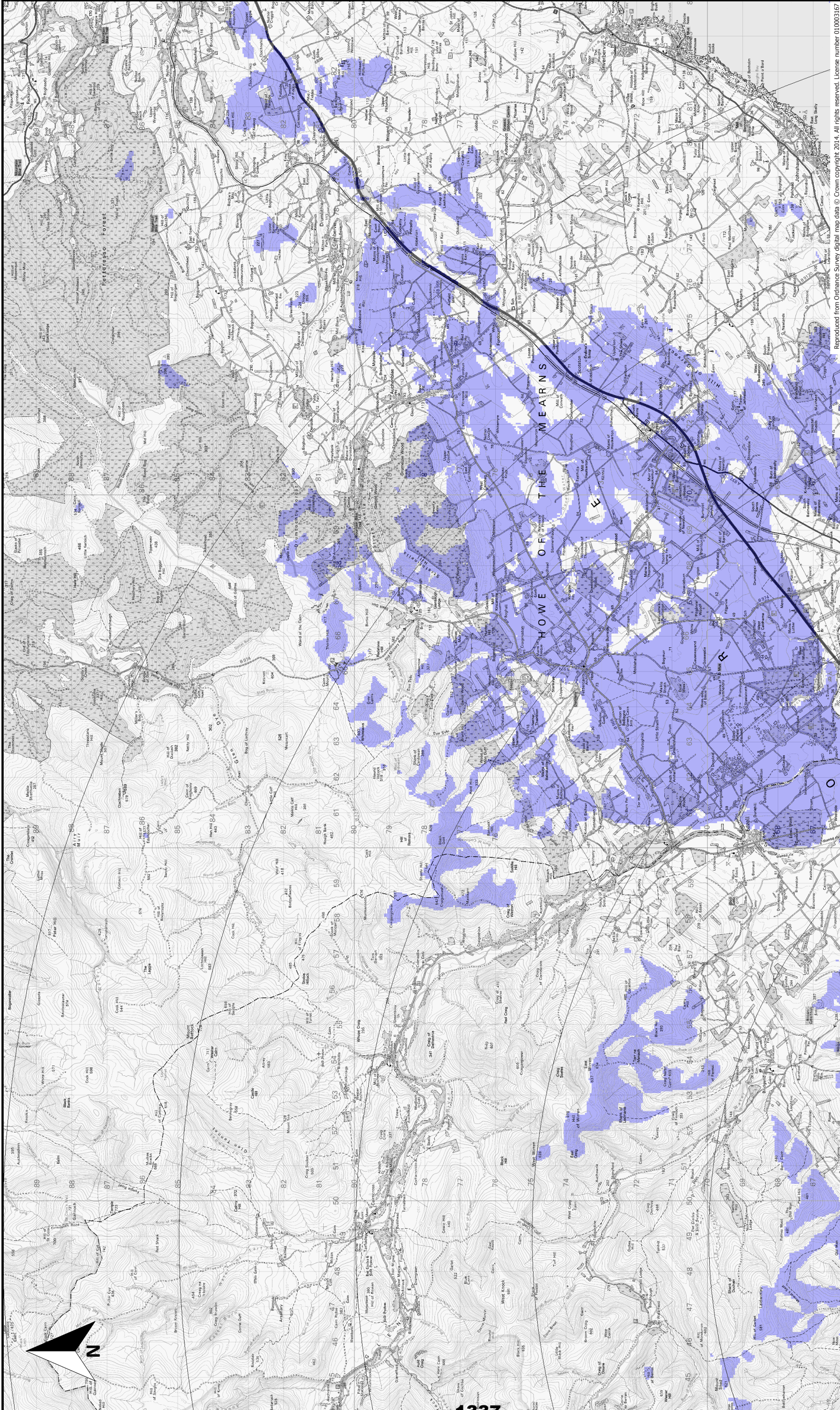
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 Drawing by: **Green Cat Renewables Ltd**

Document Number: **C0256-163/FIG 7.4**
 Version: **1.0**
 Author: **AM**
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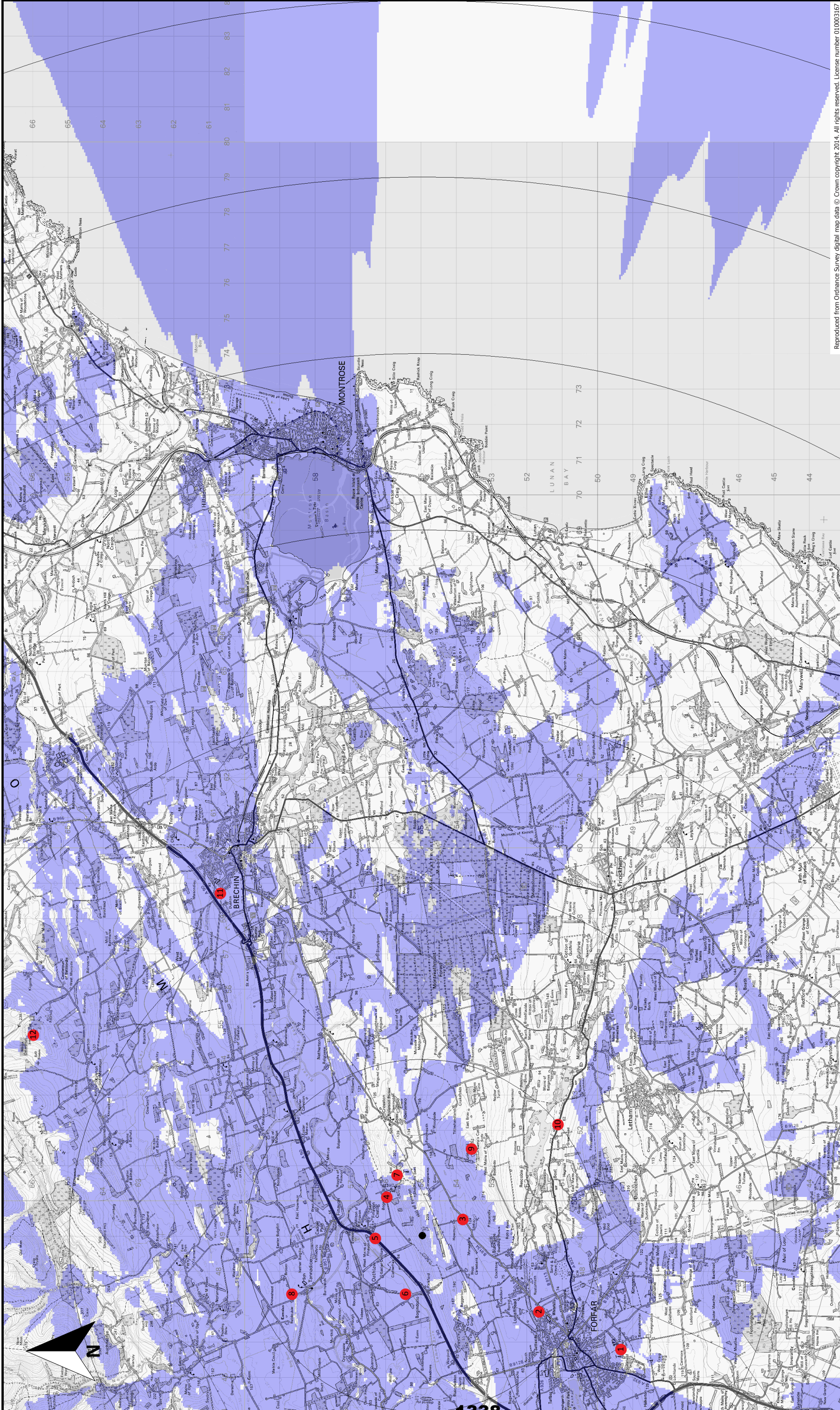




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<p>Project Name: Finavon Hill Estate Wind Turbine</p> <p>Document Title: Detailed ZTV to 67m Tip Height - North East Zone</p> <p>Scale: 1:100,000 @ A3</p>	<p>Key:</p> <ul style="list-style-type: none"> ● Proposed Wind Turbine Location ■ 1 Turbine Theoretically Visible — 5, 10, 15, 20, 25, 30 & 35km Radii from Turbine 	<p>1 Viewpoint Locator & Identifier</p> <p>Viewpoint Name:</p> <ul style="list-style-type: none"> 1 - Balmashanner 2 - Forfar 3 - Howmuir 4 - Borgado 5 - West Mains of Finavon 6 - Bogindollo 7 - Finavon Hill Fort 8 - Tannadice 9 - Turin Hill Fort 10 - A932 11 - Brechin 12 - White Caterthun Fort 13 - Airlie Monument 14 - Cat Law 15 - Kirriemuir 16 - Kinturney 17 - Glamis Castle 18 - A90 Bridge North of Forfar 	<p>Document Number: C0256-163/Fig 7.5a</p> <p>Version: 1.0</p> <p>Author: AM</p> <p>Checked by: AW</p> <p>Approved By: AW</p> <p>Date: 11/08/2014</p> <p>©Green Cat Renewables Ltd</p>
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Project Name: Finavon Hill Estate Wind Turbine
Document Title: Detailed ZTV to 67m Tip Height - East Zone
Scale: 1:100,000 @ A3

Key:

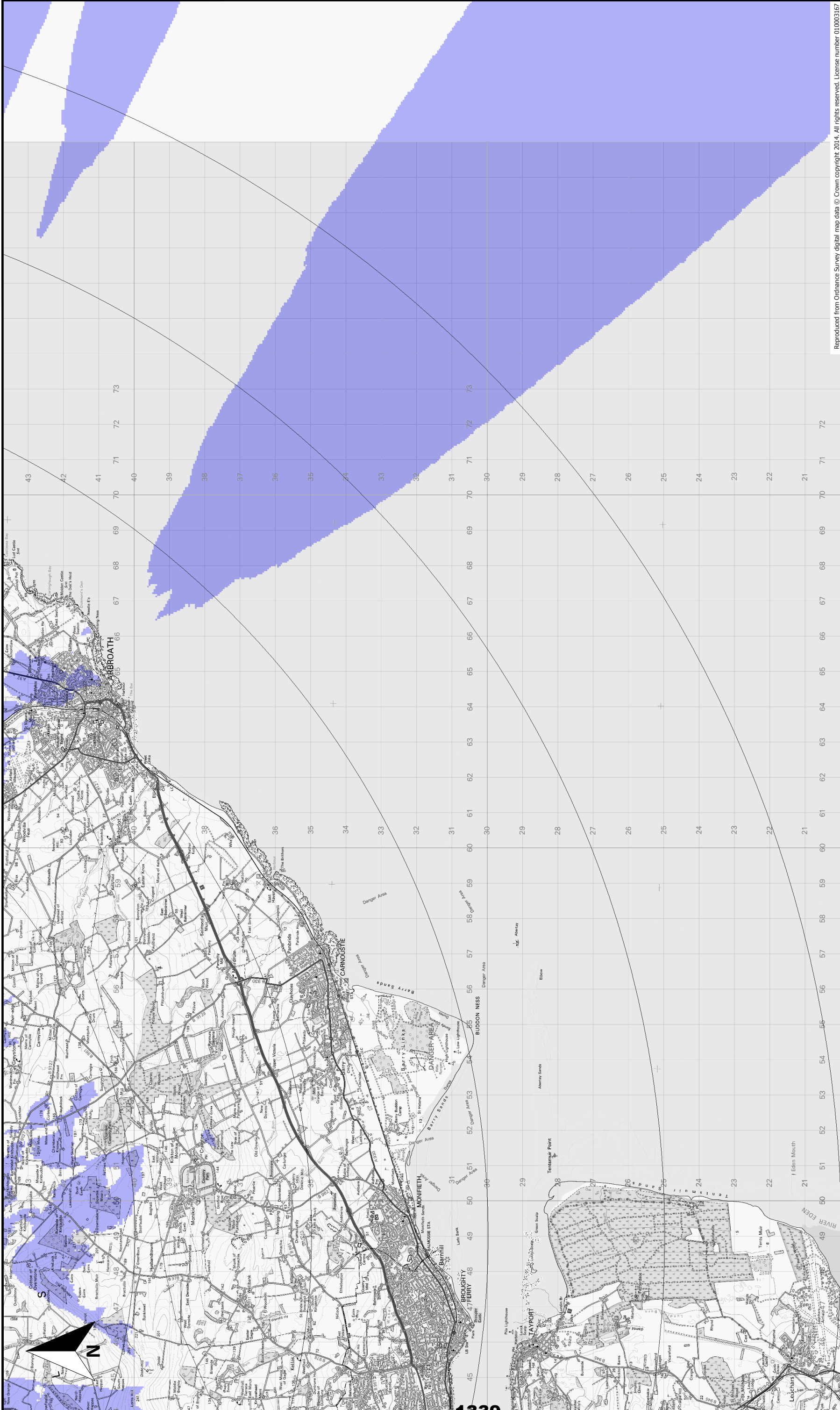
- Proposed Wind Turbine Location
- 1 Turbine Theoretically Visible
- 5, 10, 15, 20, 25, 30 & 35km Radii from Turbine

1 Viewpoint Locator & Identifier

Viewpoint Name:	Viewpoint Locator & Identifier
1 - Balmashanner	13 - Airlie Monument
2 - Forfar	14 - Cat Law
3 - Howmuir	15 - Kirriemuir
4 - Borgado	16 - Kinpurney
5 - West Mains of Finavon	17 - Glamis Castle
6 - Bogindollo	18 - A90 Bridge North of Forfar
7 - Finavon Hill Fort	
8 - Tannadice	
9 - Turin Hill Fort	
10 - A932	
11 - Brechin	
12 - White Caterthun Fort	

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Project Name: Finavon Hill Estate Wind Turbine

Document Title: Detailed ZTV to 67m Tip Height - South East Zone

Scale: 1:100,000 @ A3

Key:

- Proposed Wind Turbine Location
- 1 Turbine Theoretically Visible
- 5, 10, 15, 20, 25, 30 & 35km Radii from Turbine

1 Viewpoint Locator & Identifier

Viewpoint Name:

1 - Balmashanner	7 - Finavon Hill Fort	13 - Airlie Monument
2 - Forfar	8 - Tannadice	14 - Cat Law
3 - Howmuir	9 - Turin Hill Fort	15 - Kirriemuir
4 - Borgado	10 - A932	16 - Kinpurney
5 - West Mains of Finavon	11 - Brechin	17 - Glamis Castle
6 - Bogindollo	12 - White Caterthun Fort	18 - A90 Bridge North of Forfar

Document Number: C0256-163/Fig 7.5c

Version: 1.0

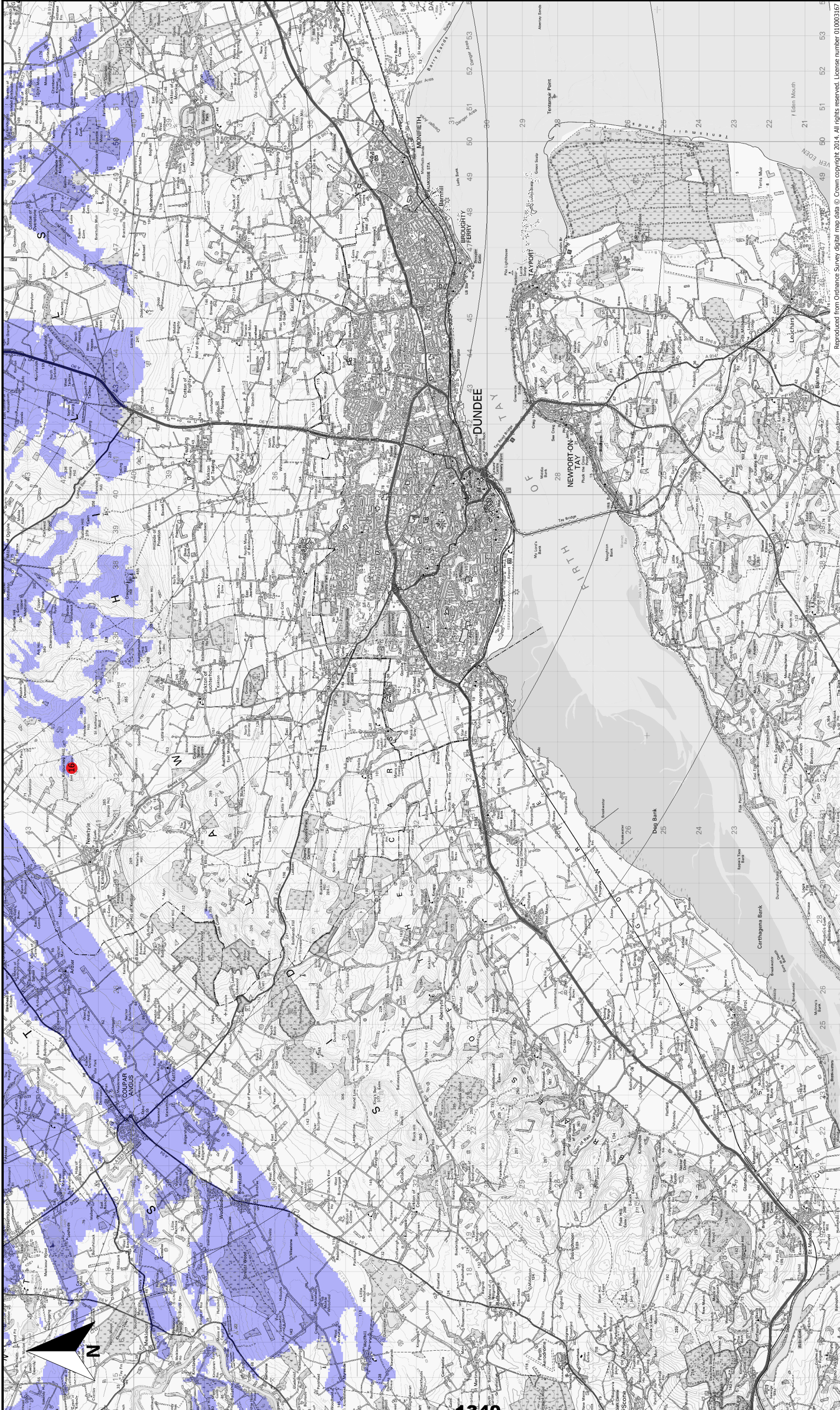
Author: AM

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1340

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Project Name: Finavon Hill Estate Wind Turbine

Document Title: Detailed ZTV to 67m Tip Height - South West Zone

Scale: 1:100,000 @ A3

Key:

- Proposed Wind Turbine Location
- 1 Turbine Theoretically Visible
- 5, 10, 15, 20, 25, 30 & 35km Radii from Turbine

Document Number: C0256-163/Fig 7.5d

Version: 1.0

Author: AM

Checked by: AW

Approved By: AW

Date: 11/08/2014

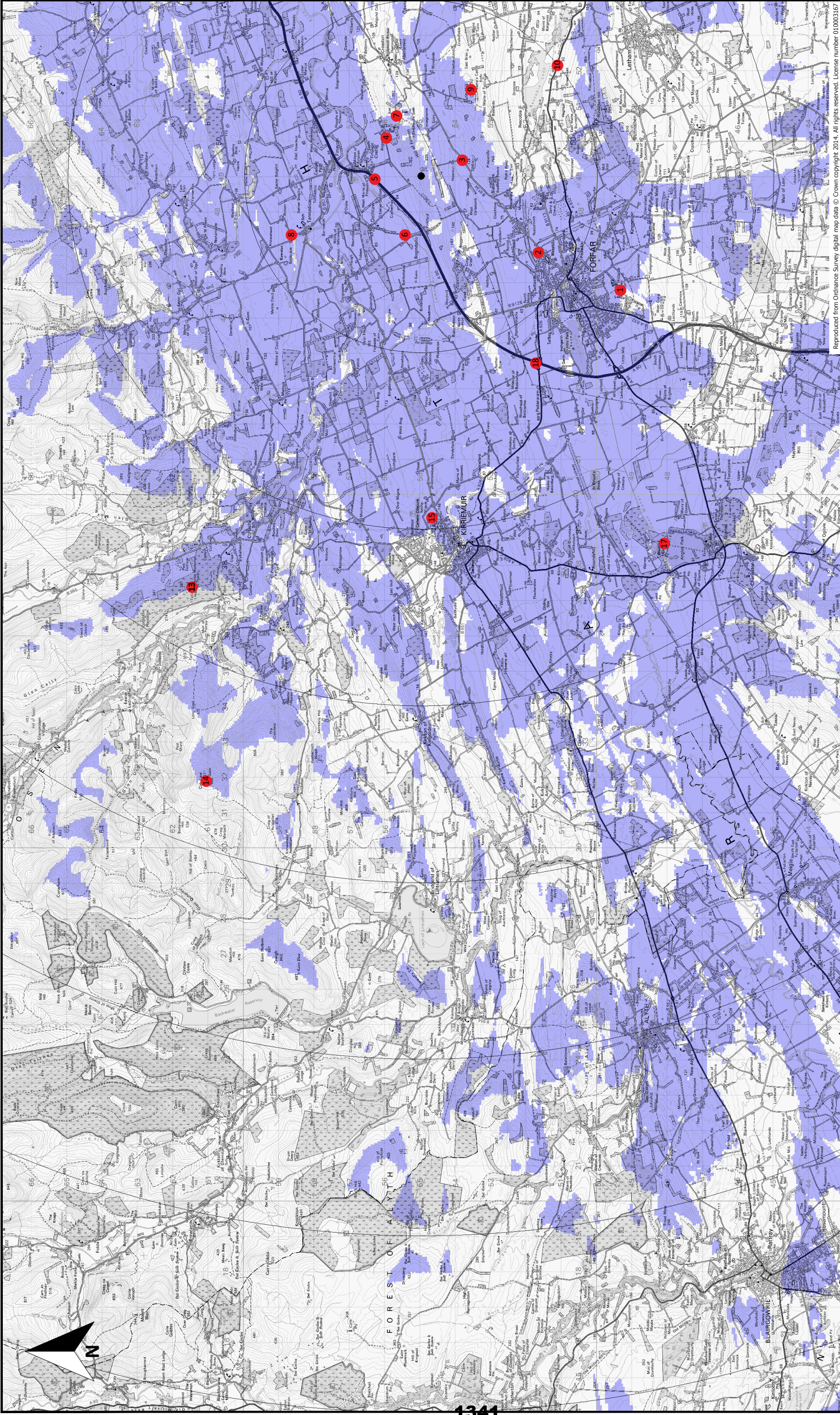
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1 Viewpoint Locator & Identifier

