

Preliminary Look at Impact of Hydraulic Fracturing at Glenfarne and Kiltyclogher, Co. Leitrim

Landscape and Visual

By

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Image of a 9 Acre Pad

Pads of between 5 and 12 acres have been proposed by Tamboran with between 8 and 16 wells per pad

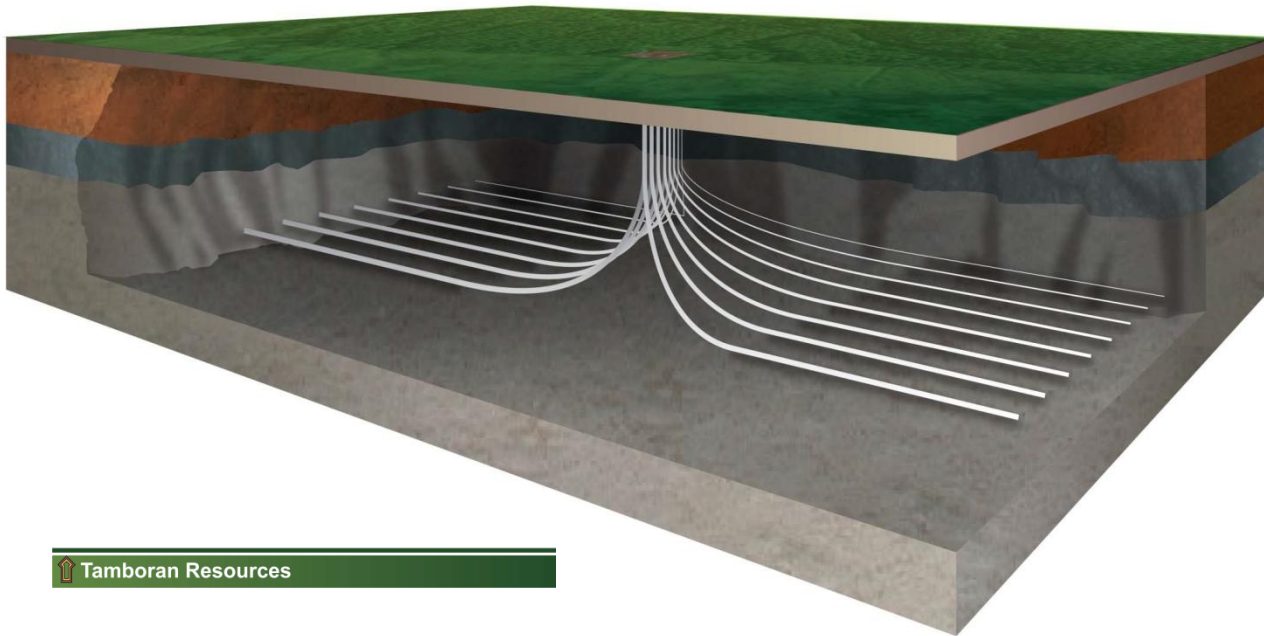
Pad Drilling

EXCO's first 4 well, 80 acre spacing super pad - IP rate of 92 Mmcf/d

- Currently testing various drilling and completion methods to improve our recoveries and reduce costs
- 4 wells drilled with 2 rigs on a 9 acre pad
- Completed with 2 frac fleets
- 20 million pounds of proppant
 - 400 truckloads or 100 railroad cars
- 23 million gallons of water
 - 35 Olympic size pools
- Currently utilizing surface water; finalizing water source project with nearby industrial plant
- Monitoring performance with microseismic and pressure observation



16- drill wellpad as described by Tamboran Resources



<http://tambeta.hypemedia.ca/wp-content/uploads/2011/09/Tamboran-Leitrim-Sept052011.pdf>

Google Earth Image of Possible Pad Locations



Image of Possible Pads in Glenfarne

10 No 12 acre and 3 No 5.5 acre pads

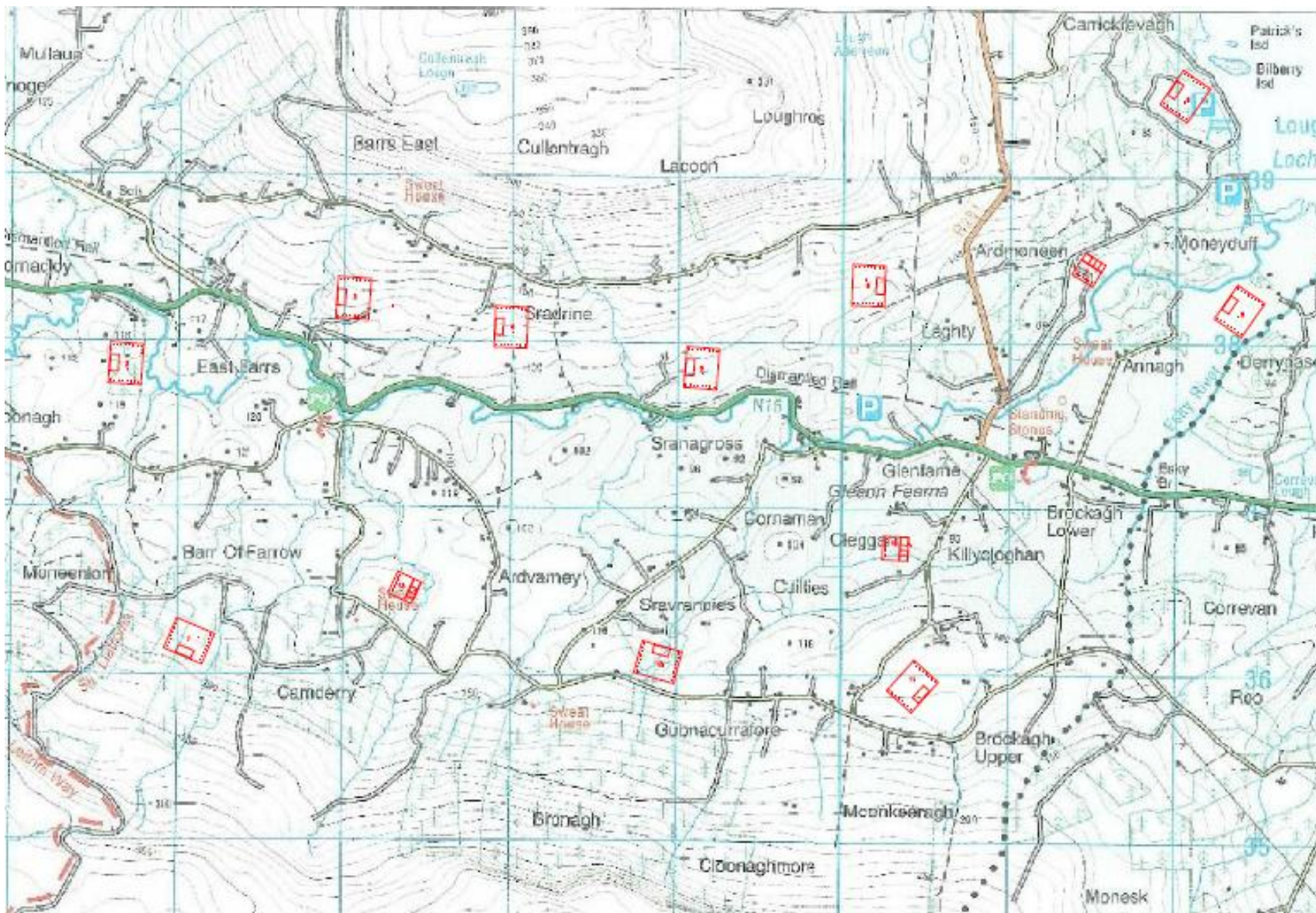
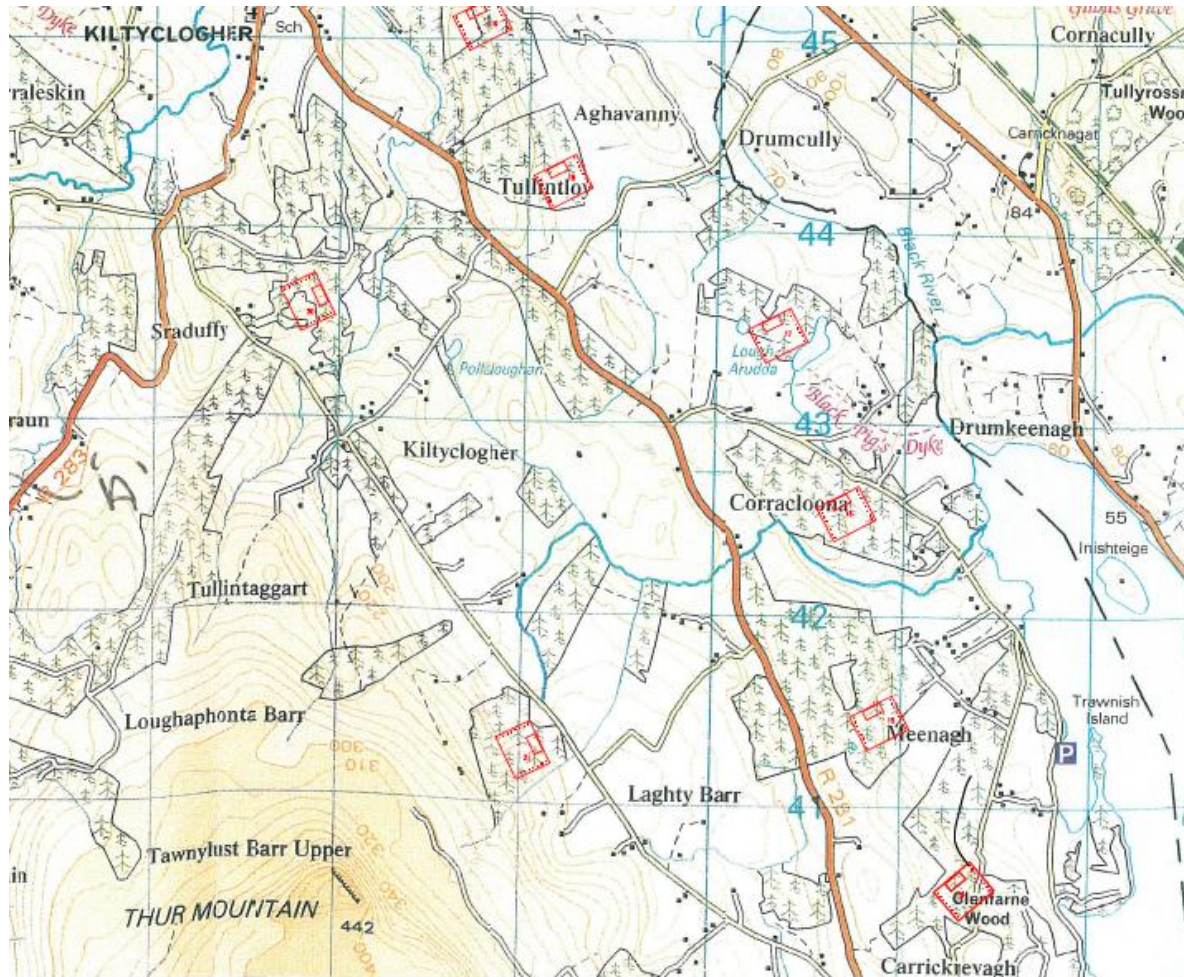