Viewpoint Name:

1 - Balmashanner	7 - Finavon Hill Fort
2 - Forfar	8 - Tannadice
3 - Howmuir	9 - Turin Hill Fort
4 - Borgado	10 - A932
5 - West Mains of Finavon	11 - Brechin
6 - Bogindollo	12 - White Caterthun Fort
	13 - Airlie Monument
	14 - Cat Law
	15 - Kirriemuir
	16 - Kinnurmye
	17 - Glamis Castle
	18 - A90 Bridge North of Forfar





Project Name: Finavon Hill Estate Wind Turbine

Document Title: Detailed ZTV to 67m Tip Height - West Zone

Scale: 1:100,000 @ A3

Key:

- Proposed Wind Turbine Location
- 1 Turbine Theoretically Visible
- 5, 10, 15, 20, 25, 30 & 35km Radii from Turbine

Viewpoint Locator & Identifier

Viewpoint Name:	Identifier
1 - Balmashanner	7 - Finavon Hill Fort
2 - Forfar	8 - Tannadice
3 - Howmuir	9 - Turin Hill Fort
4 - Borgado	10 - A932
5 - West Mains of Finavon	11 - Brechin
6 - Bogindollo	12 - White Caterthun Fort
	13 - Airlie Monument
	14 - Cat Law
	15 - Kirriemuir
	16 - Kinnurney
	17 - Glamis Castle
	18 - A90 Bridge North of Forfar

Document Number: C0256-163/Fig 7.5e

Version: 1.0

Author: AM

Checked by: AW

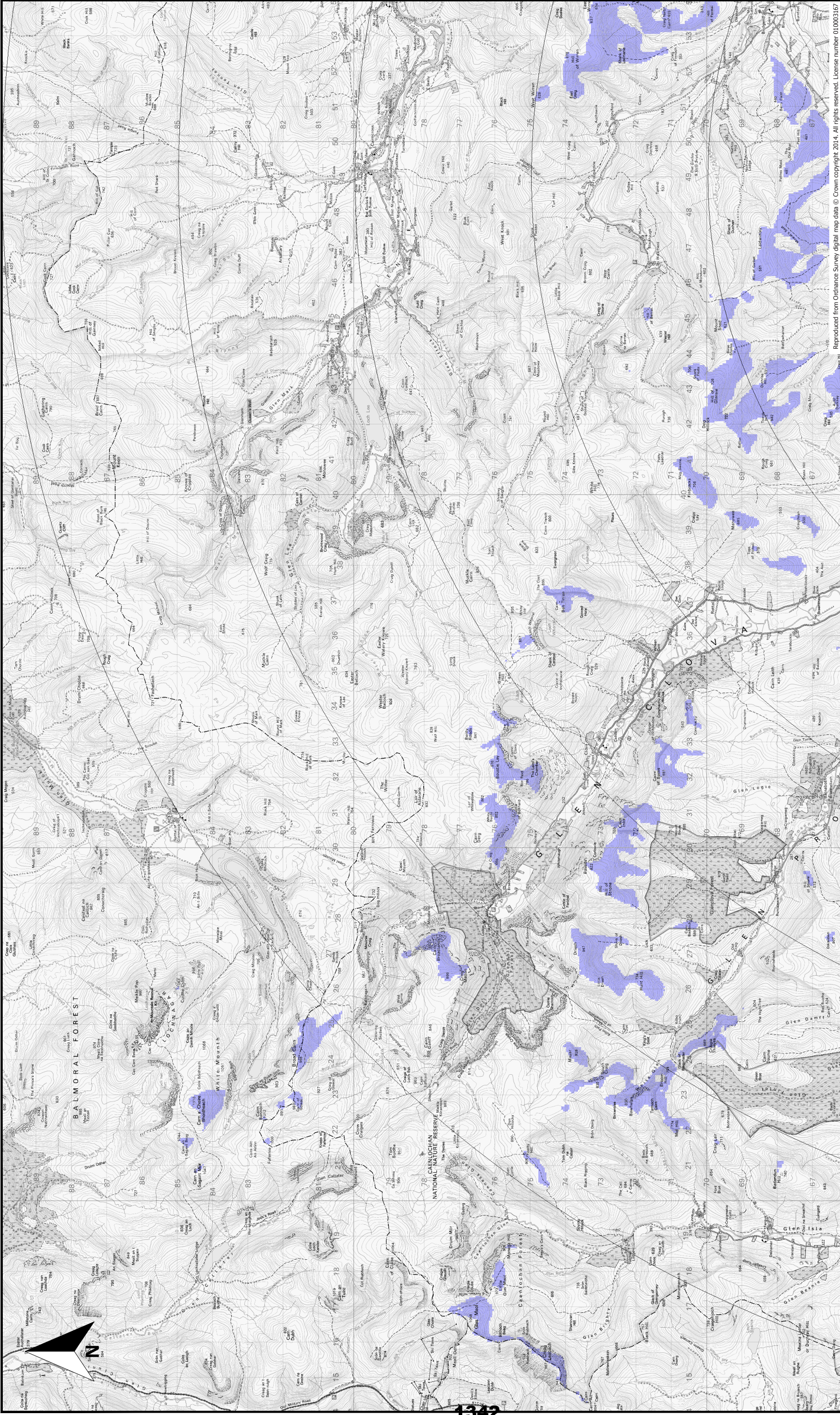
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 Author: **AM**
 Checked by: **AW**
 Approved By: **AW**
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- 1** Viewpoint Locator & Identifier
- Viewpoint Name:
- 1 - Balmashanner
 - 2 - Forfar
 - 3 - Howmuir
 - 4 - Borgado
 - 5 - West Mains of Finavon
 - 6 - Bogindollo
 - 7 - Finavon Hill Fort
 - 8 - Tannadice
 - 9 - Turin Hill Fort
 - 10 - A932
 - 11 - Brechin
 - 12 - White Caterthun Fort
 - 13 - Airlie Monument
 - 14 - Cat Law
 - 15 - Kirriemuir
 - 16 - Kinturney
 - 17 - Glamis Castle
 - 18 - A90 Bridge North of Forfar

- Proposed Wind Turbine Location
- 1 Turbine Theoretically Visible
- 5, 10, 15, 20, 25, 30 & 35km Radii from Turbine

Project Name: **Finavon Hill Estate Wind Turbine**

Document Title: **Detailed ZTV to 67m Tip Height - North West Zone**

Scale: **1:100,000 @ A3**

Project Name: **Finavon Hill Estate Wind Turbine**
 Document Title: **Residential Assessment**
 Scale: **1:25,000 @ A3**

- Key:**
- Proposed Turbine Locations
 - 1, 2 and 3km Radii from Turbine Centres
 - Turbine Theoretically Visible
 - High Magnitude of Change
 - Medium Magnitude of Change
 - Low Magnitude of Change
 - Negligible Magnitude of Change
 - ➔ Main Viewing Direction

Property Name:

- 1 - Baggerton
- 2 - Carsebank Cottage South
- 3 - Carsebank Cottage North
- 4 - West Carsebank
- 5 - Carsebank
- 6 - Clochtow
- 7 - Blackgate
- 8 - Myrestone 1
- 9 - Myrestone 2
- 10 - Pitscandy New House
- 11 - B9134 Cottages
- 12 - Howmuir 1
- 13 - Howmuir 2
- 14 - Carsegownie 1
- 15 - Carsegownie 2
- 16 - Carsegownie 3
- 17 - Back Hill of Turin
- 18 - Parkfold 1
- 19 - Parkfold 2
- 20 - Finavon House
- 21 - Clatterha
- 22 - West Mains of Finavon 1
- 23 - West Mains of Finavon 2
- 24 - Easter Oathlaw
- 25 - Bogindollo Farm
- 26 - Shepherds Seat



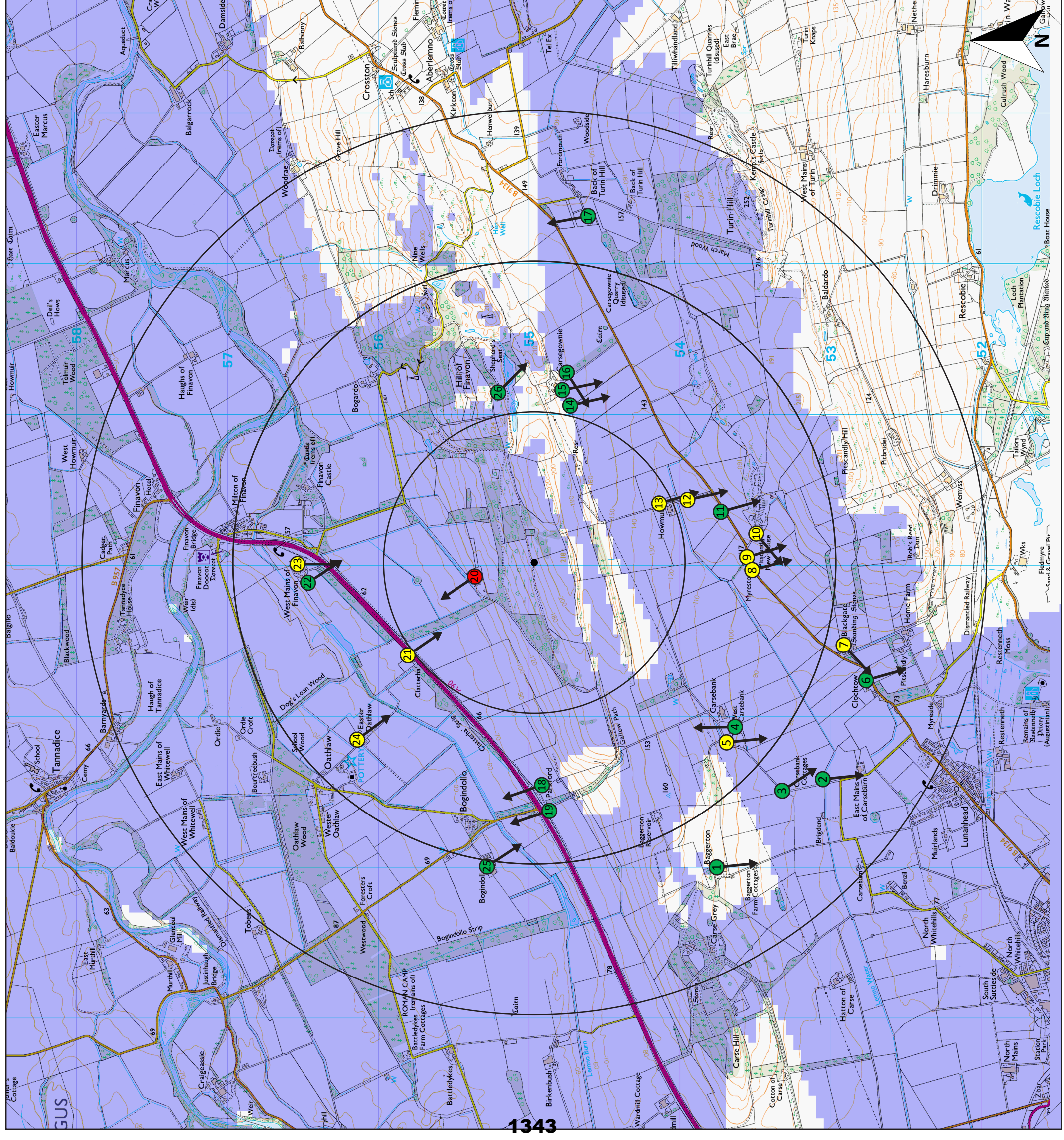
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 Kilmac Construction Ltd

Drawing by: **Green Cat Renewables Ltd**

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 Author: **AM**
 Checked by: **AW**
 Approved By: **AW**
 Date: **11/08/2014**

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Project Name: Finavon Hill Estate Wind Turbine
Document Title: Cumulative Basemap - Operational

Scale: 1:500,000 @ A3

Key:

- Proposed Wind Turbine Location
- Landscape and Visual Study Area (60km)
- 10, 20, 30, 40 & 50km Radii from Wind Farm Centre
- 3 Turbines or Fewer
- Operational
- 4 or more Turbines
- Operational

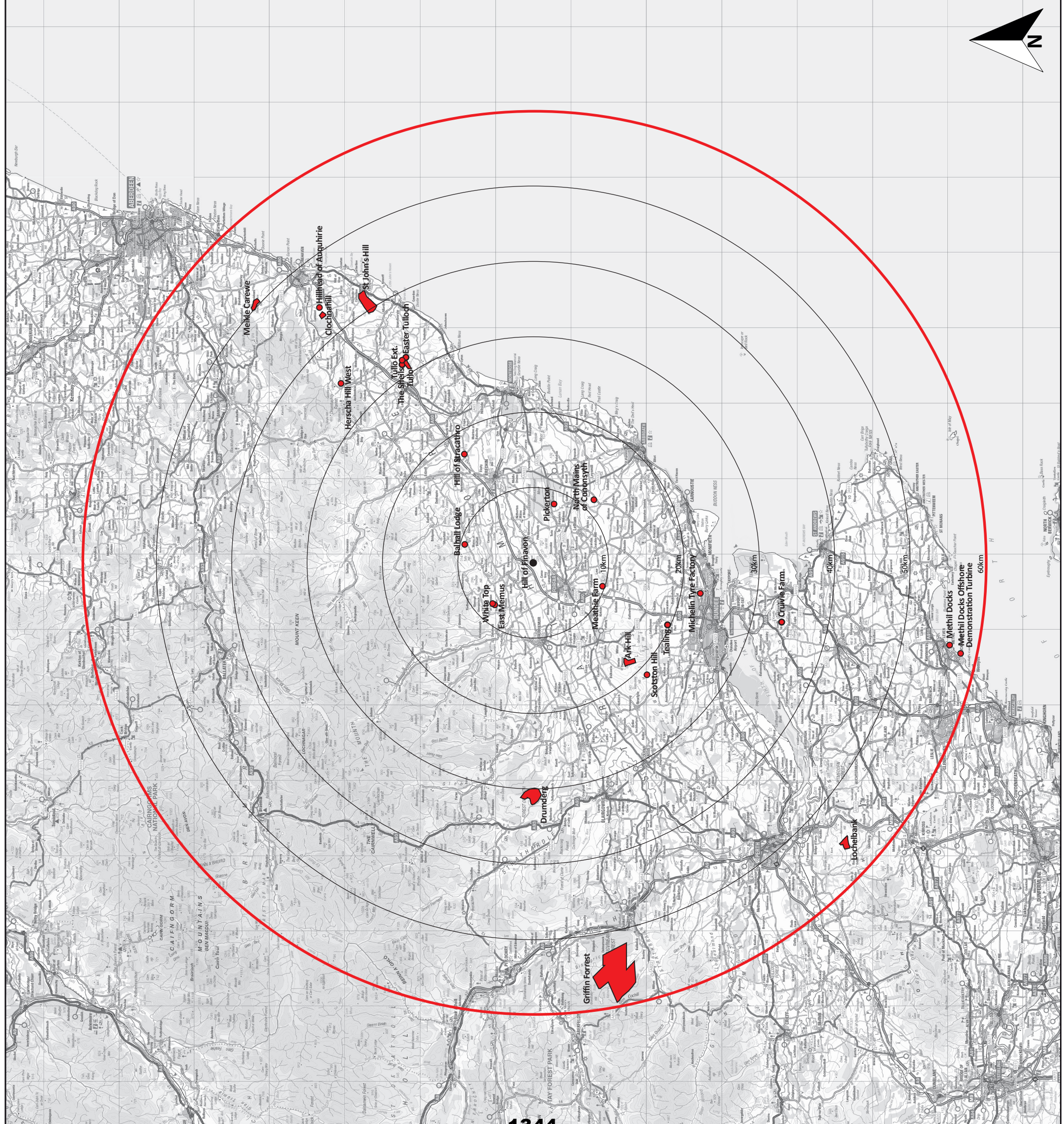
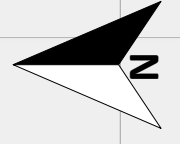


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Drawing by: Green Cat Renewables Ltd

Document Number: C0256-163/FIG 7.7a
Version: 1.0
Author: AM
Checked by: AW
Approved By: AW
Date: 11/08/2014
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Project Name: Finavon Hill Estate Wind Turbine
 Document Title: Cumulative Basemap - Consented

Scale: 1:500,000 @ A3

Key:

- Proposed Wind Turbine Location
- Landscape and Visual Study Area (60km)
- 10, 20, 30, 40 & 50km Radii from Wind Farm Centre
- 3 Turbines or Fewer
 - Operational
 - Consented
- 4 or more Turbines
 - Operational
 - Consented



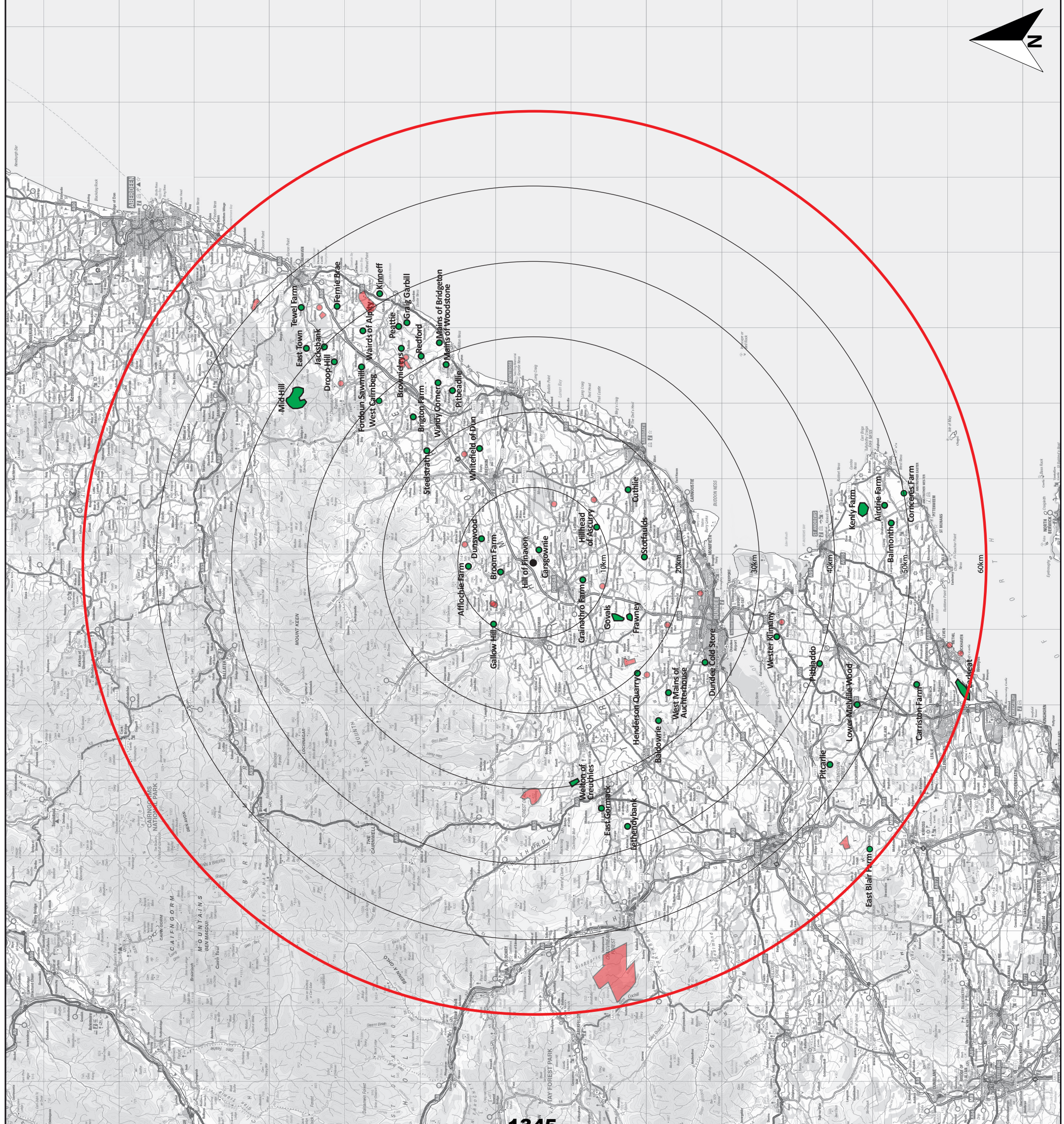
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Document Number: C0256-163/FIG 7.7b
 Version: 1.0
 Author: AM
 Checked by: AW
 Approved By: AW
 Date: 11/08/2014

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Project Name: Finavon Hill Estate Wind Turbine
 Document Title: Cumulative Basemap - In Planning

Scale: 1:500,000 @ A3

Key:

- Proposed Wind Turbine Location
- Landscape and Visual Study Area (60km)
- 10, 20, 30, 40 & 50km Radii from Wind Farm Centre
- 3 Turbines or Fewer
 - Operational
 - Consented
 - In Planning
- 4 or more Turbines
 - Operational
 - Consented
 - In Planning