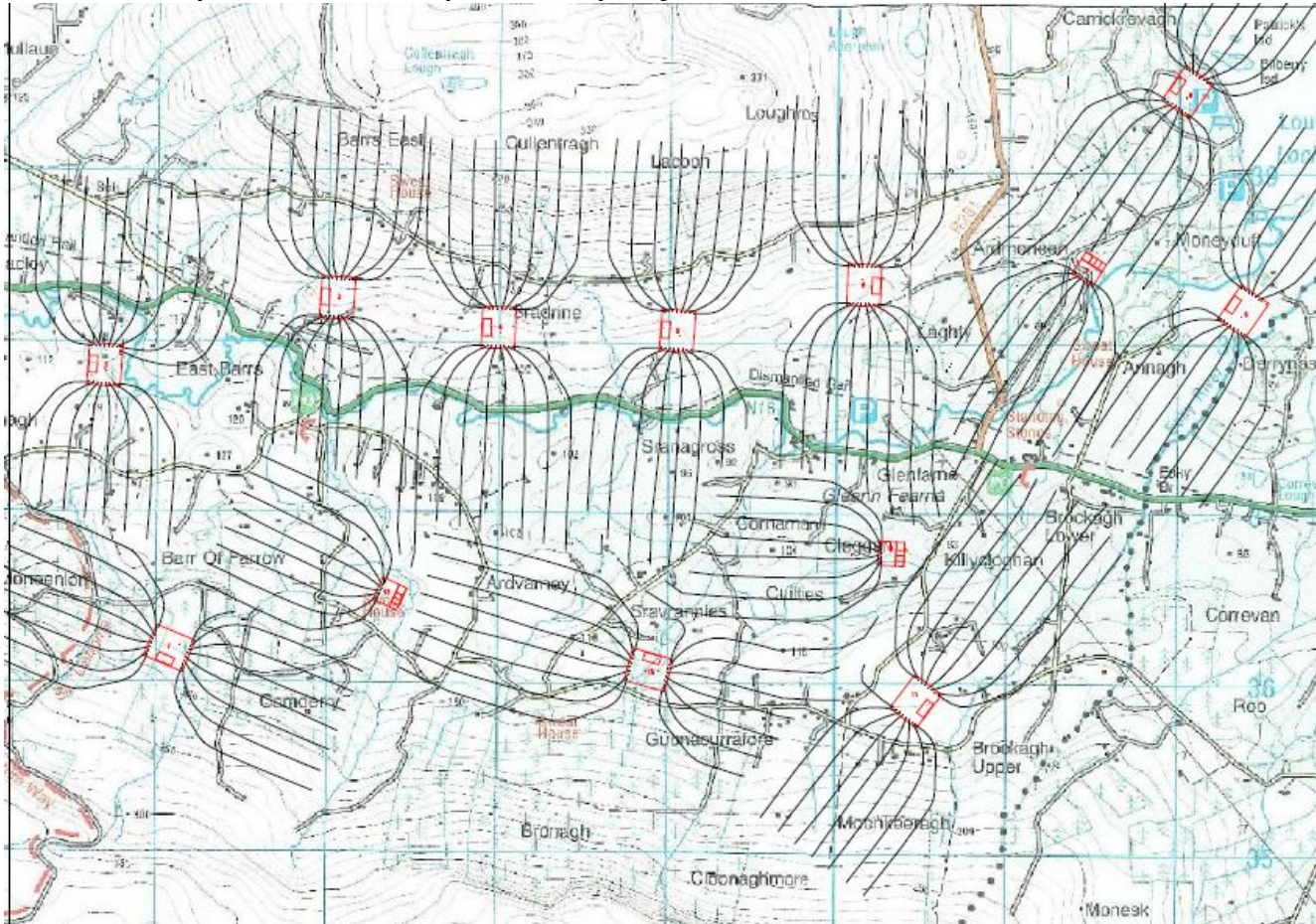
Image of Possible Pads in Kiltyclogher

10 No 12 acre and 3 No 5.5 acre pads



Glenfarne

This layout is based on information received at 3 public information meetings with Tamboran and information taken off the Tamboran Website. It has been produced to put the project into a context.

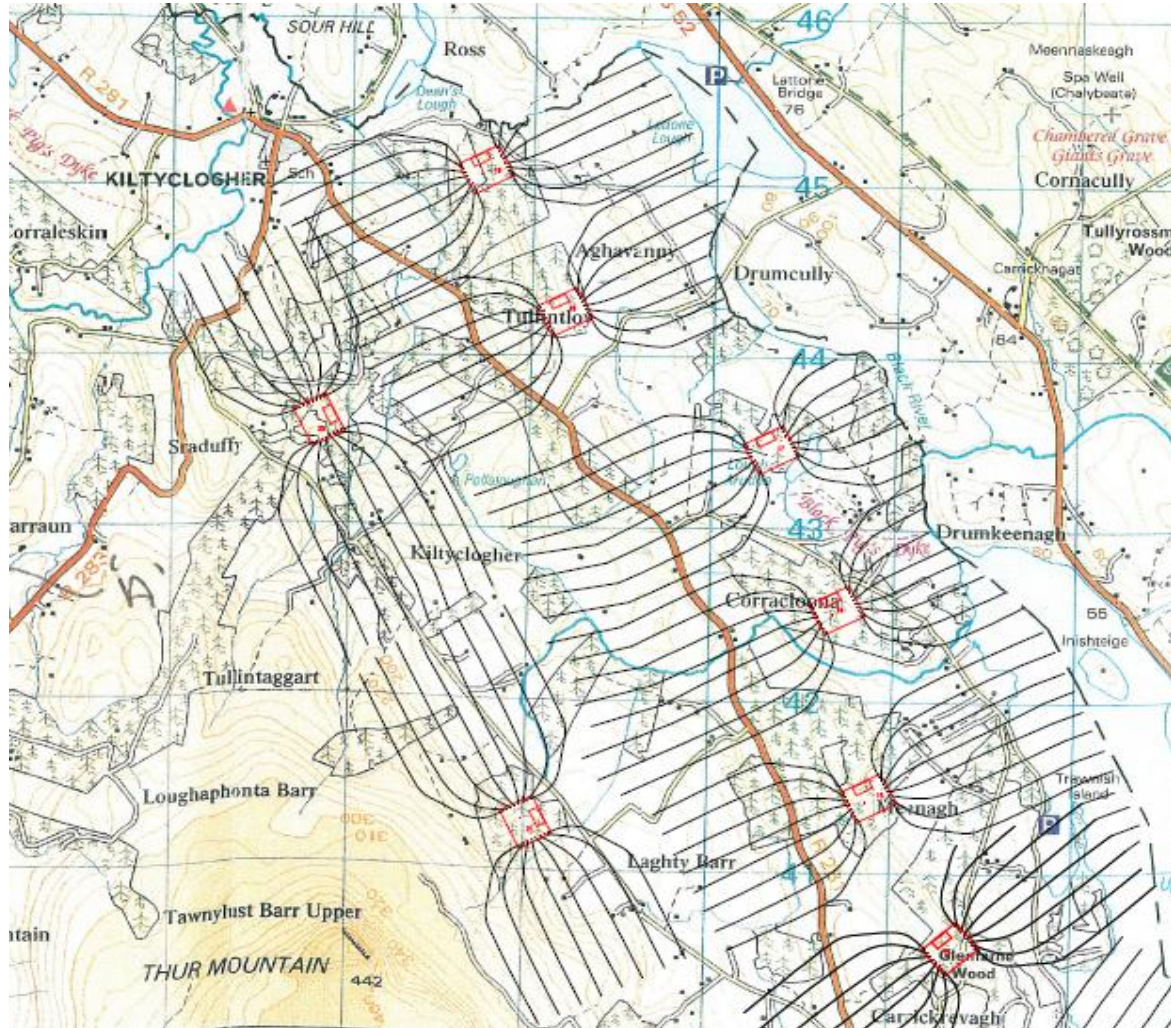


184 wells in on layout. Total project to include 1000 wells

Kiltyclogher

Possible well pad locations

8 No 12 acre



What does Tamboran say about Wellpad design

- Wellpad
- What is a wellpad?
- *We refer to a wellpad as a central location at which several wells can be drilled. The central location greatly reduces the total amount of surface impact (or “footprint”) needed in comparison to drilling each well in a separate location. Tamboran is designing one of the most advanced, self-sufficient onshore wellpad systems in the world today to reduce traffic, emissions, and noise.*
- What are the other advantages of a wellpad?
- *In addition to reducing the surface impact, wellpads enable the sharing of all surface equipment, which eliminates significant duplication. Wellpads also enable the central gathering of all fugitive emissions from water recovery tanks through a vapour recovery system.*
- How big is a wellpad?
- *Wellpad size will depend on the number of wells to be drilled on each site. We anticipate a standard wellpad designs intended to accommodate 8, 16 or more wells. The smallest wellpad (for 8 wells) would need to be approximately 120 m by 200 m in size or approximately 0.02 square kilometres (equal to 6 acres or 2.4 hectares). A wellpad with 16 wells would need to be approximately 200 m x 250 m in size or approximately 0.05 square kilometres (equal to 12 acres or 5 hectares).*
- *Under our current theoretical design, this wellpad would enable the underground development of 2 square miles (1,280 acres = 518 hectares). So, wellpads will have a surface impact of 0.5% to 1.0% of underground development size.*