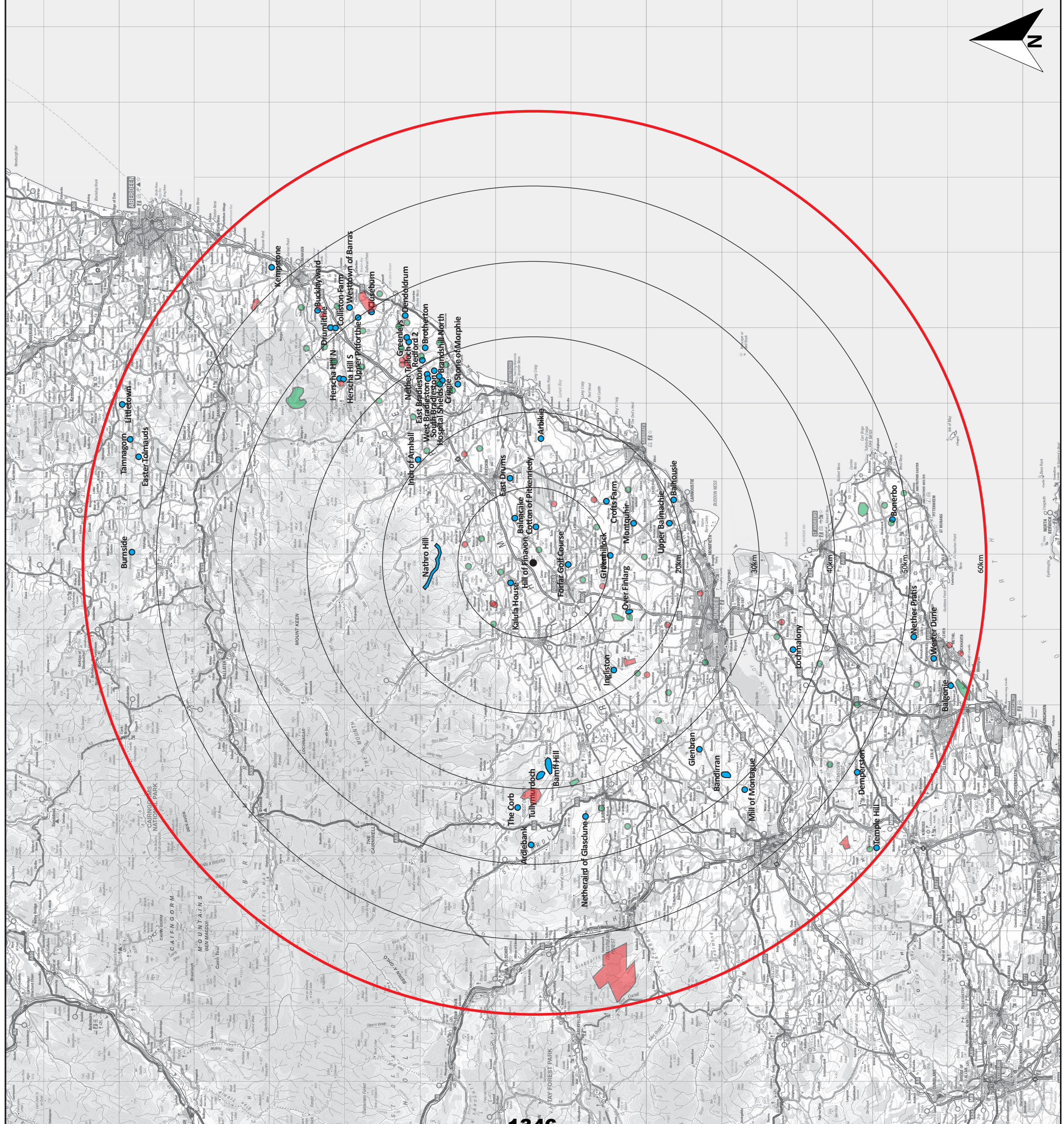
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Document Number: C0256-163/FIG 7.7c
 Version: 1.0
 Author: AM
 Checked by: AW
 Approved By: AW
 Date: 11/08/2014

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Project Name: Hill of Finavon Wind Turbine
Document Title: Cumulative ZTV to Tip Height for 35km Radii - Ark Hill (Operational)
Scale: 1:200,000 @ A3

Key:

- Proposed Turbine Location
- Cumulative Project Location
- 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
- Landscape and Visual Study Area (35km)
- Hill of Finavon Visible
- Ark Hill Visible
- Hill of Finavon & Ark Hill Visible

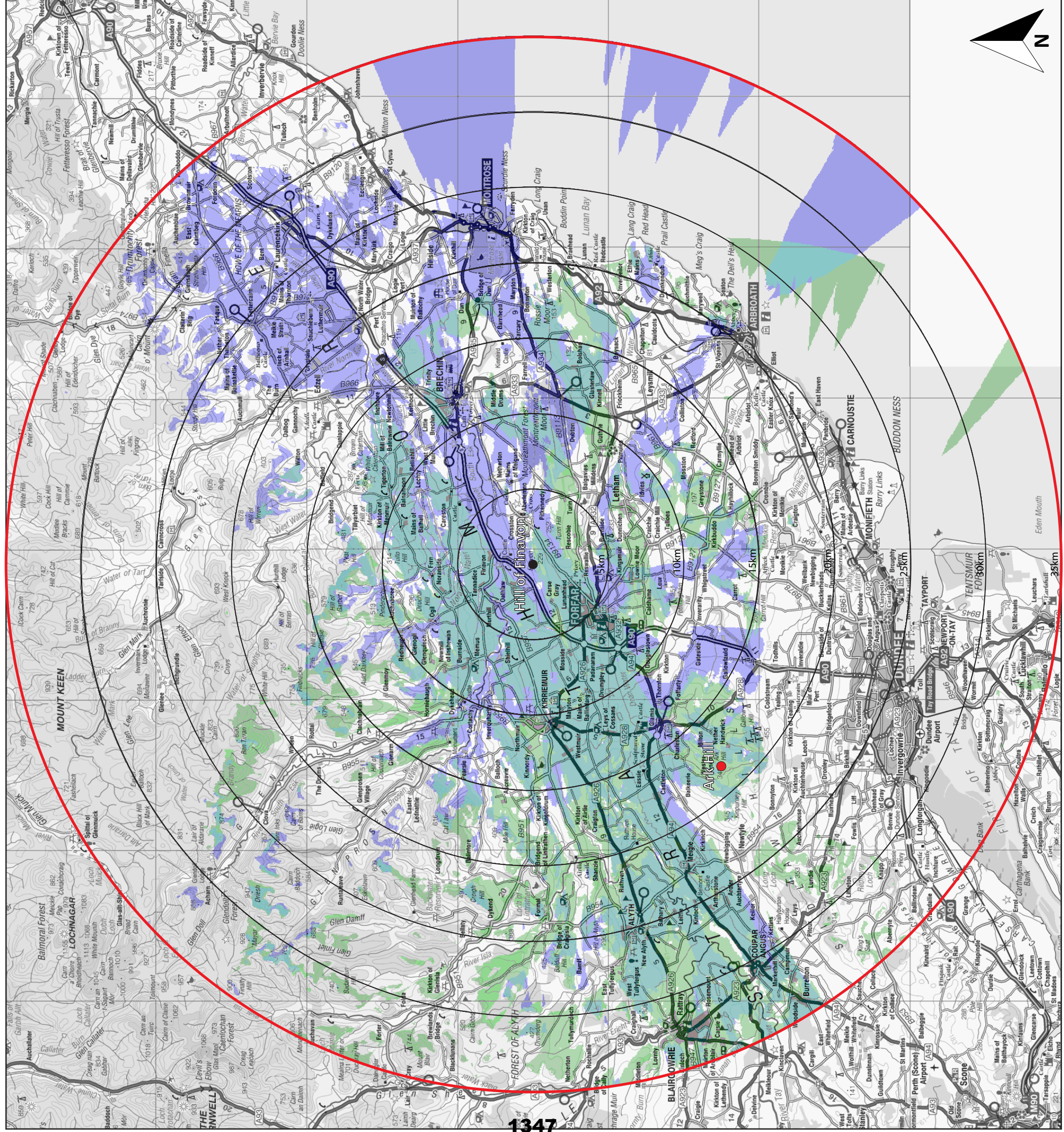


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Version: 1.0
Author: AM
Checked by: AW
Approved By: AW
Date: 11/08/2014

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Project Name: Hill of Finavon Wind Turbine
Document Title: Cumulative ZTV to Tip Height for 35km Radii - Balhall Lodge (Operational)
Scale: 1:200,000 @ A3

Key:

- Proposed Turbine Location
- Cumulative Project Location
- 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
- Landscape and Visual Study Area (35km)
- Hill of Finavon Visible
- Balhall Lodge Visible
- Hill of Finavon & Balhall Lodge Visible

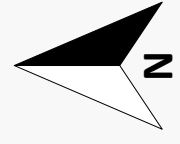
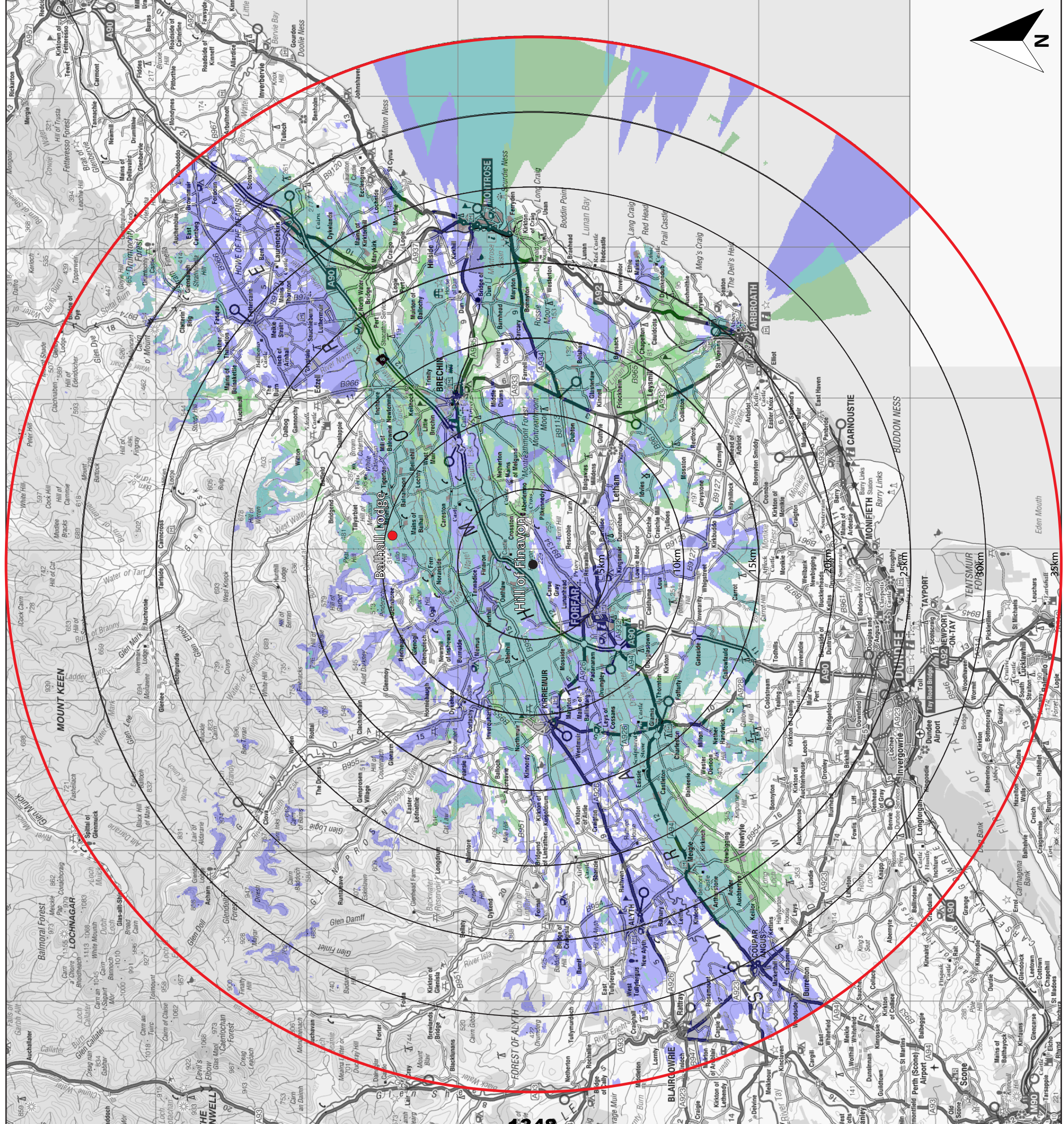


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Document Number: C0256-163/Fig 7.8b
Version: 1.0
Author: AM
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Date: 11/08/2014

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Project Name: Hill of Finavon Wind Turbine
 Document Title: Cumulative ZTV to Tip Height for 35km Radii - Drumderg (Operational)
 Scale: 1:200,000 @ A3

Key:

- Proposed Turbine Location
- Cumulative Project Location
- 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
- Landscape and Visual Study Area (35km)
- Hill of Finavon Visible
- Drumderg Visible
- Hill of Finavon & Drumderg Visible

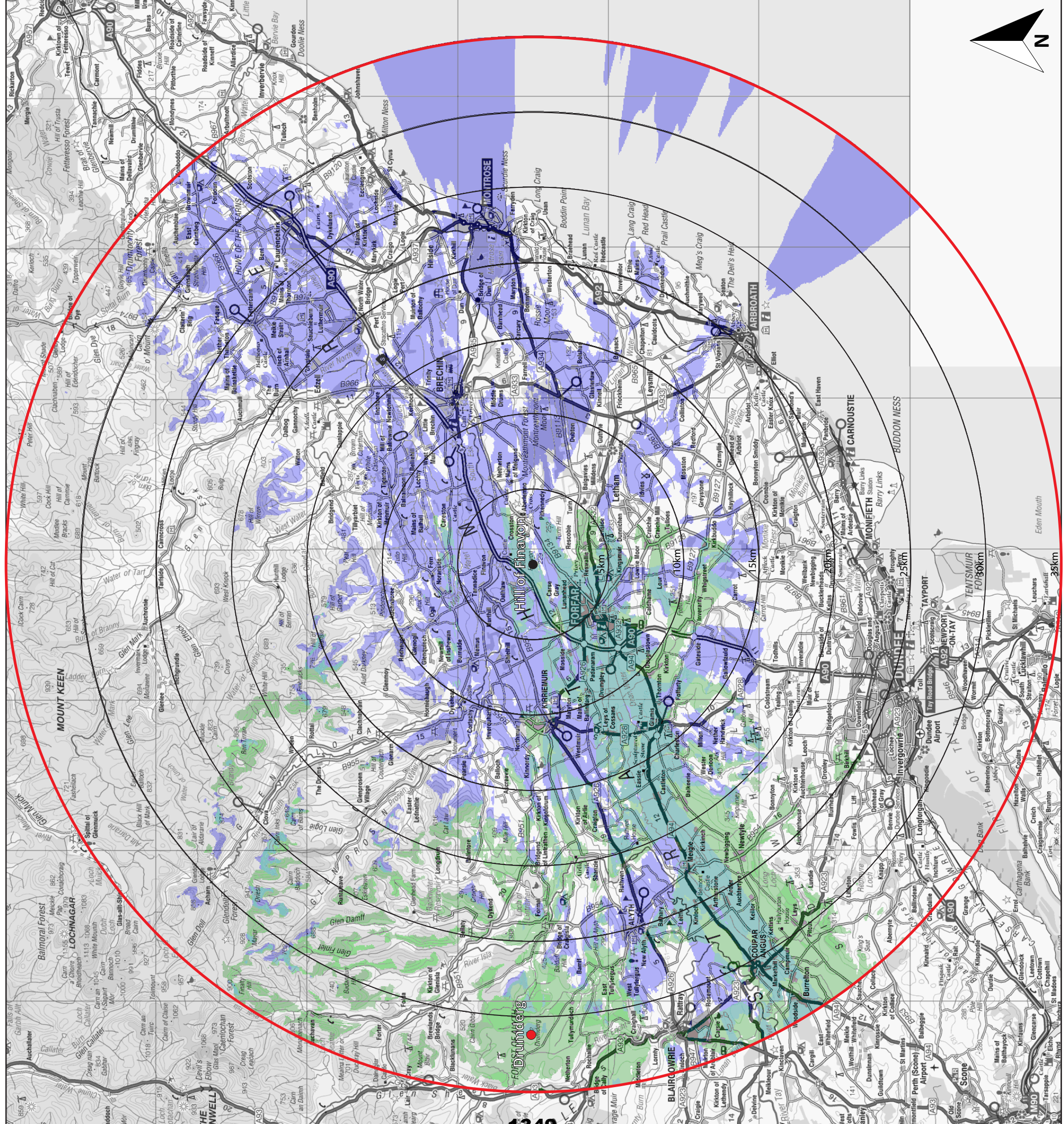


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 Drawing by: Green Cat Renewables Ltd

Document Number: C0256-163/FIG 7.8c
 Version: 1.0
 Author: AM
 Checked by: AW
 Approved By: AW
 Date: 11/08/2014

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Project Name: Hill of Finavon Wind Turbine
Document Title: Cumulative ZTV to Tip Height for 35km Radii - East Memus (Operational)
Scale: 1:200,000 @ A3

Key:

- Proposed Turbine Location
- Cumulative Project Location
- 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
- Landscape and Visual Study Area (35km)
- Hill of Finavon Visible
- East Memus Visible
- Hill of Finavon & East Memus Visible

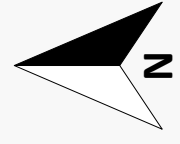
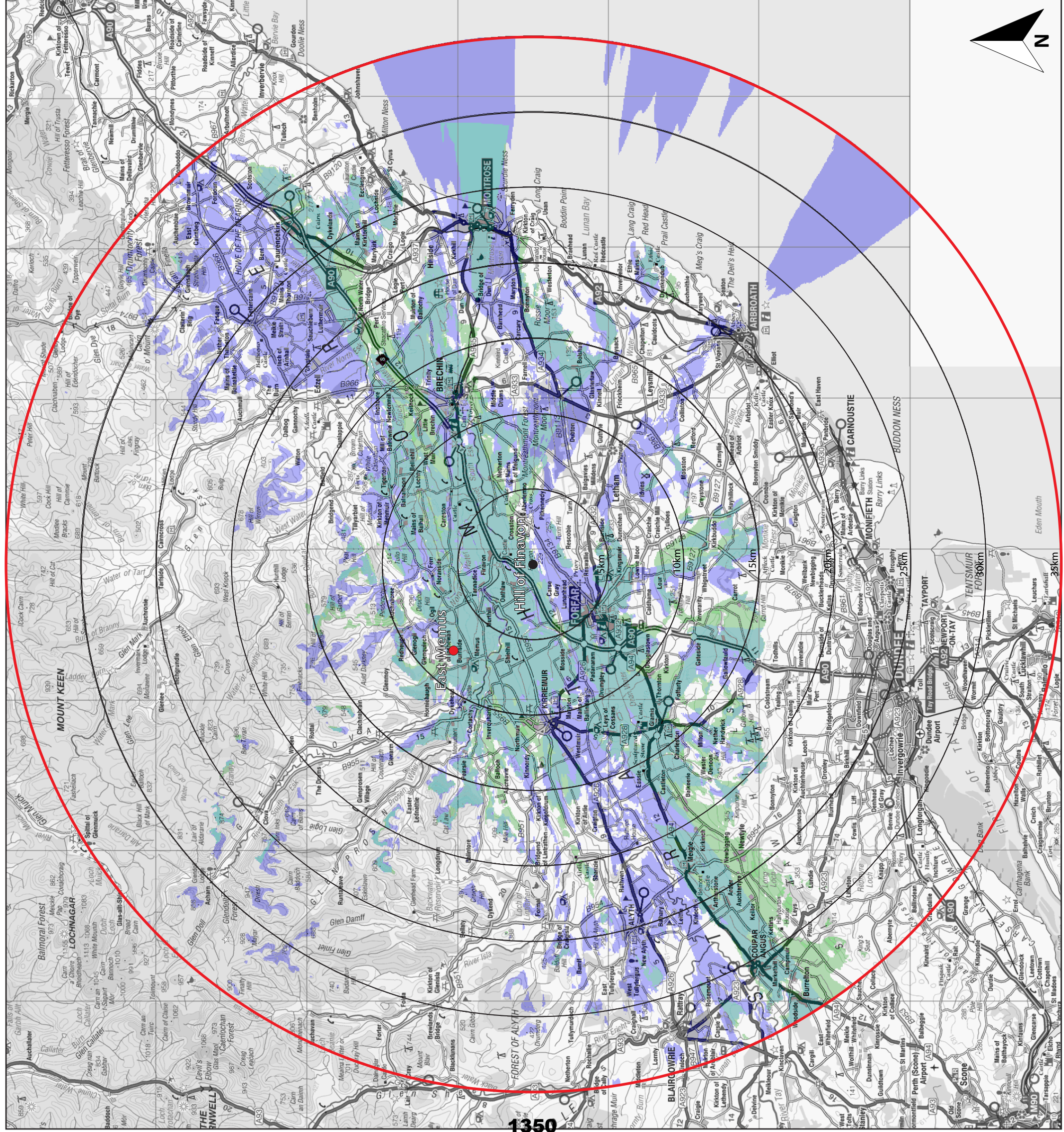


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Version: 1.0
Author: AM
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Date: 11/08/2014

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Project Name: **Finavon Hill Estate Wind Turbine**
 Document Title: **Cumulative ZTV to Tip Height for 35km Radii - Hill of Stracathro (Operational)**
 Scale: **1:200,000 @ A3**

Key:

- Proposed Turbine Location
- Cumulative Project Location
- 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
- Landscape and Visual Study Area (35km)
- Hill of Finavon Visible
- Hill of Stracathro
- Hill of Finavon & Hill of Stracathro Visible