Density

- How far apart are the wellpads?
- *Initially, we expect to drill horizontal wells of approximately 1 km in length in multiple directions from a wellpad. This will allow us to keep the wellpads at least 2 km apart. Eventually, provided the geological conditions permit longer drilling, we may be able to drill horizontal wells up to 2 km in length in multiple directions from a wellpad. In turn, this would allow us to keep the wellpads 4 km apart; we would need to drill half as many wells and would require half as many wellpads.*
- How many wellpads will be needed and when will pads be constructed?
- *In our most active case, we could construct as many as 100 wellpads at 2 km apart over the project's likely 10 to 15 drilling period. If all approvals are granted, the earliest wellpad construction could begin in late 2012 or early 2013. In our most active possible case, someday as many as 10 wellpads could be being constructed each year about seven years from now (by approximately 2018). Each wellpad is likely to require separate environmental impact assessments and planning permission.*

Where

- Where will Tamboran plan to drill?
- *Our lease option covers nearly 420,000 acres, but probably only the middle 100,000 acres are worth exploring. Our primary exploration focus is the Bundoran Shale, with secondary potential in the Mullaghmore Sandstone and Benbulbin Shale. In order to be sufficiently productive, a rock formation likely has to be at least 500 m below the surface of the ground in order to have enough gas pressure. The current lease options goes right to the edges of the rock formations where they rise all the way to surface. These are known as outcrops. As a side note, the rock formations often receive their names (Bundoran Shale) from where they outcrop at surface (near Bundoran of course). However, anything shallower than 500 m is likely too shallow to produce at an economic rate, which leaves us with a relatively small area in the middle of the overall basin, likely centered around Thur Mountain.*
- *We can't of course drill on Thur Mountain because it is environmentally designated, nor would we want to be on a high slope (for several operational and visual reasons), but from prior drills by other operators over the past 50 years, we know that the general area surrounding Thur Mountain is over 500 m deep (and up to 1500 m deep in places as you go south). This means that our most likely development area is roughly an area of 100,000 acres (nearly 400 square km) that would range from the northern part of County Leitrim, the western side of County Cavan, and the southern edge of County Fermanagh.*