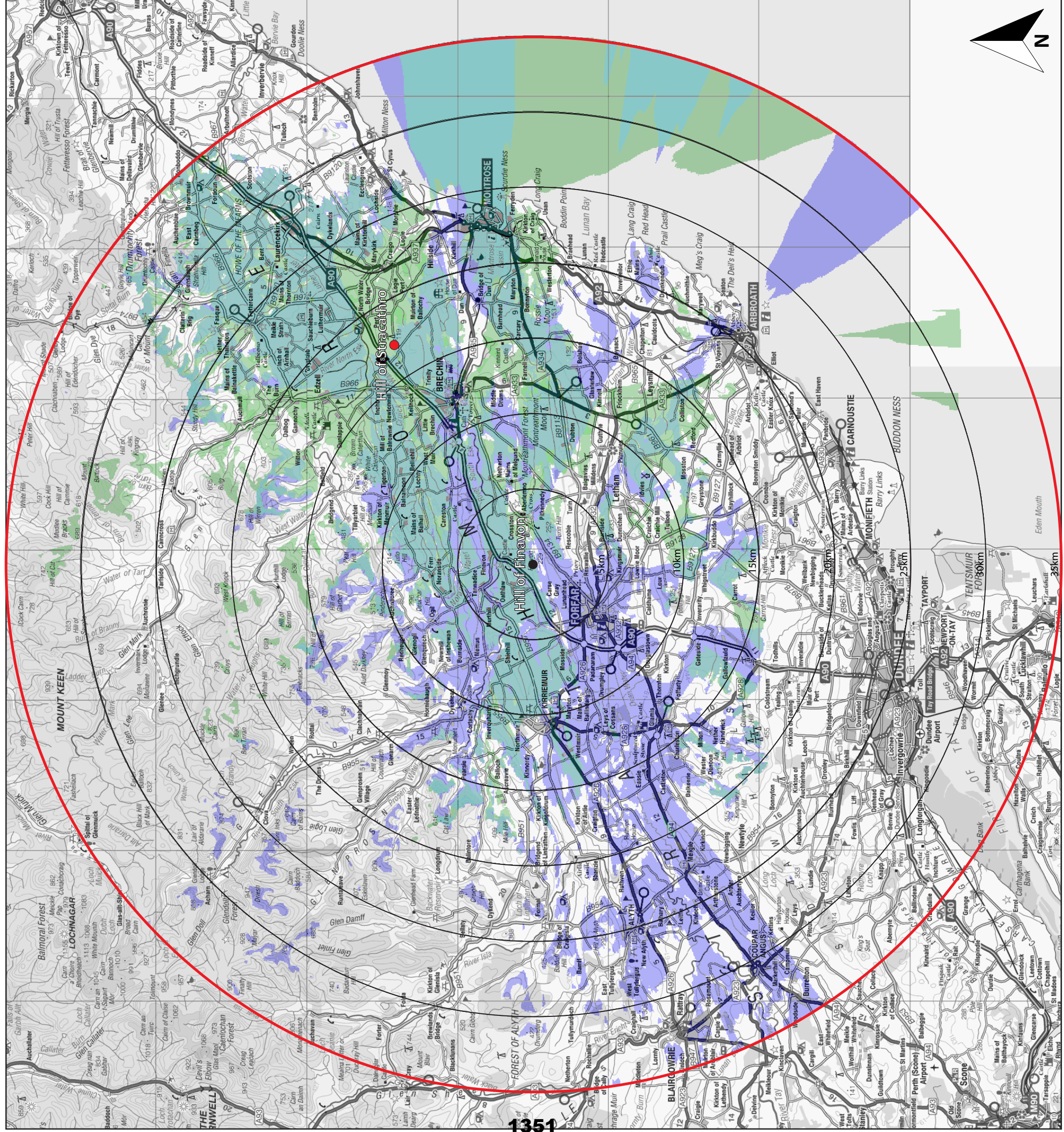
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 Version: **1.0**
 Author: **AM**
 Checked by: **AW**
 Approved By: **AW**
 Date: **11/08/2014**

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Project Name: **Finavon Hill Estate Wind Turbine**
 Document Title: **Cumulative ZTV to Tip Height for 35km Radii - Meathie Farm (Operational)**
 Scale: **1:200,000 @ A3**

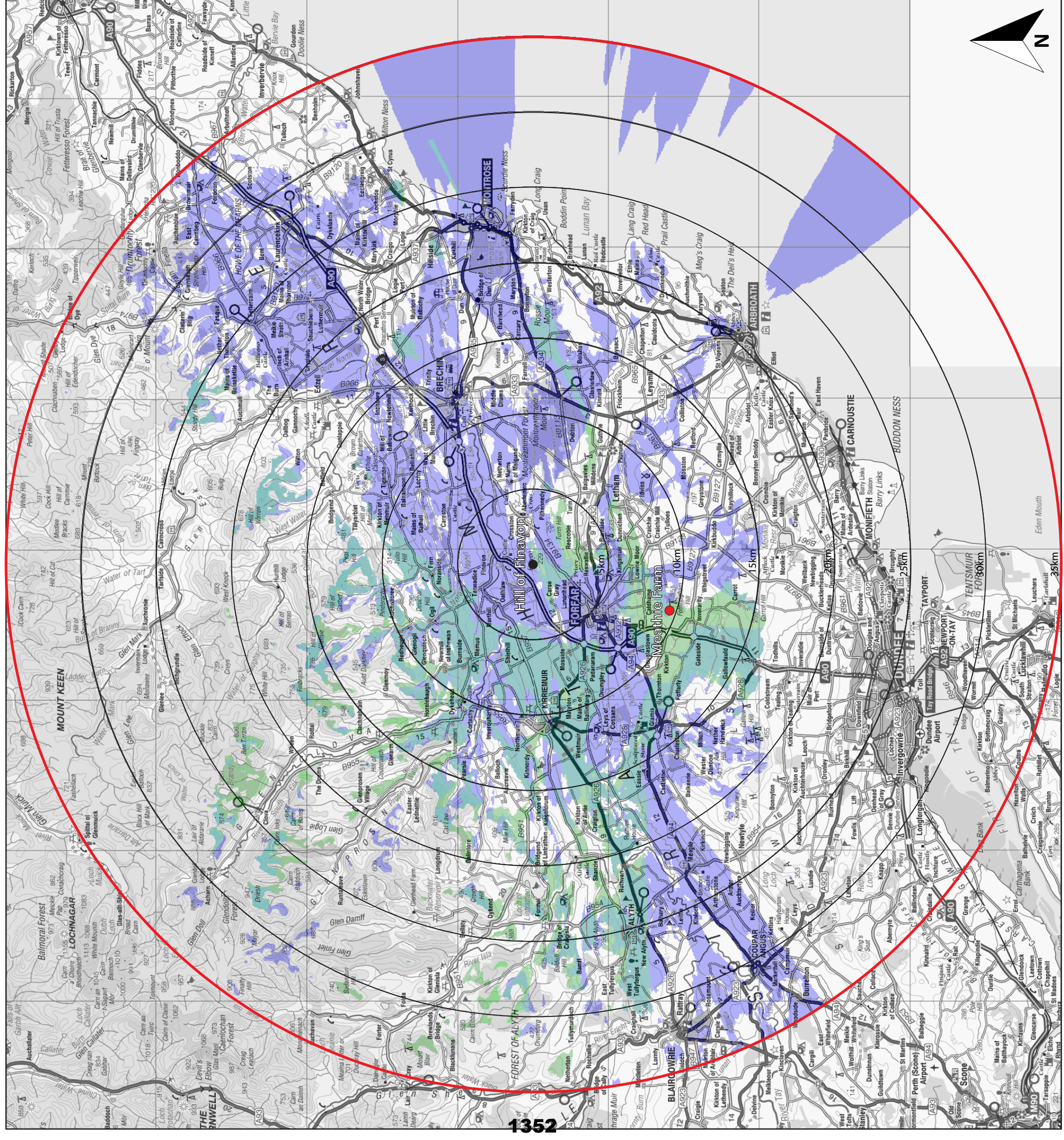
Key:

- Proposed Turbine Location
- Cumulative Project Location
- 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
- Landscape and Visual Study Area (35km)
- Hill of Finavon Visible
- Meathie Farm Visible
- Hill of Finavon & Meathie Farm Visible



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 Kilmac Construction Ltd
 Drawing by: **Green Cat Renewables Ltd**

Document Number: **C0256-163/Fig 7.8f**
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 Approved By: **AW**
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Project Name: **Finavon Hill Estate Wind Turbine**
 Document Title: **Cumulative ZTV to Tip Height for 35km Radii - North Mains of Cononsyth (Operational)**
 Scale: **1:200,000 @ A3**

- Key:**
- Proposed Turbine Location
 - Cumulative Project Location
 - 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
 - Landscape and Visual Study Area (35km)
 - Hill of Finavon Visible
 - North Mains of Cononsyth Visible
 - Hill of Finavon & North Mains of Cononsyth Visible



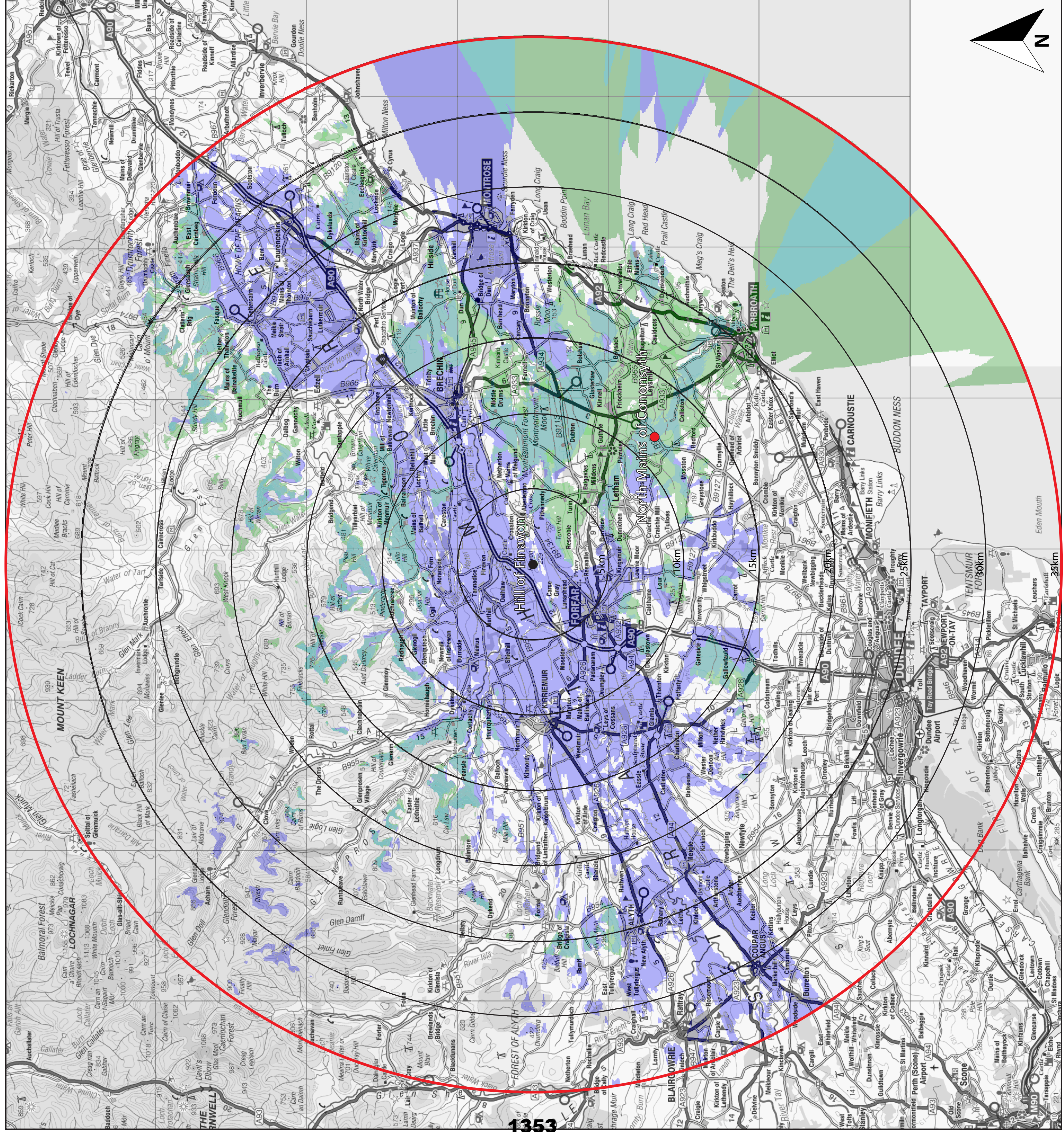
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Drawing by: **Green Cat Renewables Ltd**

Document Number: **C0256-163/FIG 7.8g**
 Version: **1.0**
 Author: **AM**
 Checked by: **AW**
 Approved By: **AW**
 Date: **11/08/2014**

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Project Name: Finavon Hill Estate Wind Turbine
 Document Title: Cumulative ZTV to Tip Height for 35km Radii - Pickerton (Operational)
 Scale: 1:200,000 @ A3

Key:

- Proposed Turbine Location
- Cumulative Project Location
- 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
- Landscape and Visual Study Area (35km)
- Hill of Finavon Visible
- Pickerton Farm Visible
- Hill of Finavon & Pickerton Visible

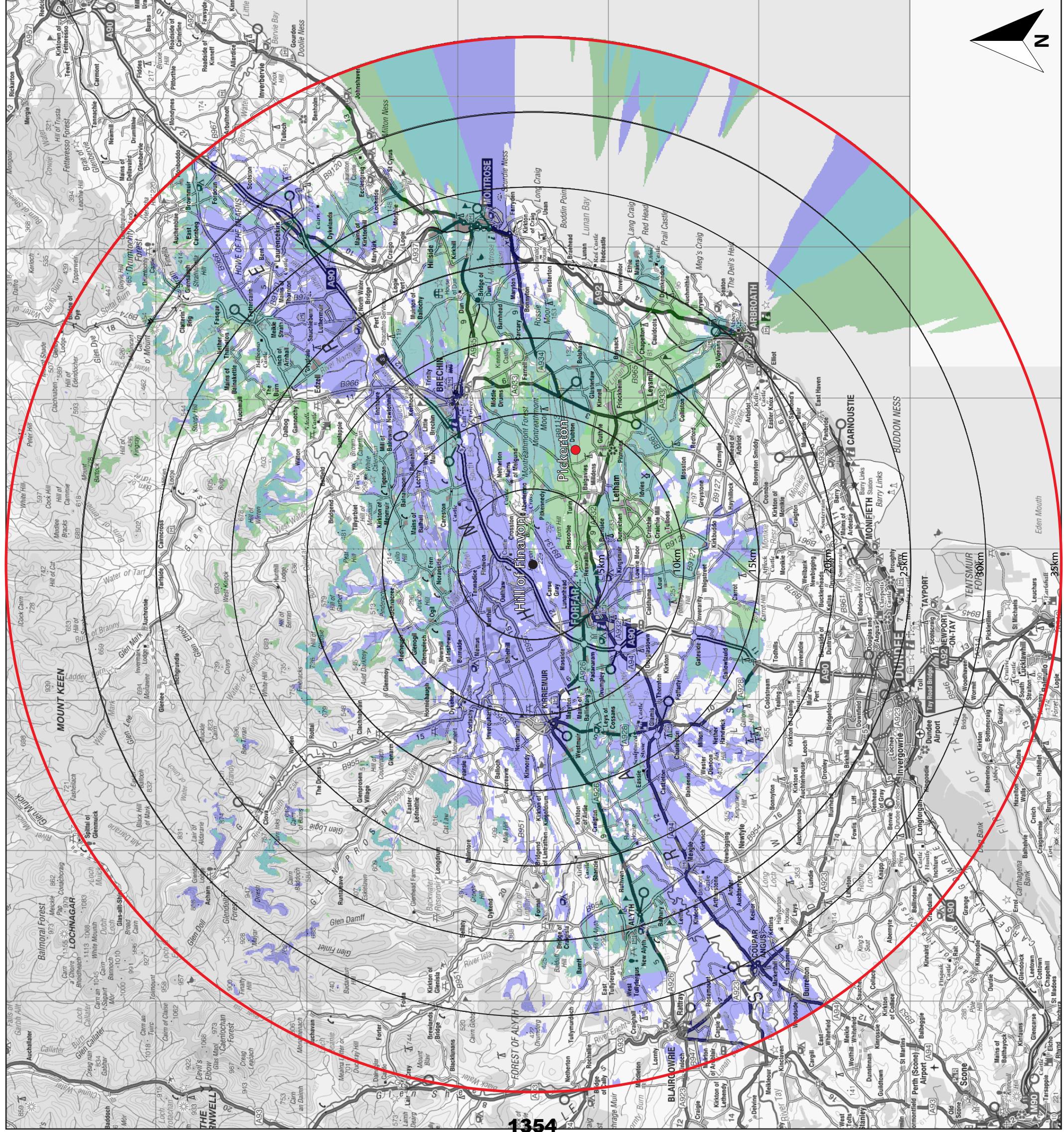


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Project Name: Finavon Hill Estate Wind Turbine
 Document Title: Cumulative ZTV to Tip Height for 35km Radii - Scotston Hill (Operational)
 Scale: 1:200,000 @ A3

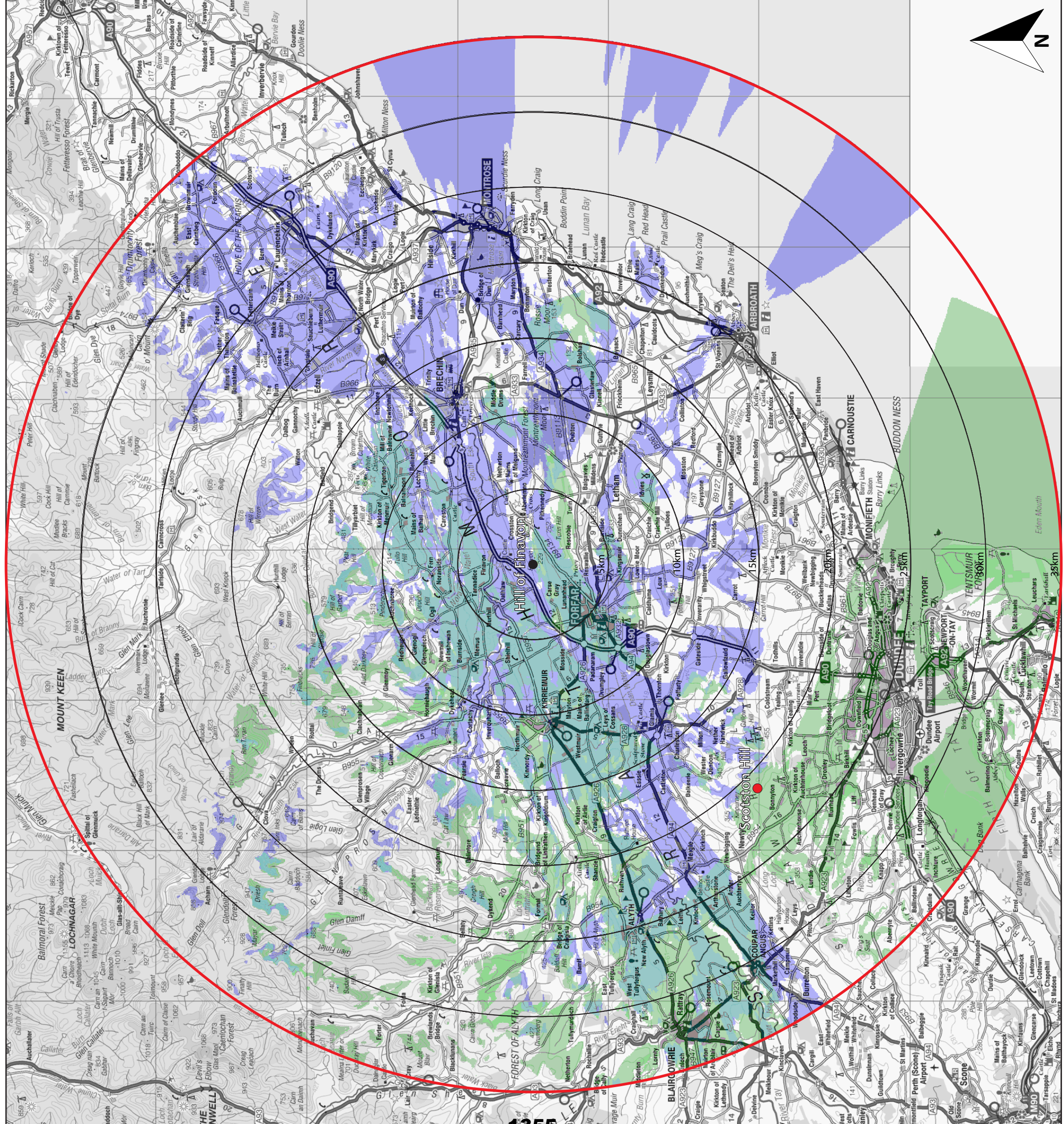
Key:

- Proposed Turbine Location
- Cumulative Project Location
- 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
- Landscape and Visual Study Area (35km)
- Hill of Finavon Visible
- Scotston Hill Visible
- Hill of Finavon & Scotston Hill Visible



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 Kilmac Construction Ltd
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Document Number: C0256-163/FIG 7.8i
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 Author: AM
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 Approved By: AW
 Date: 11/08/2014



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Project Name: Finavon Hill Estate Wind Turbine
 Document Title: Cumulative ZTV to Tip Height for 35km Radii - Tealing (Operational)
 Scale: 1:200,000 @ A3

Key:

- Proposed Turbine Location
- Cumulative Project Location
- 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
- Landscape and Visual Study Area (35km)
- Hill of Finavon Visible
- Tealing Visible
- Hill of Finavon & Tealing Visible

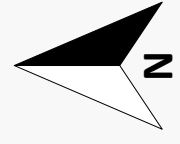
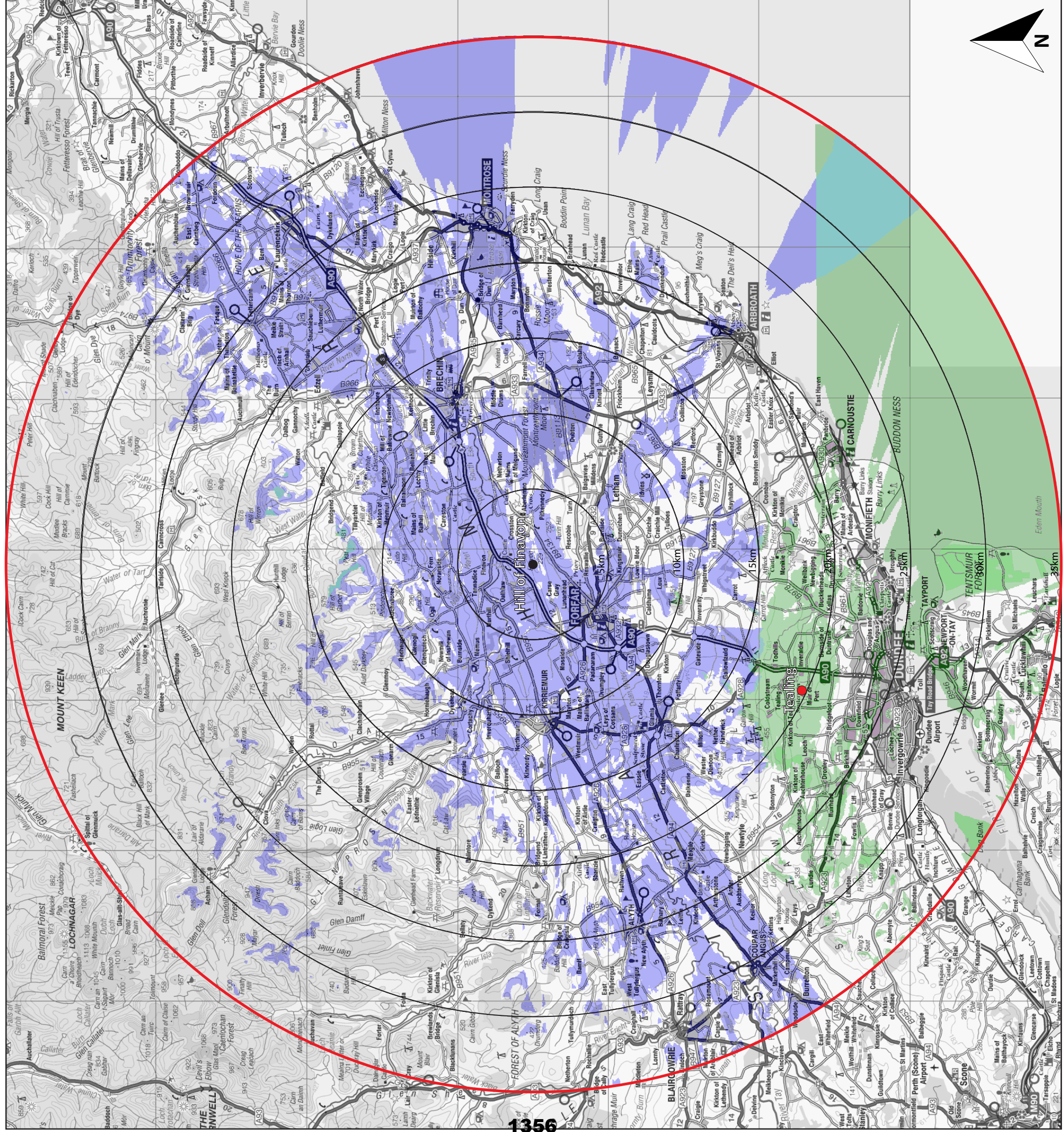