Pad 7 5.5 Acre



Pad 9 12 Acre



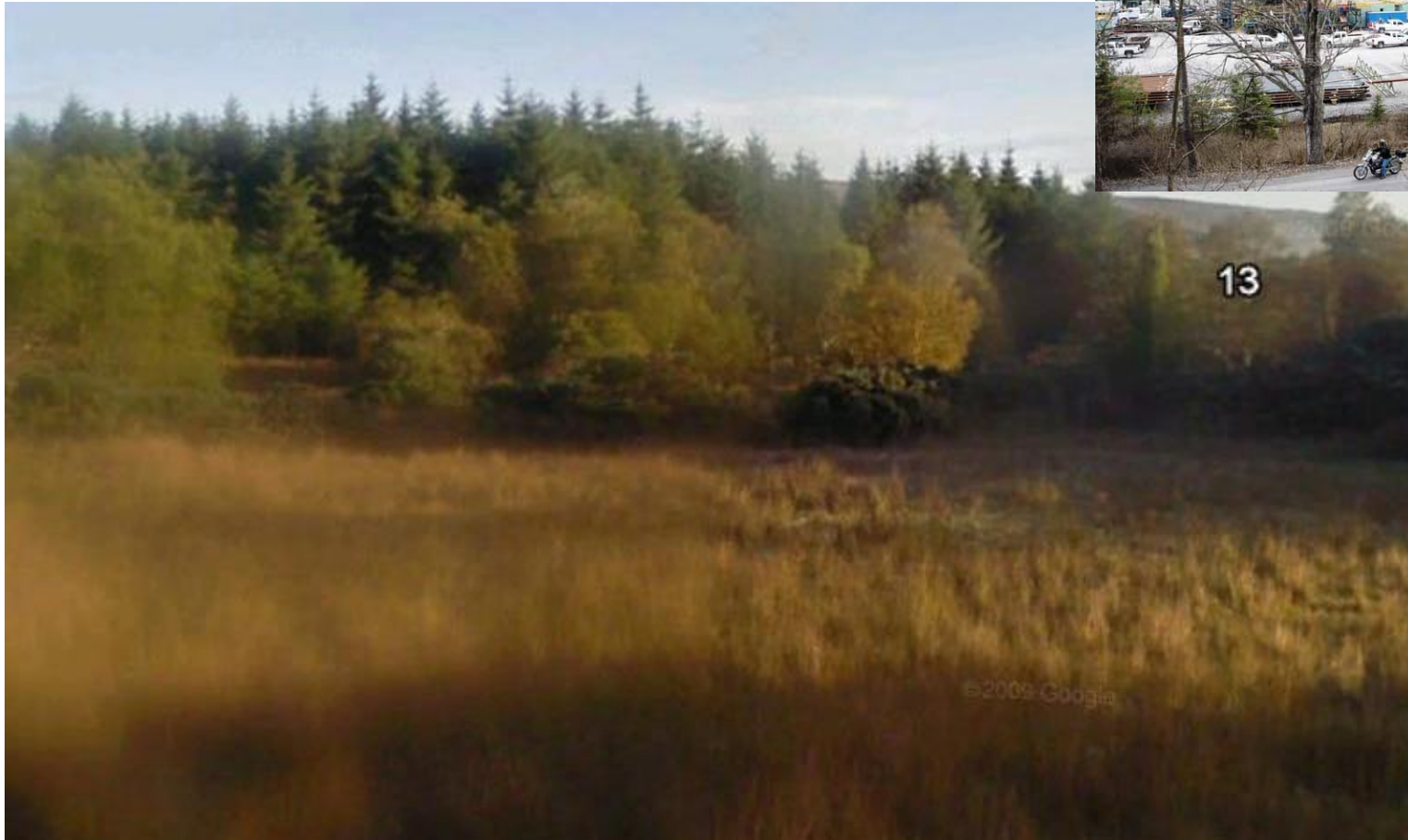
Pad 10 5.5 Acre



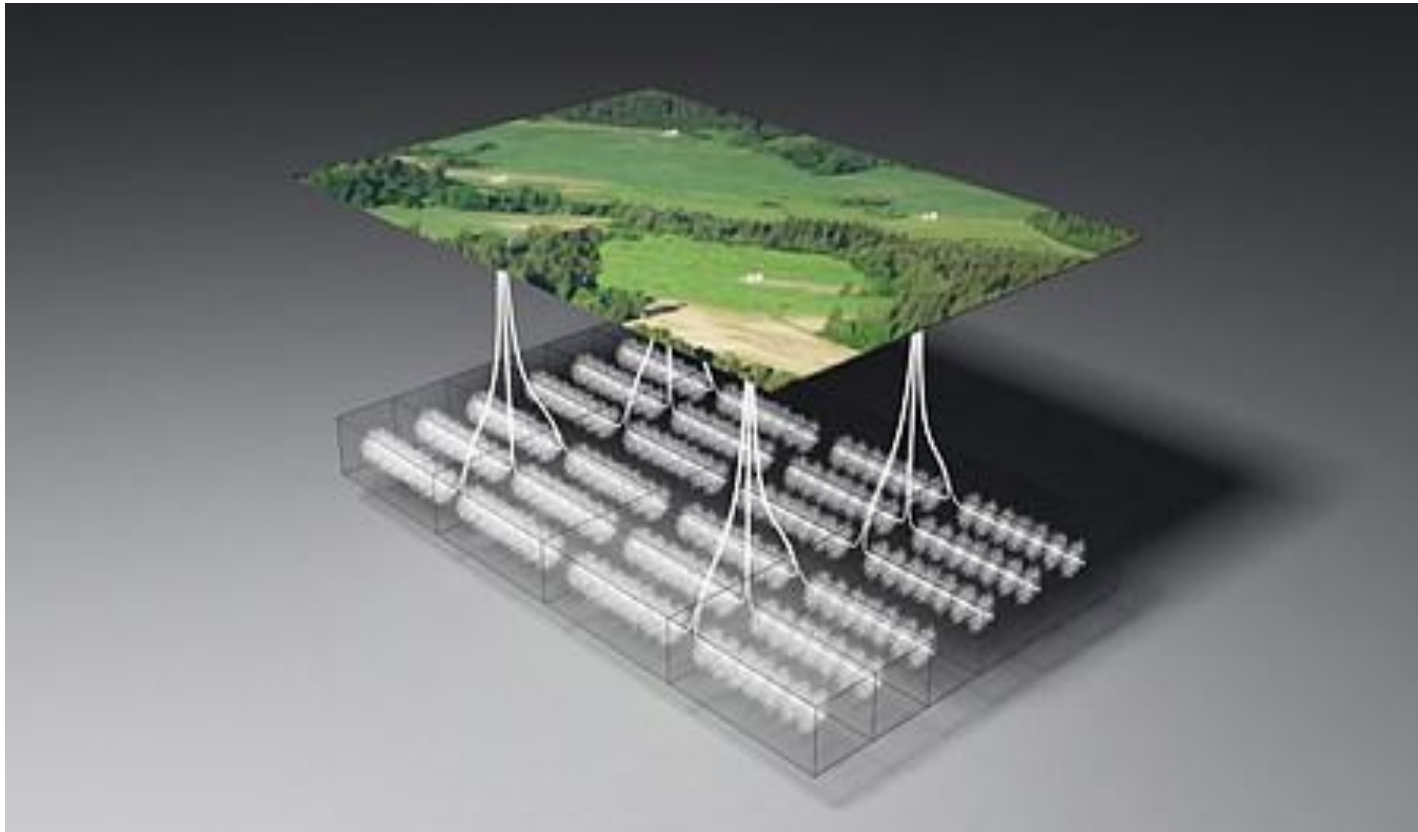
Pad 12 12 Acre



Pad 13 5.5 Acre



What is Fracking



http://www.google.ie/imgres?q=16+well+pads+gas&um=1&hl=en&prmdo=1&biw=1066&bih=554&tbm=isch&tbnid=X_5_1dGkmEVoyM:&imgrefurl=http://www.statoil.com/en/About/Worldwide/USA/Pages/ShaleGasMarcellus.aspx&docid=Eo62xulPaXYIcM&w=225&h=150&ei=y7OQToqUloiq8QPellkh&zoom=1&iact=hc&vpx=540&vpy=175&dur=3792&hovh=120&hovw=180&tx=96&ty=58&page=1&tbnh=115&tbnw=155&start=0&ndsp=17&ved=1t:429,r:2,s:0

Summary of Environmental Impacts

Water

- The amount needed for Fracking (5 million gallons/frac)
- Loss of well (aquifer) water through disruption or contamination
- Gas migration causing methane contaminated water
- The fate of the produced water (“treated” at POTWs)
- Degradation of water quality in local streams and rivers
- Degradation of drinking water quality (need to purchase bottled water)

Land usage

- Large amount of acreage needed for well pads and impoundments
- As long as a well can be “restimulated”, the well pad will remain active
- Leased areas (former private and public lands) become restricted access
- Public lands and parks no longer “public” as they are off limits due to safety
- Exposure to toxic chemicals (spills, aquifer contamination)

Fracking fluids

- Produced water contaminated with organics, salts, heavy metals, and NORMs
- Failed or improper casings lead to aquifer contamination
- Traffic and road degradation
- Significant increase in trucks and vehicles cause road and bridge deterioration
- Trucks may exceed weight and height limits

Noise

- Heavy equipment, increased traffic,
- Low frequency sounds during Fracking
- Compressors and compressor stations

Air pollution

- Increased vehicle traffic
- Well flaring
- Release of VOC’s from well installations (condensate tanks are vented by design)
- Compressor stations
- Well blow outs

Property devaluation

- Mortgages and home equity loans jeopardized by presence of wells
- Mine subsidence insurance compromised or negated
- Land owner ultimately responsible for taxes and environmental damage

EMS and emergency procedures

- Evacuation plans must be in place for populated areas (a single well blow out can affect more than 1 mile radius)
- EMS, police and fire must be trained to handle emergencies (well and impoundment fires, evacuations)
- Increases taxes to cover infrastructure damage, additional public services and security.