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Document Number: C0256-163/Fig 7.8j
 Version: 1.0
 Author: AM
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Project Name: Finavon Hill Estate Wind Turbine
 Document Title: Cumulative ZTV to Tip Height for 35km Radii - Tullo (Operational)
 Scale: 1:200,000 @ A3

Key:

- Proposed Turbine Location
- Cumulative Project Location
- 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
- Landscape and Visual Study Area (35km)
- Hill of Finavon Visible
- Tullo Visible
- Hill of Finavon & Tullo Visible



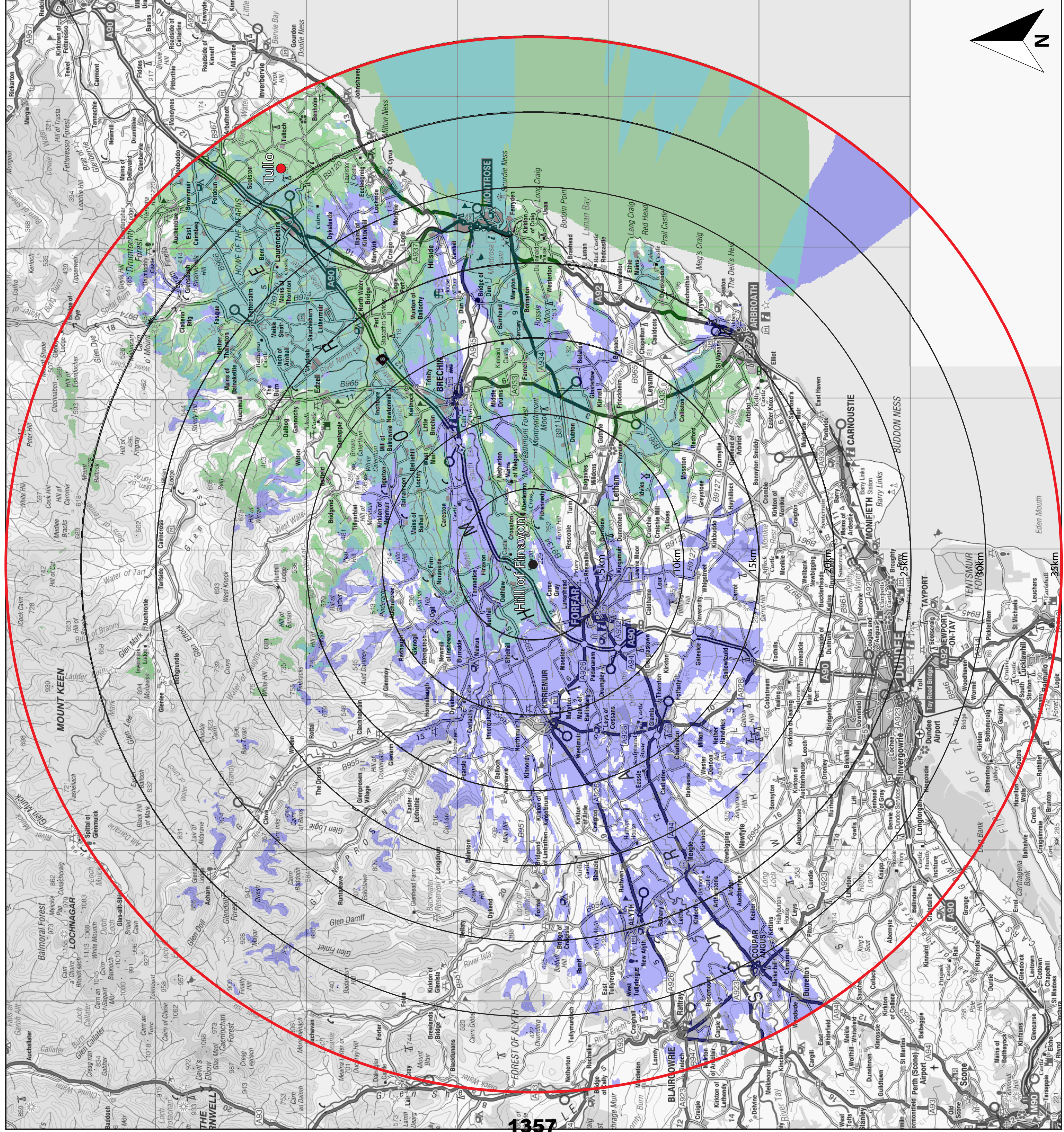
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 Version: 1.0
 Author: AM
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Project Name: **Finavon Hill Estate Wind Turbine**
 Document Title: **Cumulative ZTV to Tip Height for 35km Radii - White Top (Operational)**
 Scale: **1:200,000 @ A3**

- Key:**
- Proposed Turbine Location
 - Cumulative Project Location
 - 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
 - Landscape and Visual Study Area (35km)
 - Hill of Finavon Visible
 - White Top
 - Hill of Finavon & White Top Visible



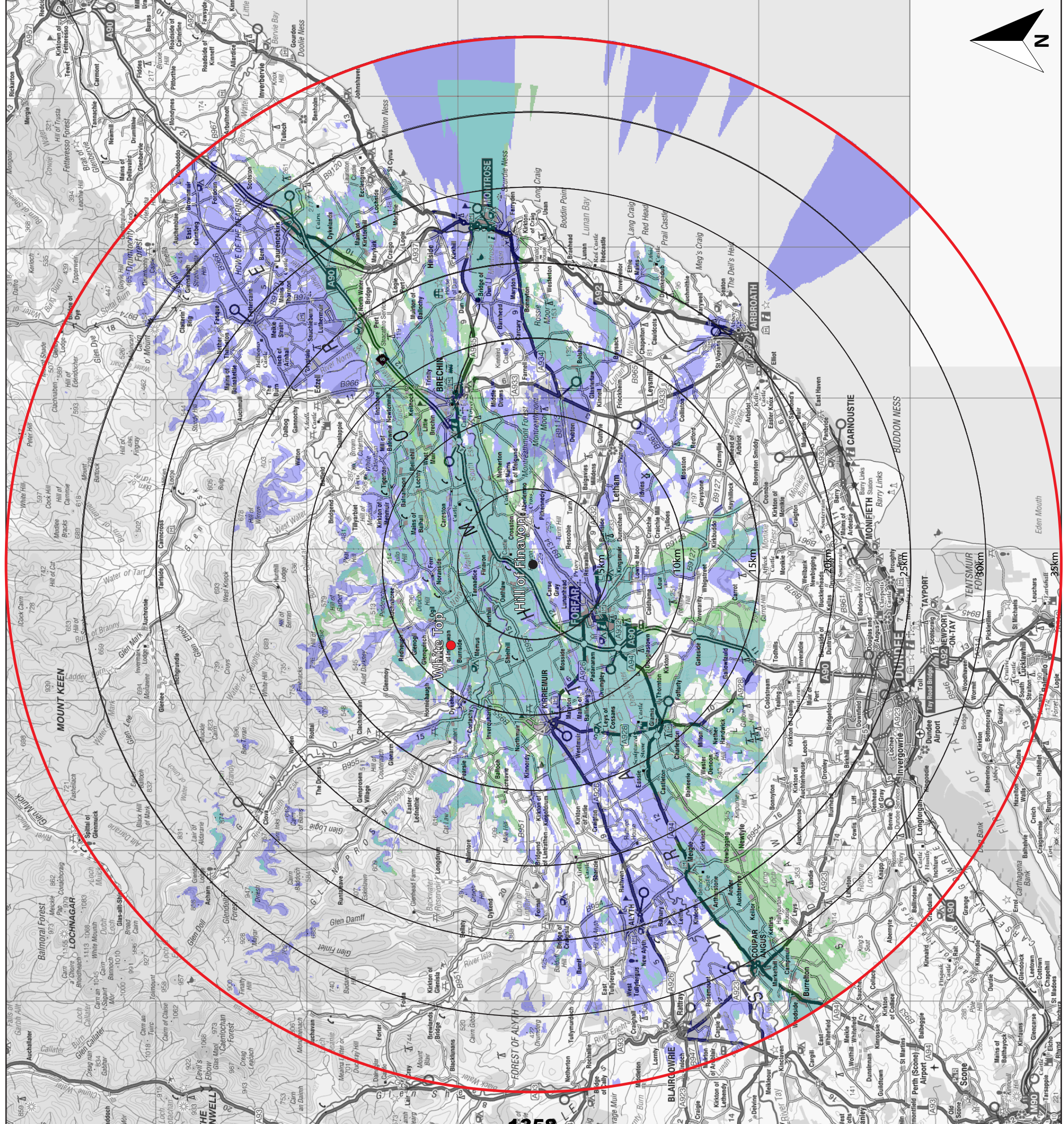
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Project Name: **Finavon Hill Estate Wind Turbine**
 Document Title: **Cumulative ZTV to Tip Height for 35km Radii - Afflochie Farm (Consented)**
 Scale: **1:200,000 @ A3**

Key:

- Proposed Turbine Location
- Cumulative Project Location
- 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
- Landscape and Visual Study Area (35km)
- Hill of Finavon Visible
- Afflochie Farm Visible
- Hill of Finavon & Afflochie Farm Visible



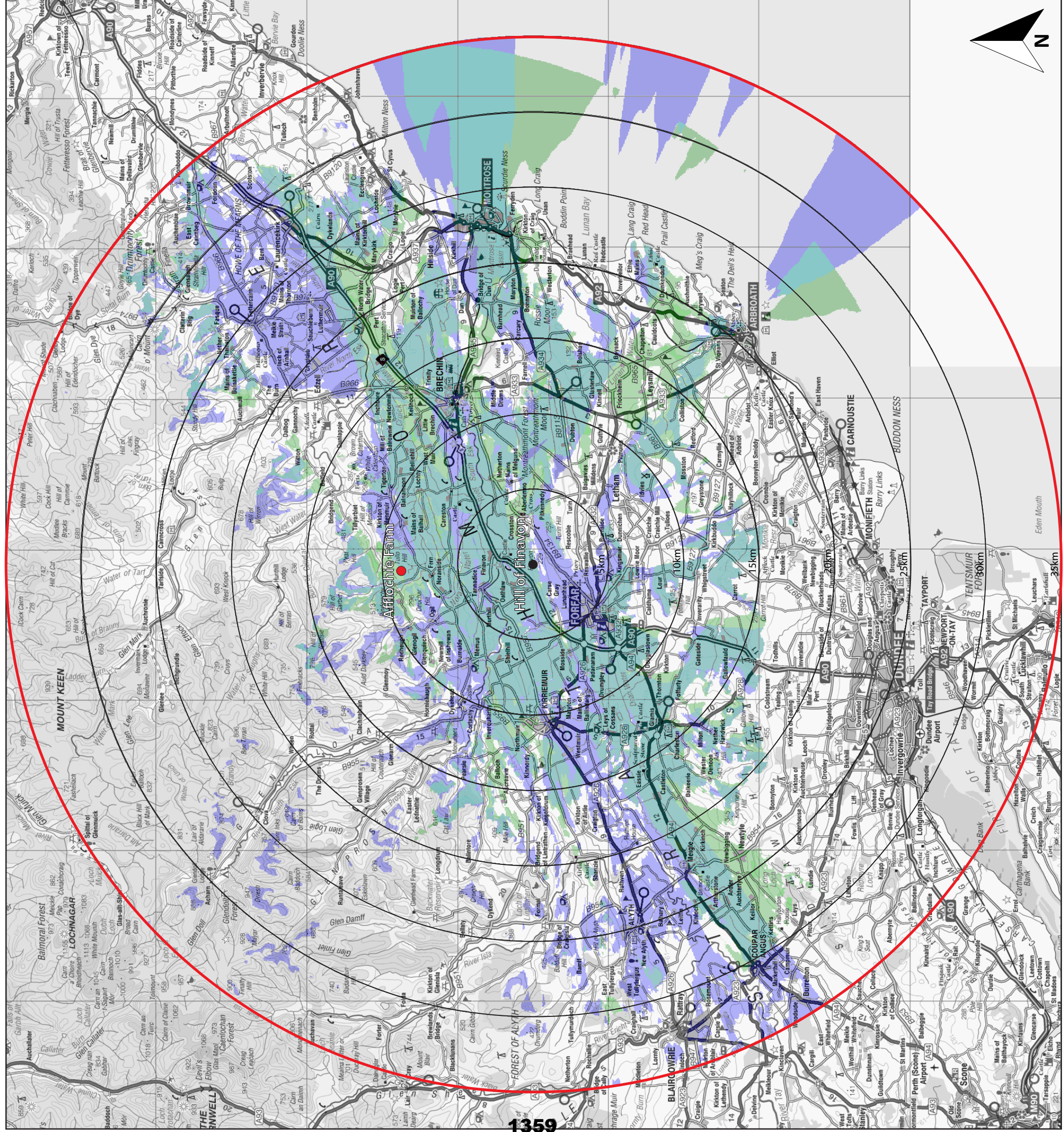
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Project Name: **Finavon Hill Estate Wind Turbine**
 Document Title: **Cumulative ZTV to Tip Height for 35km Radii - Broom Farm (Consented)**
 Scale: **1:200,000 @ A3**

- Key:**
- Proposed Turbine Location
 - Cumulative Project Location
 - 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
 - Landscape and Visual Study Area (35km)
 - Hill of Finavon Visible
 - Broom Farm Visible
 - Hill of Finavon & Broom Farm Visible



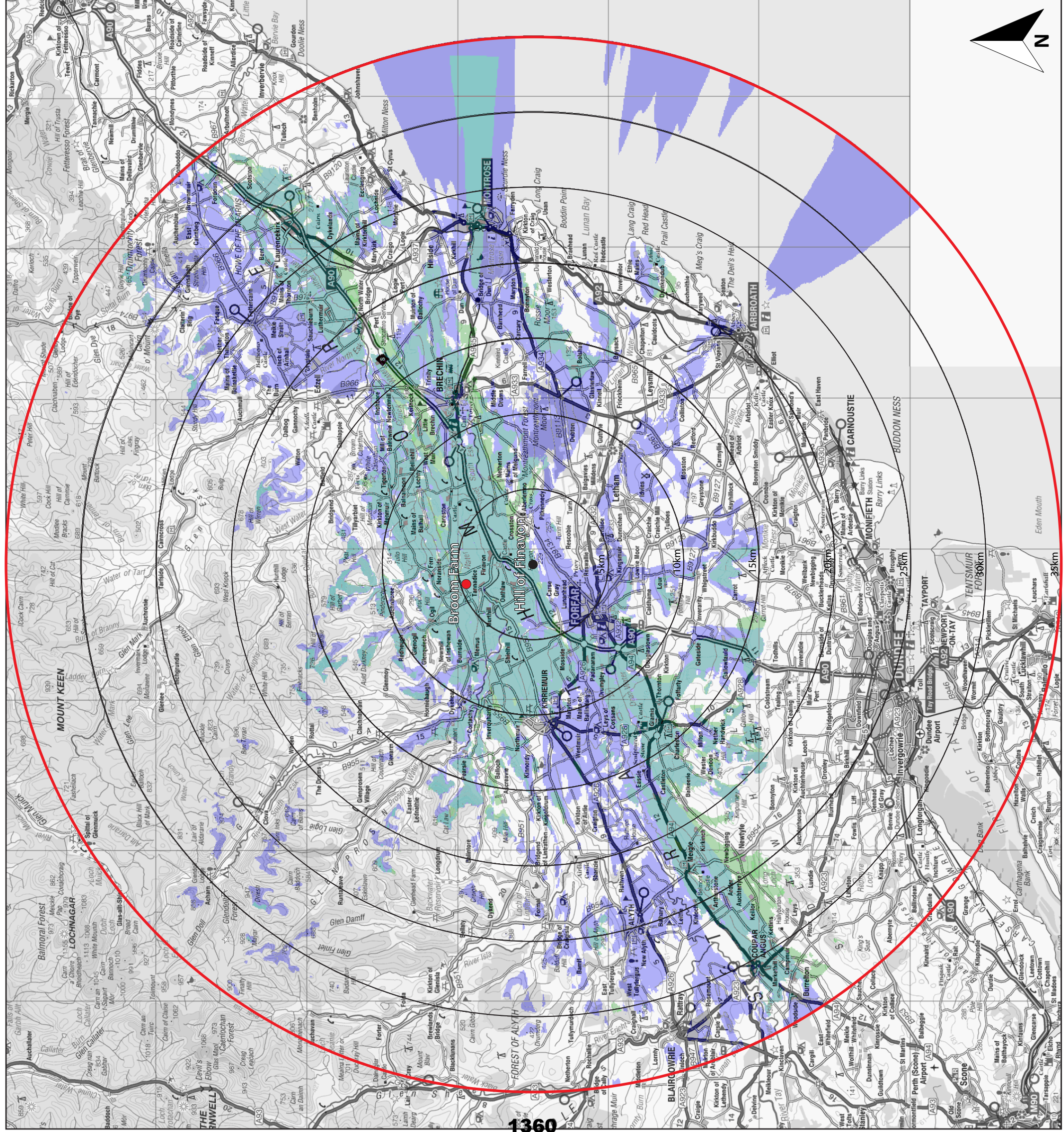
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Project Name: Finavon Hill Estate Wind Turbine
 Document Title: Cumulative ZTV to Tip Height for 35km Radii - Cargownie (Consented)
 Scale: 1:200,000 @ A3

Key:

- Proposed Turbine Location
- Cumulative Project Location
- 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
- Landscape and Visual Study Area (35km)
- Hill of Finavon Visible
- Cargownie Visible
- Hill of Finavon & Cargownie Visible



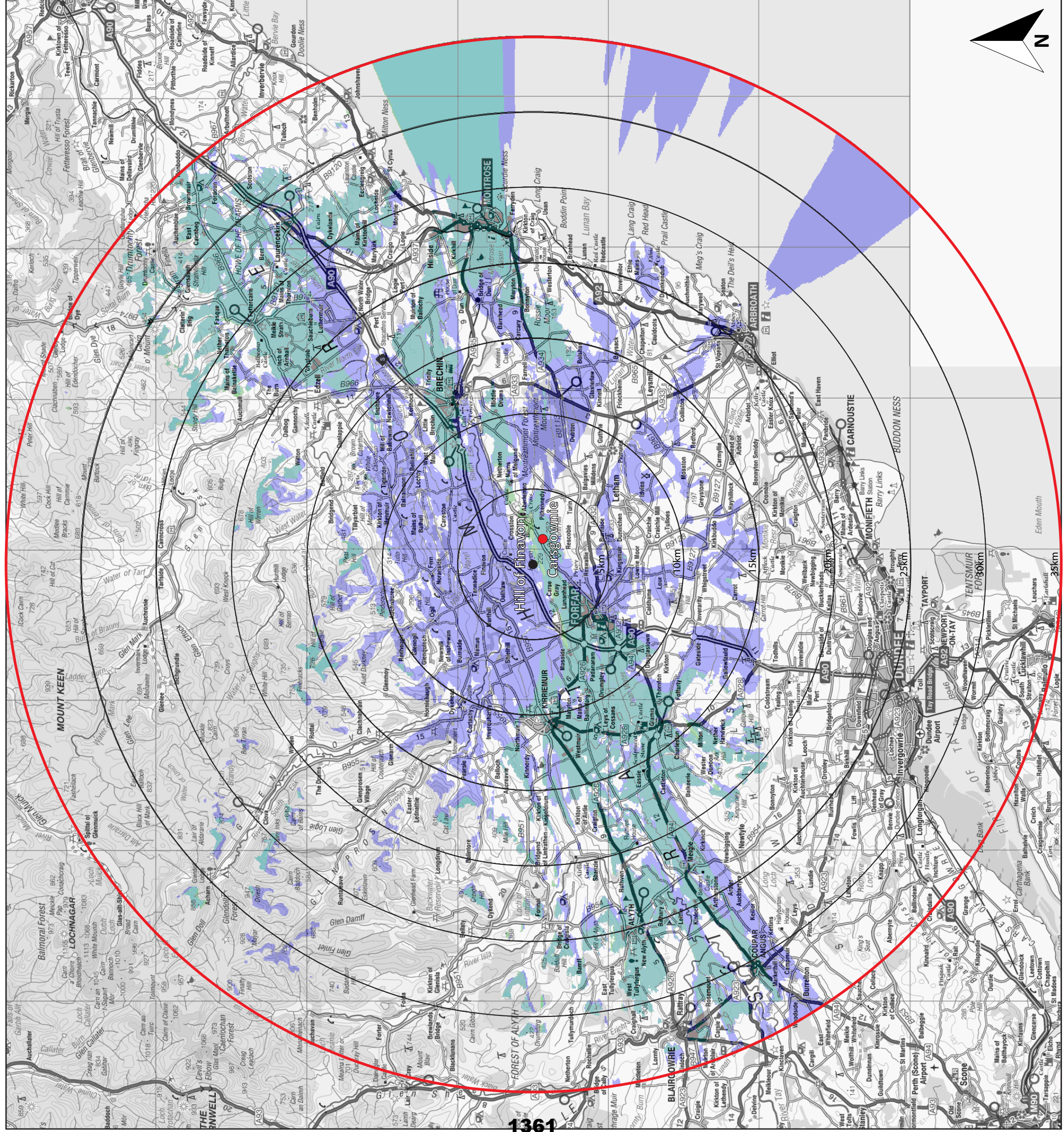
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Project Name: Finavon Hill Estate Wind Turbine
 Document Title: Cumulative ZTV to Tip Height for 35km Radii -
 Crainathro Farm (Consented)
 Scale: 1:200,000 @ A3

- Key:
- Proposed Turbine Location
 - Cumulative Project Location
 - 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
 - Landscape and Visual Study Area (35km)
 - Hill of Finavon Visible
 - Crainathro Farm Visible
 - Hill of Finavon & Crainathro Farm Visible



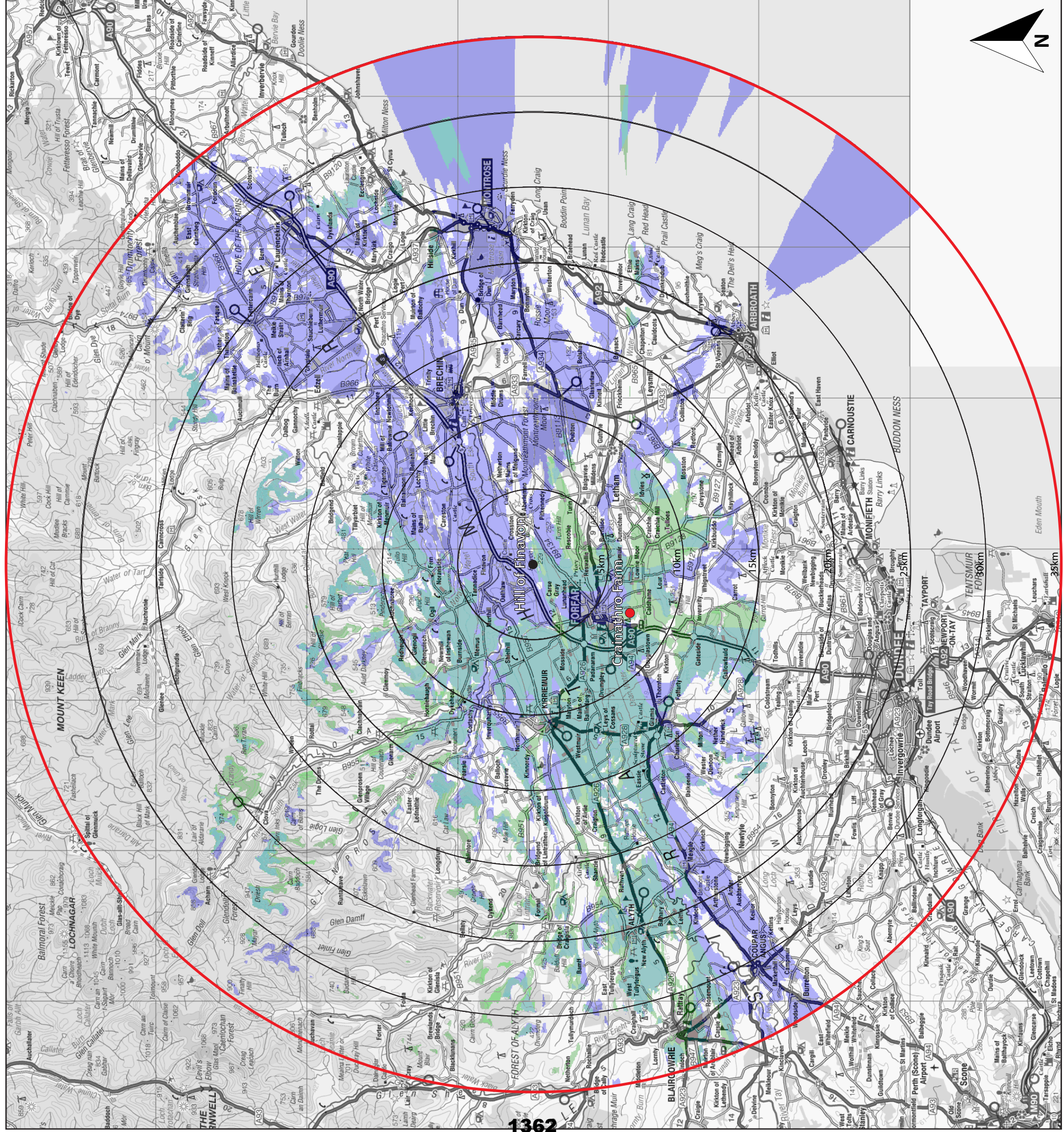
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Project Name: Finavon Hill Estate Wind Turbine
 Document Title: Cumulative ZTV to Tip Height for 35km Radii - Dunswood (Consented)
 Scale: 1:200,000 @ A3

- Key:
- Proposed Turbine Location
 - Cumulative Project Location
 - 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
 - Landscape and Visual Study Area (35km)
 - Hill of Finavon Visible
 - Dunswood Visible
 - Hill of Finavon & Dunswood Visible

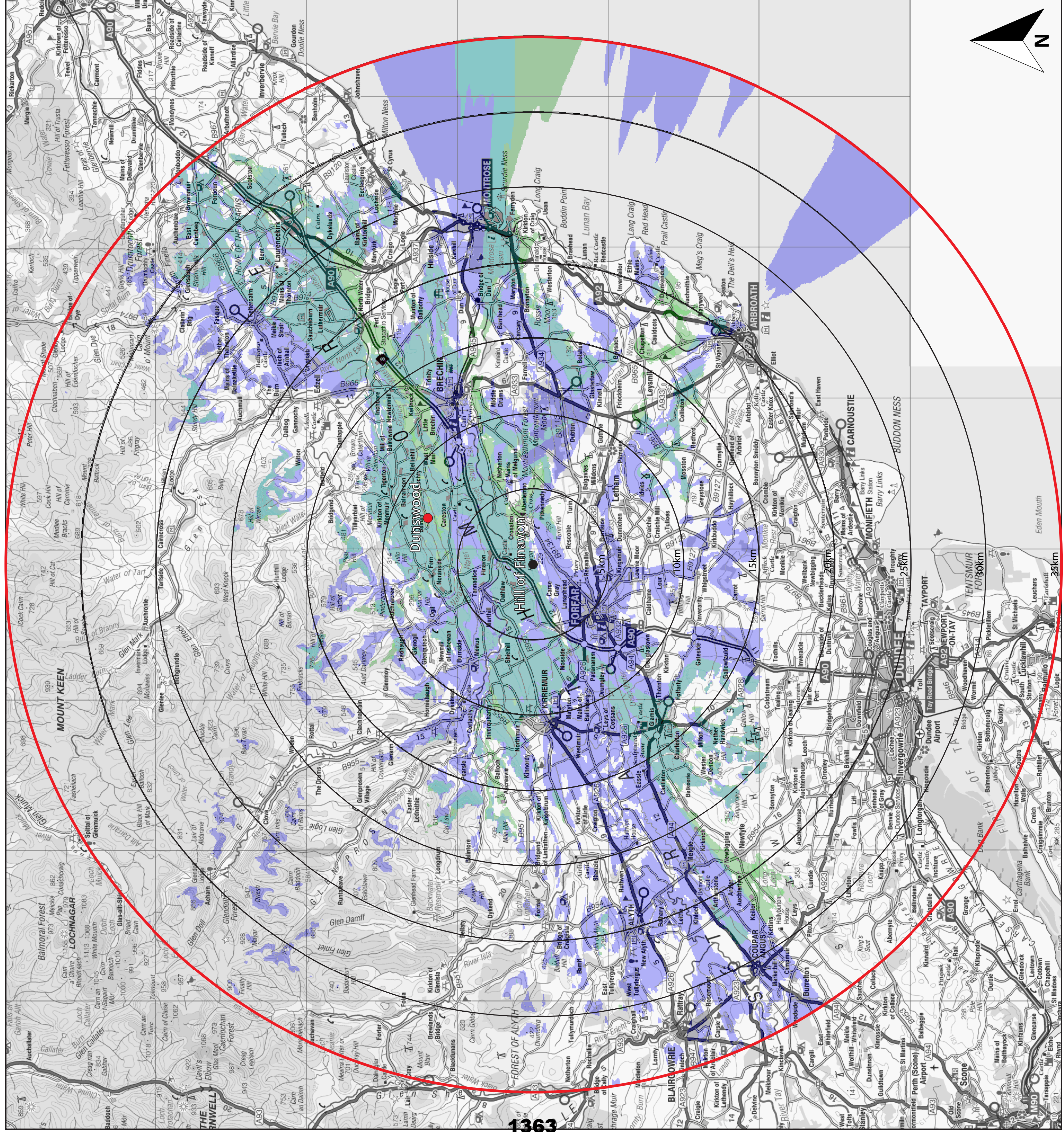


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Project Name: Finavon Hill Estate Wind Turbine
 Document Title: Cumulative ZTV to Tip Height for 35km Radii - Frawny (Consented)
 Scale: 1:200,000 @ A3

Key:

- Proposed Turbine Location
- Cumulative Project Location
- 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
- Landscape and Visual Study Area (35km)
- Hill of Finavon Visible
- Frawny Farm Visible
- Hill of Finavon & Frawny Visible



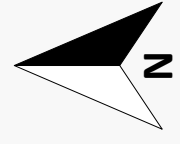
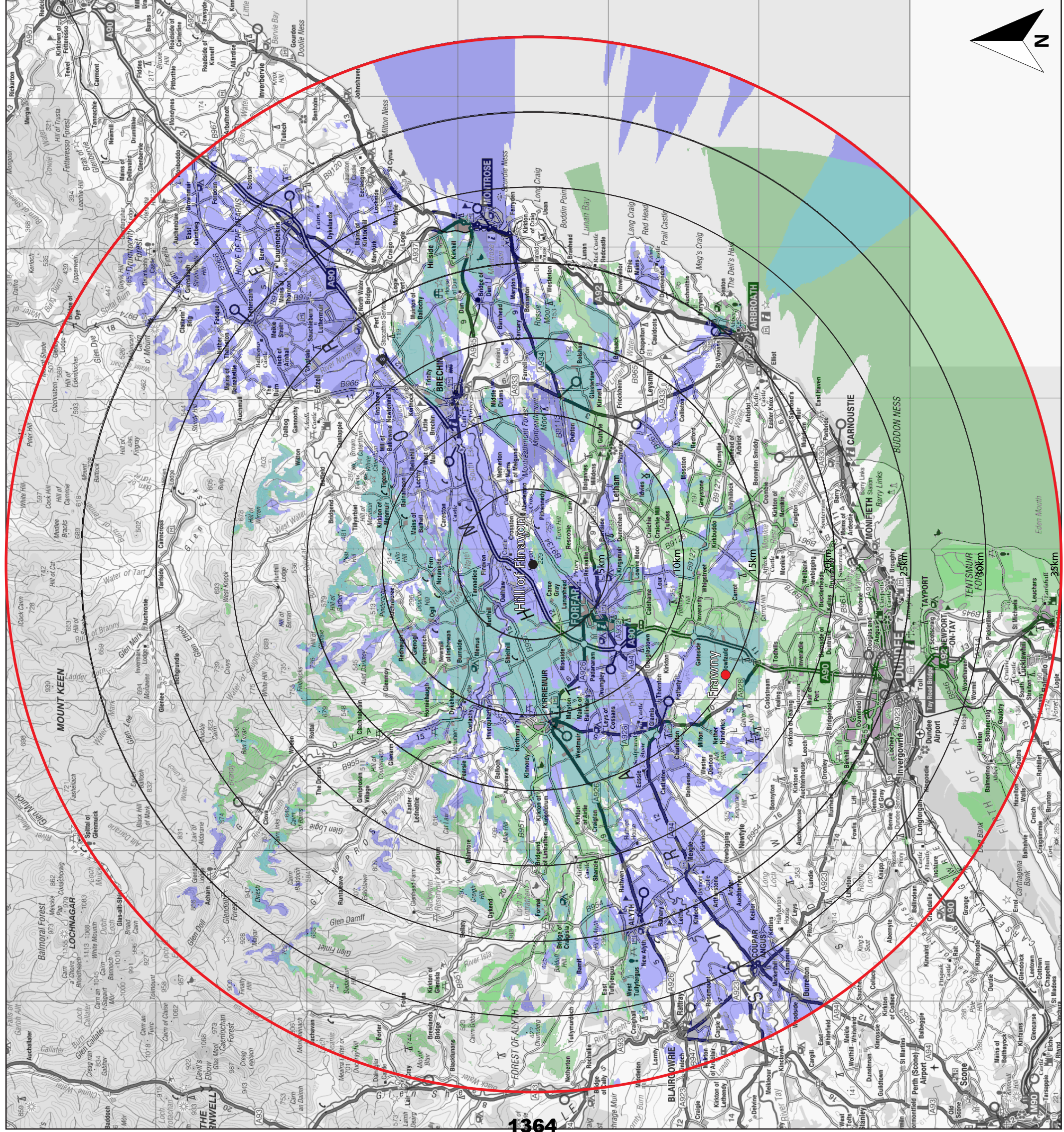
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Project Name: **Finavon Hill Estate Wind Turbine**
 Document Title: **Cumulative ZTV to Tip Height for 35km Radii - Gallow Hill (Consented)**
 Scale: **1:200,000 @ A3**

Key:

- Proposed Turbine Location
- Cumulative Project Location
- 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
- Landscape and Visual Study Area (35km)
- Hill of Finavon Visible
- Gallow Hill Visible
- Hill of Finavon & Gallow Hill Visible



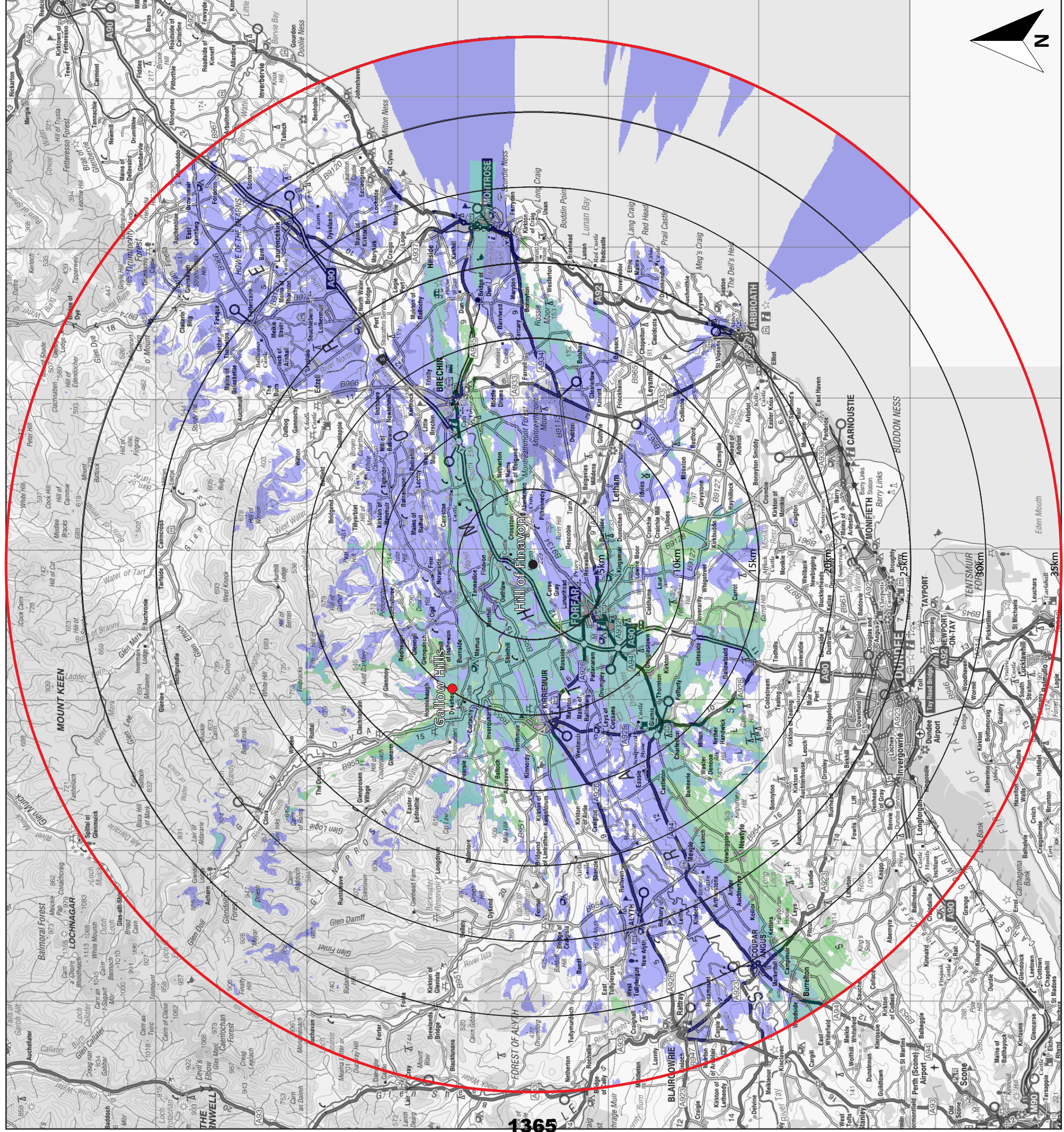
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Project Name: Finavon Hill Estate Wind Turbine
 Document Title: Cumulative ZTV to Tip Height for 35km Radii -
 Govals (Consented)
 Scale: 1:200,000 @ A3

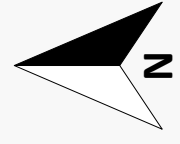
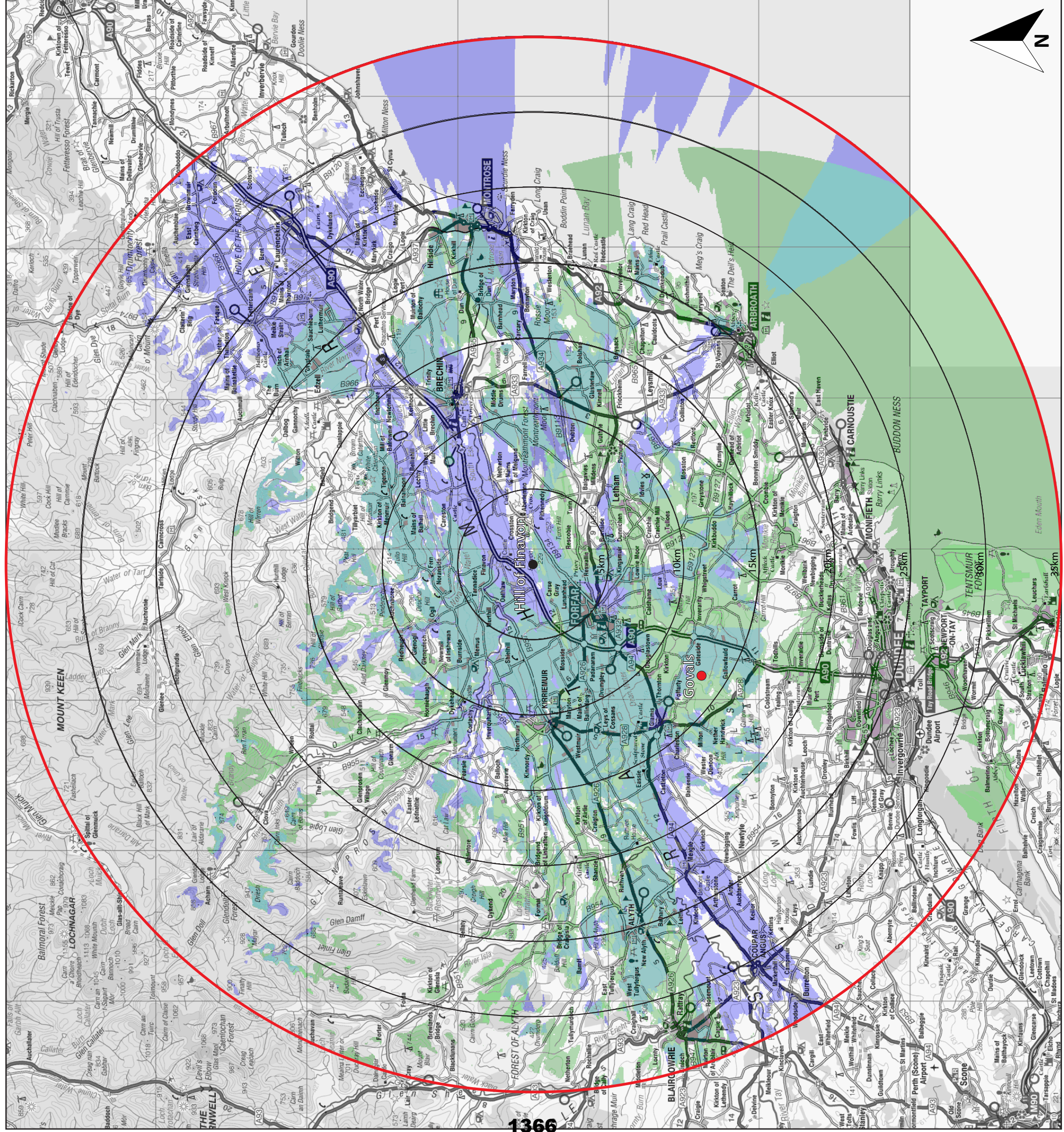
Key:

- Proposed Turbine Location
- Cumulative Project Location
- 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
- Landscape and Visual Study Area (35km)
- Hill of Finavon Visible
- Govals Farm Visible
- Hill of Finavon & Govals Visible



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 Kilmac Construction Ltd
 Drawing by: Green Cat Renewables Ltd

Document Number: C0256-163/FIG 7.8t
 Version: 1.0
 Author: AM
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 Date: 11/08/2014
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Project Name: **Finavon Hill Estate Wind Turbine**
 Document Title: **Cumulative ZTV to Tip Height for 35km Radii - Hillhead of Ascurry (Consented)**
 Scale: **1:200,000 @ A3**

Key:

- Proposed Turbine Location
- Cumulative Project Location
- 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
- Landscape and Visual Study Area (35km)
- Hill of Finavon Visible
- Hillhead of Ascurry Visible
- Hill of Finavon & Hillhead of Ascurry Visible



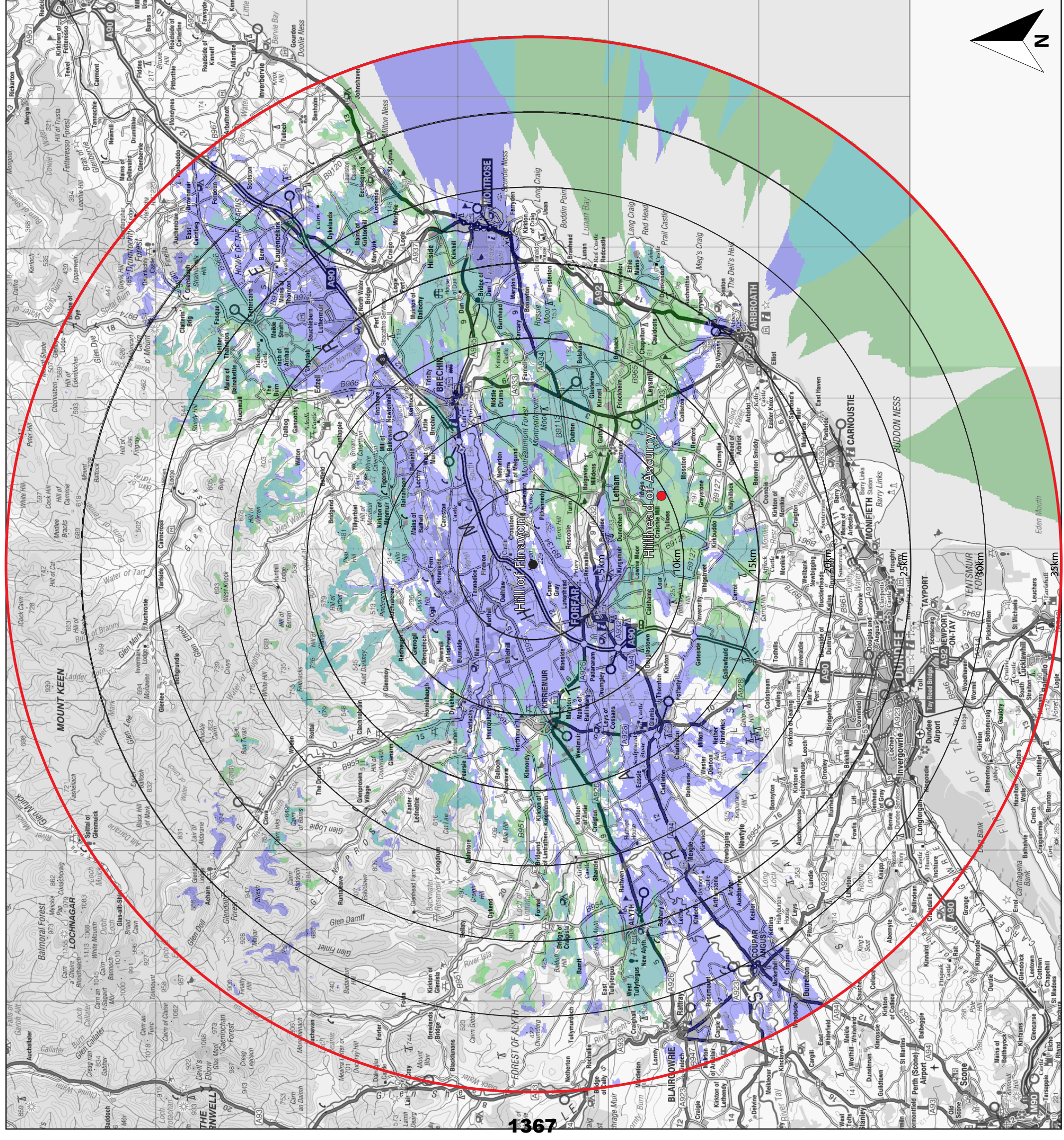
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Project Name: **Finavon Hill Estate Wind Turbine**
 Document Title: **Cumulative ZTV to Tip Height for 35km Radii - Whitefield of Dun (Consented)**
 Scale: **1:200,000 @ A3**

Key:

- Proposed Turbine Location
- Cumulative Project Location
- 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
- Landscape and Visual Study Area (35km)
- Hill of Finavon Visible
- Whitefield of Dun Visible
- Hill of Finavon & Whitefield of Dun Visible



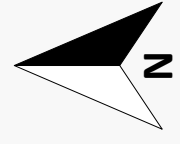
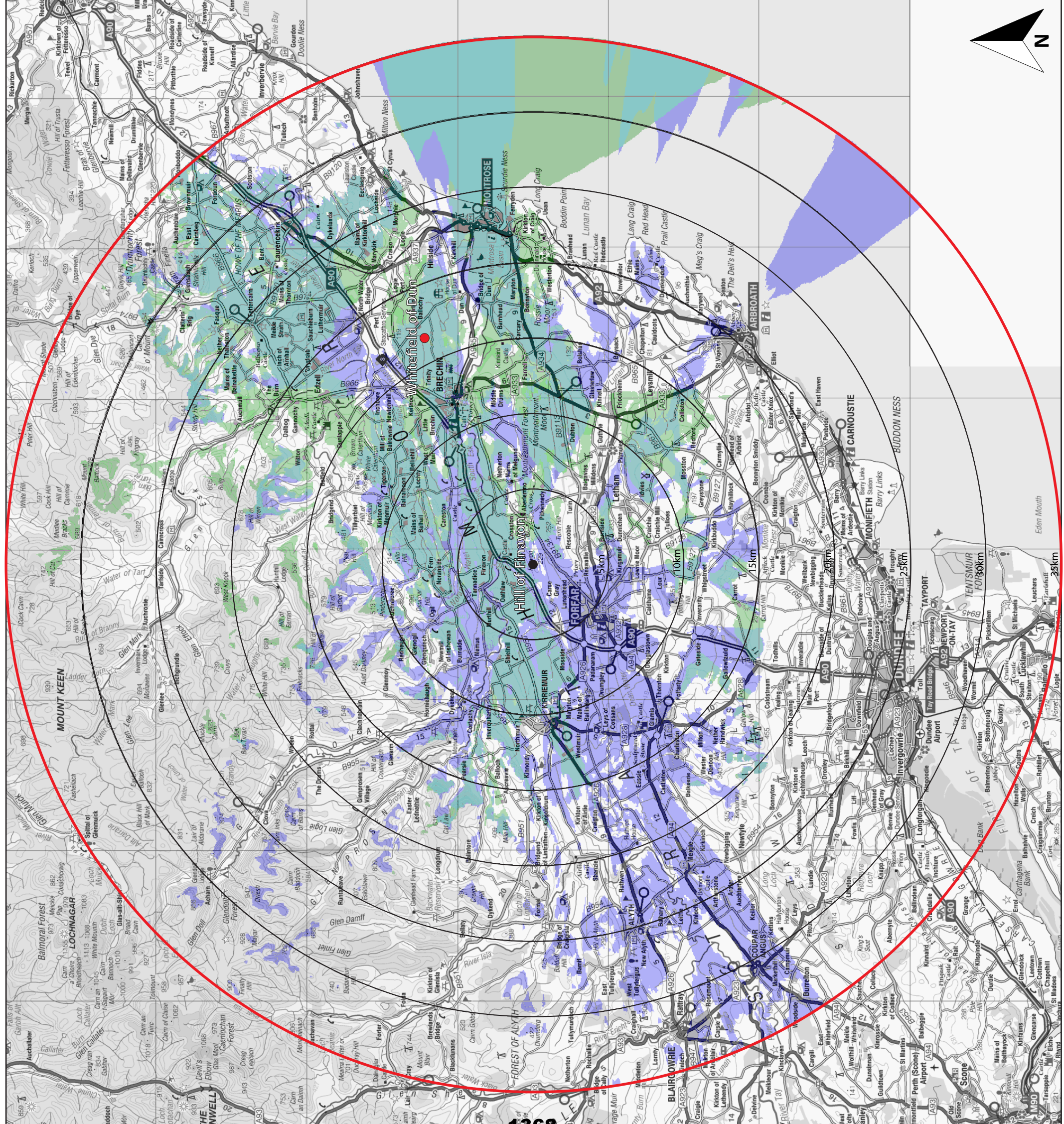
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Drawing by: **Green Cat Renewables Ltd**

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 Version: **1.0**
 Author: **AM**
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 Approved By: **AW**
 Date: **11/08/2014**

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Project Name: Finavon Hill Estate Wind Turbine
 Document Title: Cumulative ZTV to Tip Height for 35km Radii - Arbiekie (In Planning)
 Scale: 1:200,000 @ A3

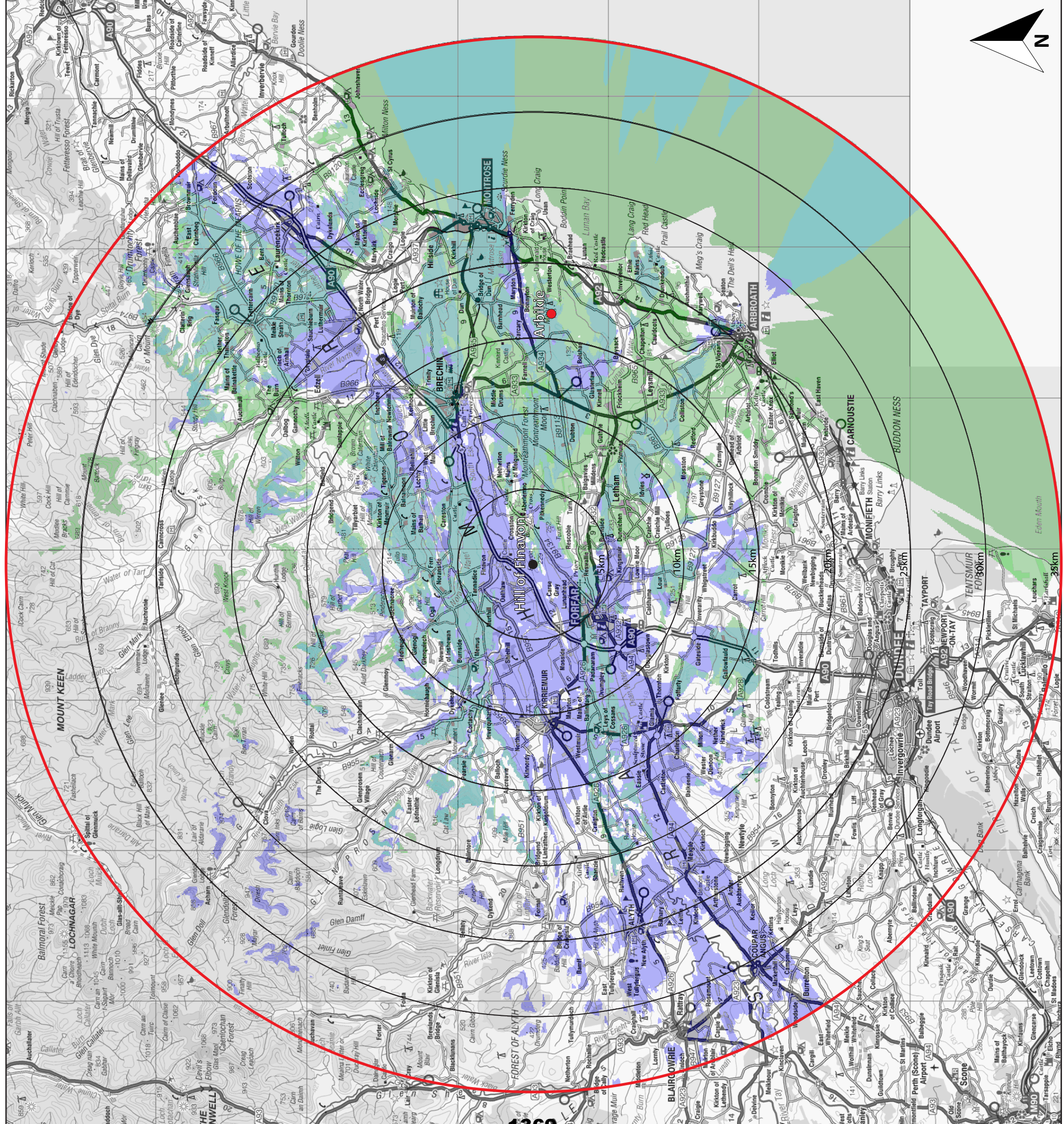
- Key:
- Proposed Turbine Location
 - Cumulative Project Location
 - 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
 - Landscape and Visual Study Area (35km)
 - Hill of Finavon Visible
 - Arbiekie Visible
 - Hill of Finavon & Arbiekie Visible



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 Author: AM
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Project Name: Finavon Hill Estate Wind Turbine
 Document Title: Cumulative ZTV to Tip Height for 35km Radii -
 Balnacake (In Planning)
 Scale: 1:200,000 @ A3

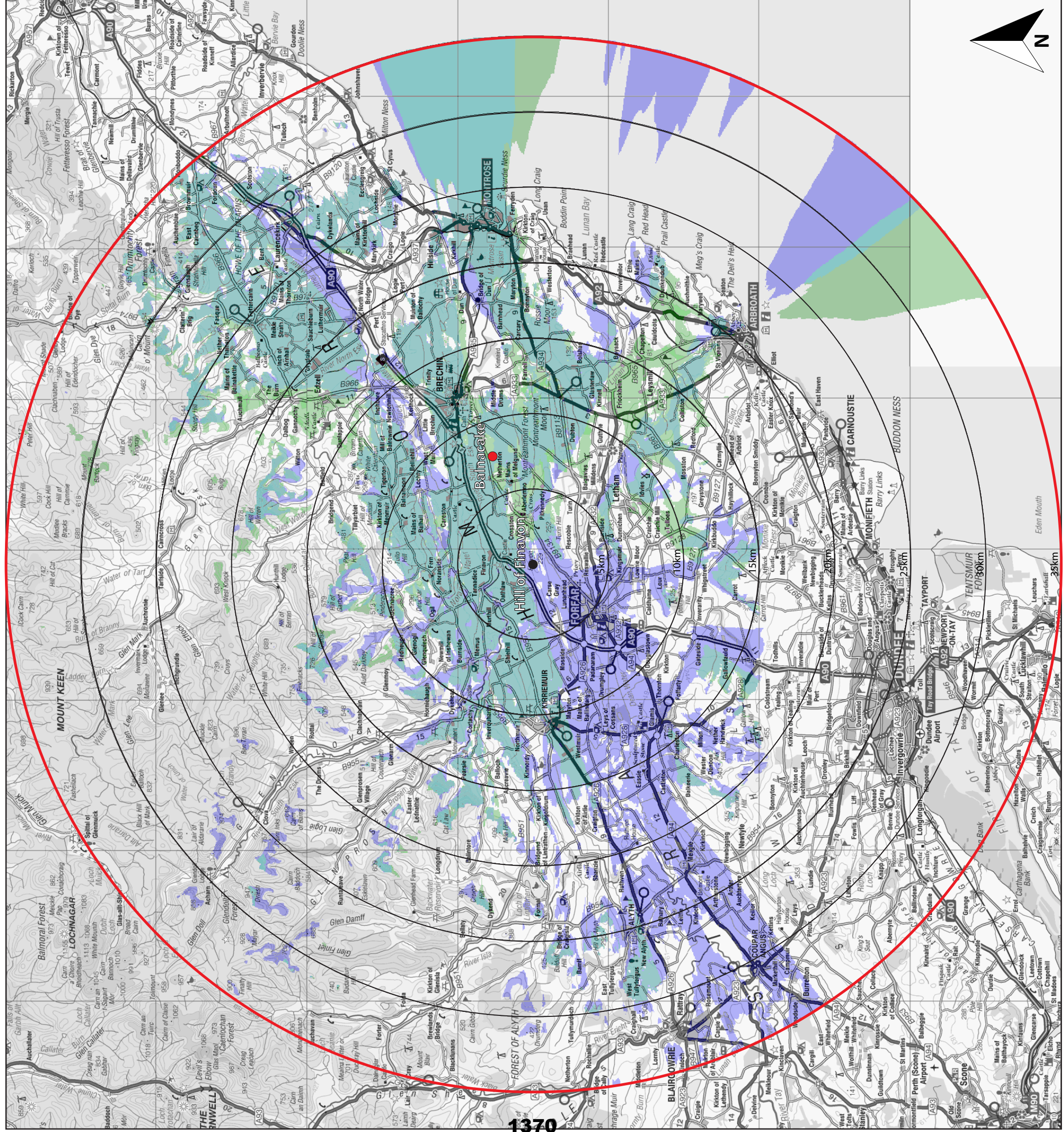
Key:

- Proposed Turbine Location
- Cumulative Project Location
- 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
- Landscape and Visual Study Area (35km)
- Hill of Finavon Visible
- Balnacake Visible
- Hill of Finavon & Balnacake Visible



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 Kilmac Construction Ltd
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 Author: AM
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 Approved By: AW
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Project Name: **Finavon Hill Estate Wind Turbine**
 Document Title: **Cumulative ZTV to Tip Height for 35km Radii - Cotton of Pitkenedy (In Planning)**
 Scale: **1:200,000 @ A3**

- Key:**
- Proposed Turbine Location
 - Cumulative Project Location
 - 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
 - Landscape and Visual Study Area (35km)
 - Hill of Finavon Visible
 - Cotton of Pitkenedy Visible
 - Hill of Finavon & Cotton of Pitkenedy Visible



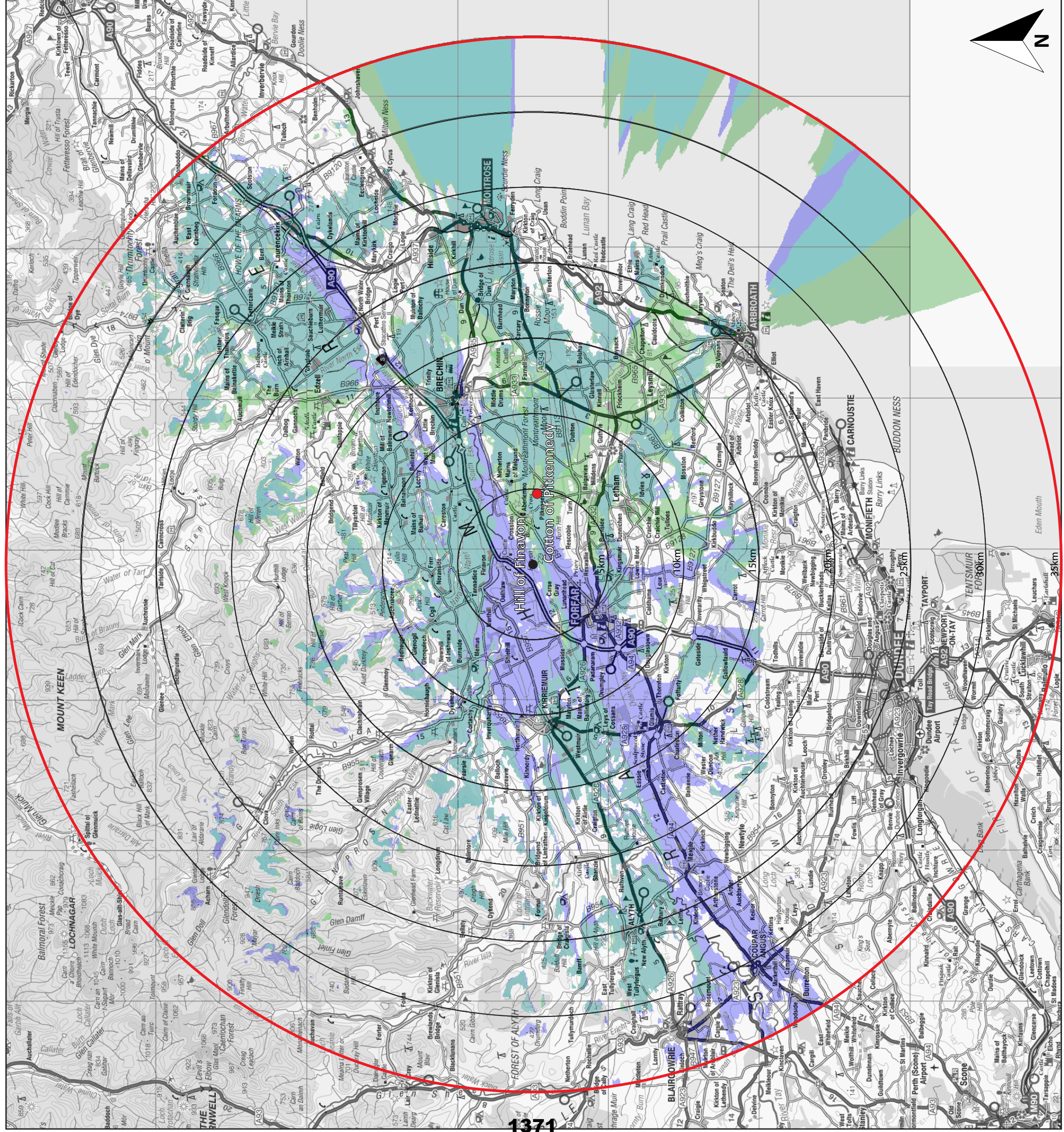
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Project Name: Finavon Hill Estate Wind Turbine
 Document Title: Cumulative ZTV to Tip Height for 35km Radii - Crofts Farm (In Planning)
 Scale: 1:200,000 @ A3

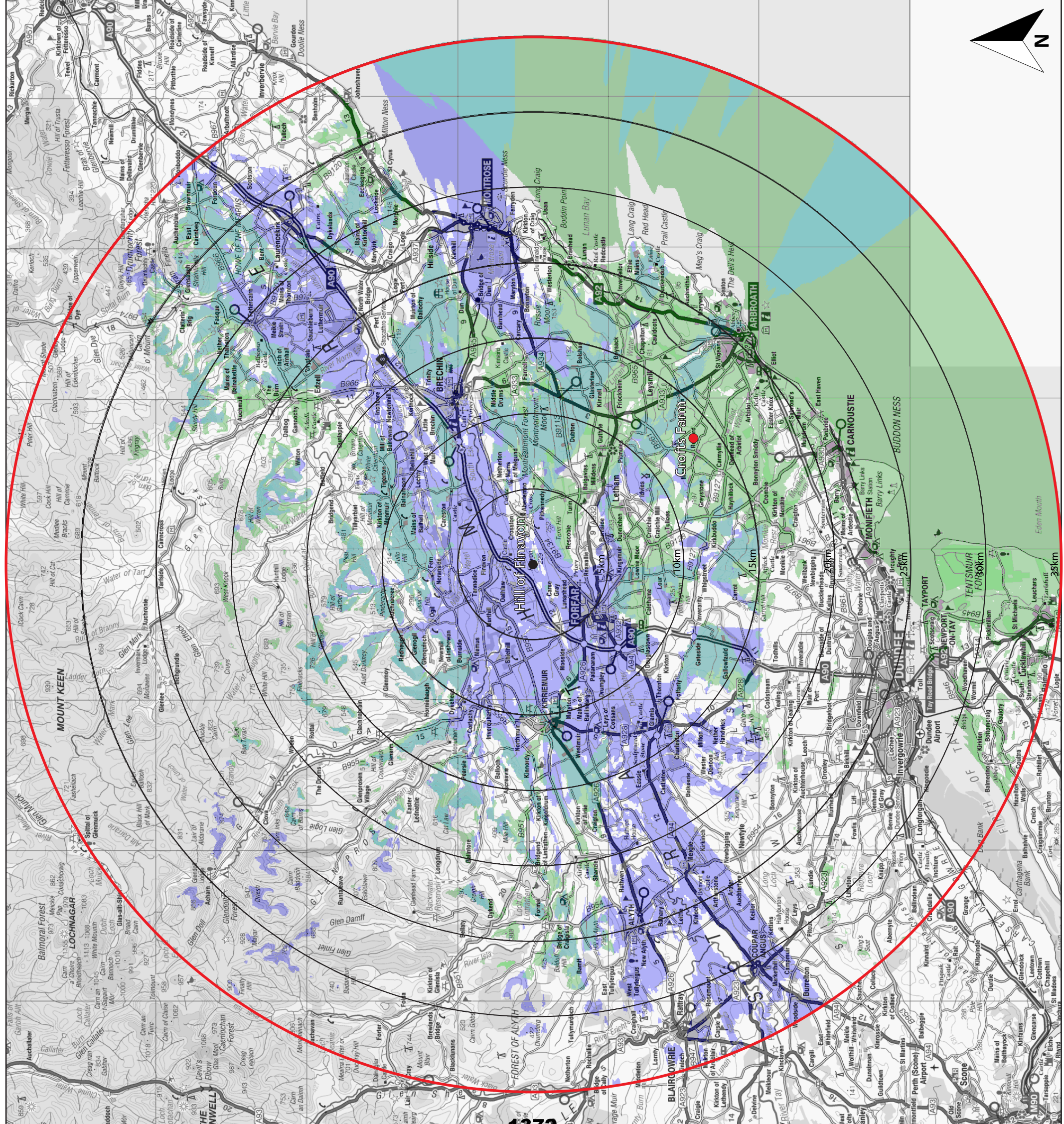
Key:

- Proposed Turbine Location
- Cumulative Project Location
- 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
- Landscape and Visual Study Area (35km)
- Hill of Finavon Visible
- Crofts Farm Visible
- Hill of Finavon & Crofts Farm Visible



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Project Name: Finavon Hill Estate Wind Turbine
 Document Title: Cumulative ZTV to Tip Height for 35km Radii - East Drums (In Planning)
 Scale: 1:200,000 @ A3

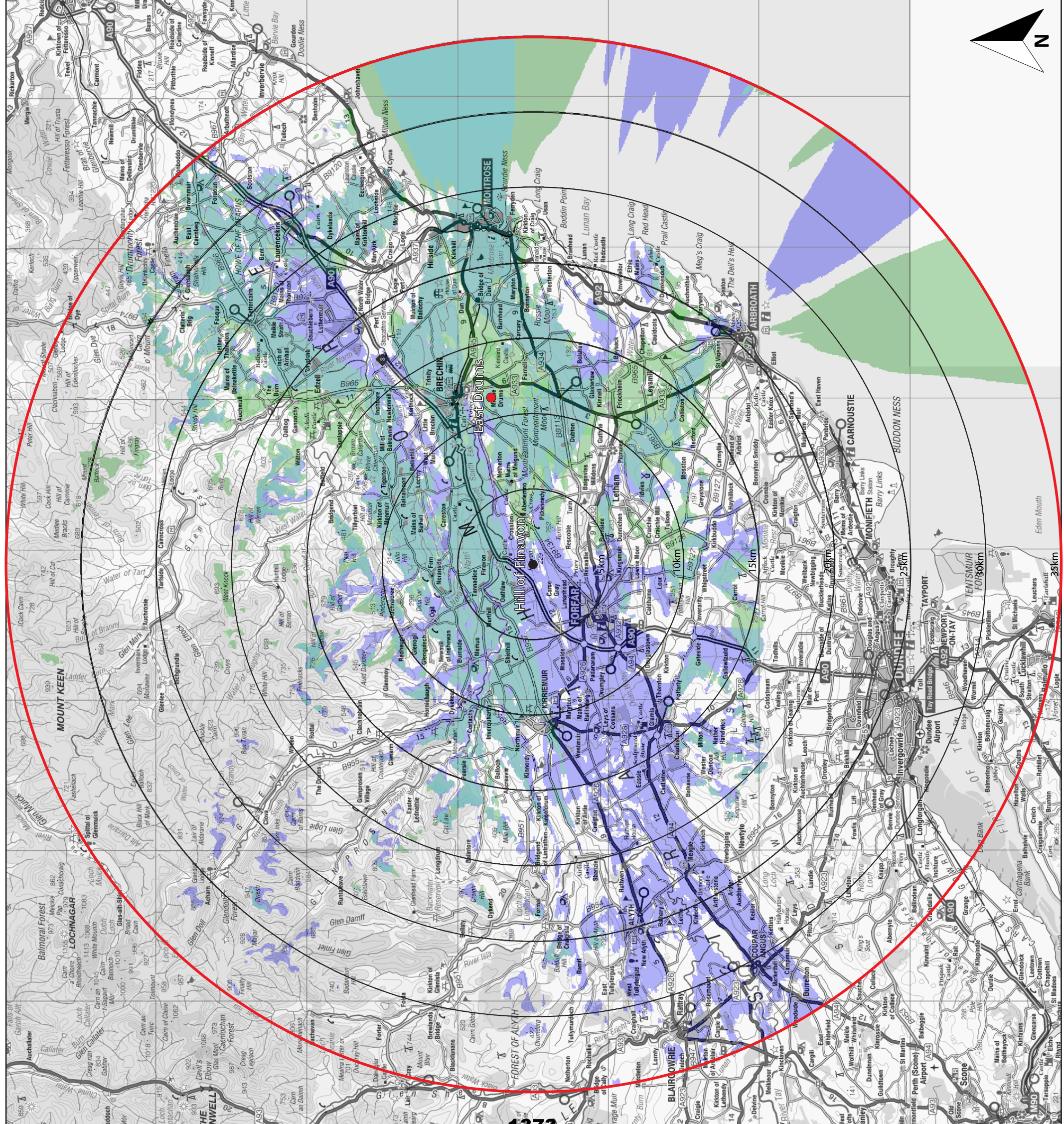
Key:

- Proposed Turbine Location
- Cumulative Project Location
- 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
- Landscape and Visual Study Area (35km)
- Hill of Finavon Visible
- East Drums Visible
- Hill of Finavon & East Drums Visible



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 Drawing by: Green Cat Renewables Ltd

Document Number: C0256-163/Fig 7.8aa
 Version: 1.0
 Author: AM
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 Approved By: AW
 Date: 11/08/2014



Project Name: **Finavon Hill Estate Wind Turbine**
 Document Title: **Cumulative ZTV to Tip Height for 35km Radii - Forfar Golf Course (In Planning)**
 Scale: **1:200,000 @ A3**

Key:

- Proposed Turbine Location
- Cumulative Project Location
- 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
- Landscape and Visual Study Area (35km)
- Hill of Finavon Visible
- Forfar Golf Course Farm Visible
- Hill of Finavon & Forfar Golf Course Visible



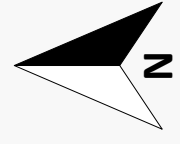
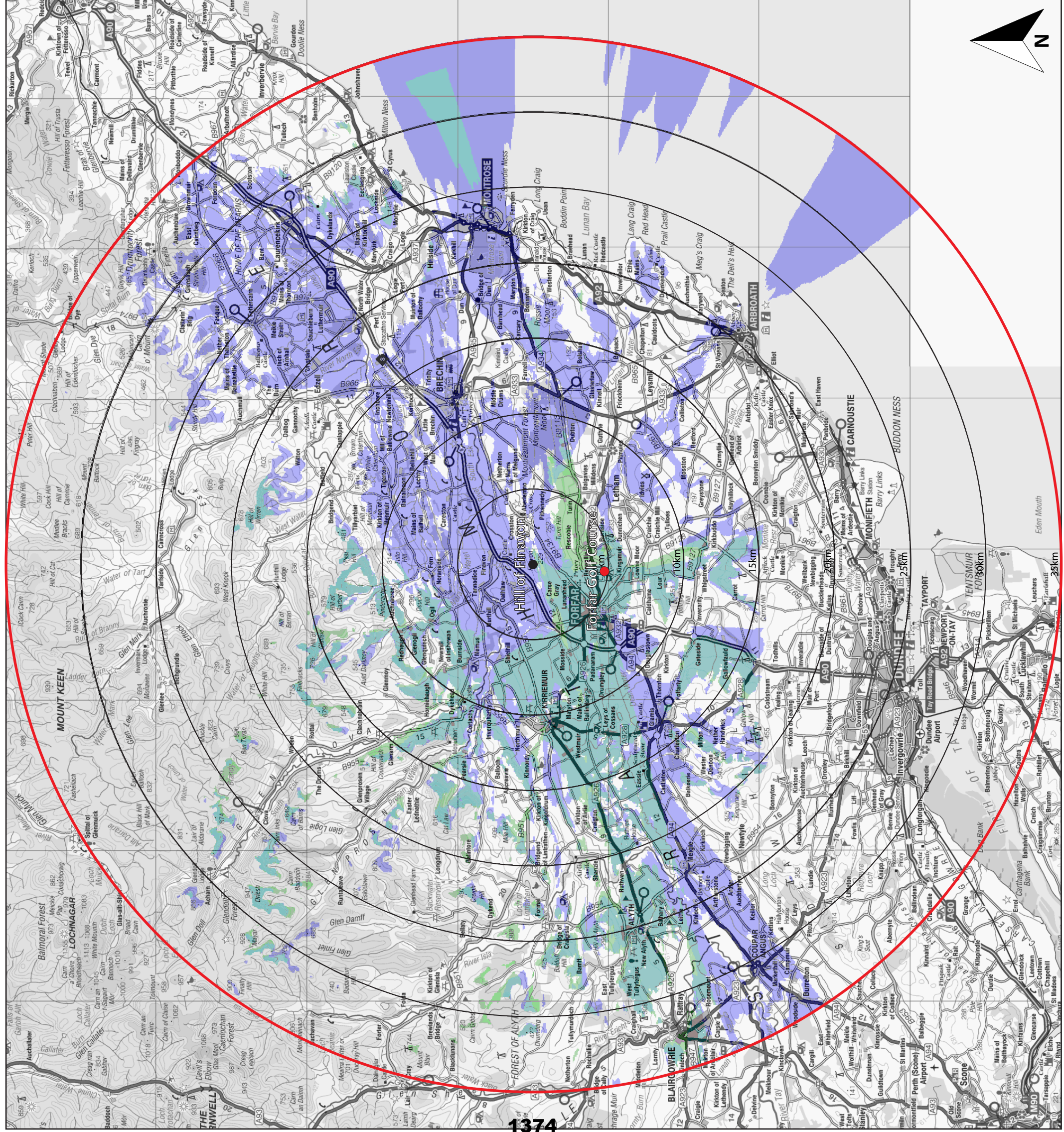
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Project Name: **Finavon Hill Estate Wind Turbine**
 Document Title: **Cumulative ZTV to Tip Height for 35km Radii - Kalula House (In Planning)**
 Scale: **1:200,000 @ A3**

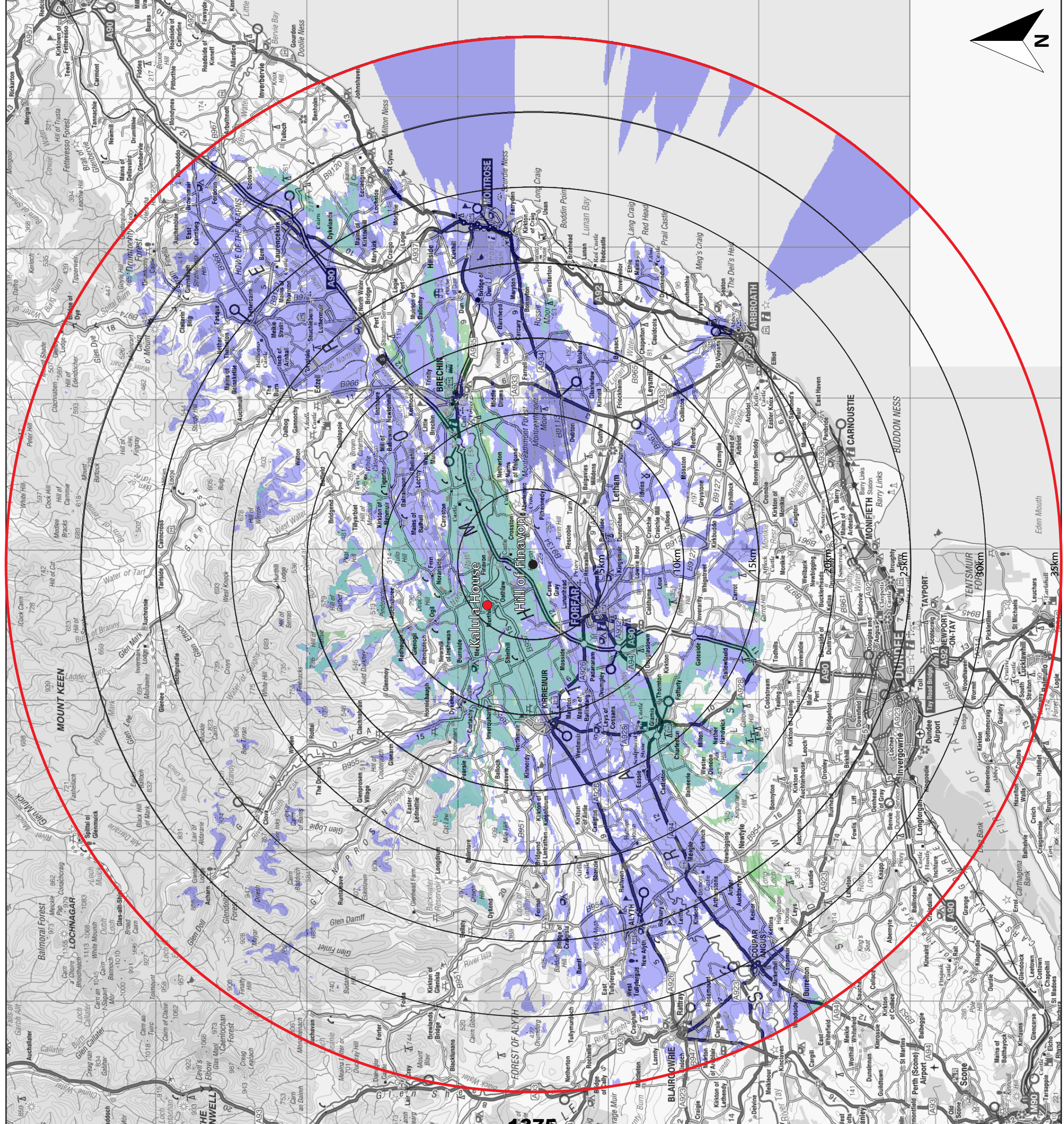
Key:

- Proposed Turbine Location
- Cumulative Project Location
- 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
- Landscape and Visual Study Area (35km)
- Hill of Finavon Visible
- Kalula House Visible
- Hill of Finavon & Kalula House Visible



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 Kilmac Construction Ltd
 Drawing by: **Green Cat Renewables Ltd**

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Project Name: **Finavon Hill Estate Wind Turbine**
 Document Title: **Cumulative ZTV to Tip Height for 35km Radii - Nathro Hill (In Planning)**
 Scale: **1:200,000 @ A3**

- Key:**
- Proposed Turbine Location
 - Cumulative Project Location
 - 5, 10, 15, 20, 25 & 30km Radii from Wind Farm Centre
 - Landscape and Visual Study Area (35km)
 - Hill of Finavon Visible
 - Nathro Hill Visible
 - Hill of Finavon & Nathro Hill Visible



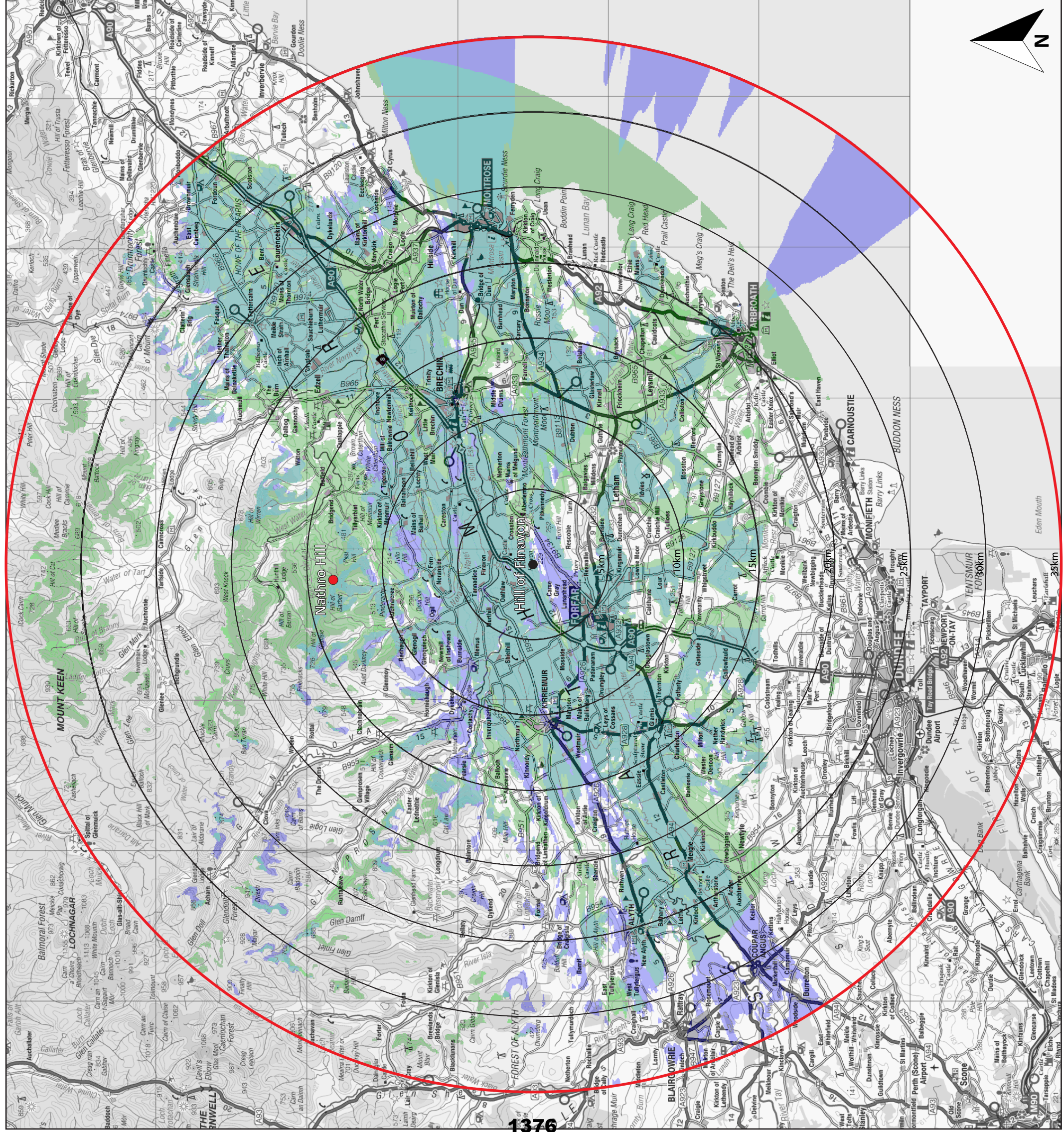
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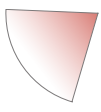
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 Document Title: **VP01 - Balmashanner**
 Scale: **1:50,000 @ A3**

Key:

- Proposed Turbine Location



76° Field of View

Viewpoint Information

Viewpoint Location: **E345739 N749331**
 Viewpoint Elevation: **167m (A.O.D)**
 View Direction: **37°**
 Distance to Turbine: **6.5km**

Visibility: **6 Projects**

Camera Type: **Nikon D3000**
 Focal Length: **35mm**
 Effective Focal Length: **52mm**
 Date Taken: **26/07/2011**
 Time Taken: **11:50**
 Height above elevation: **1.5m**

Visual Impact

Sensitivity: **High**
 Magnitude: **Low**
 Overall: **Moderate**

Please note for a 76° field of view, a viewing distance of 300m is recommended.



Client: **Mr. J Sanderson (Finavon Estate) & Construction Partner**
Kilmac Construction Ltd
 Drawing by: **Green Cat Renewables Ltd**

Document Number: **C0256-163/FIG 7.9**
 Version: **1.0**
 Author: **AM**
 Checked by: **AW**
 Approved By: **AW**
 Date: **11/08/2014**

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