

APPENDIX B: SITE CHARACTERISATION FORM

File Reference:



1.0 GENERAL DETAILS (From planning application)

144342-21/02/2014-Site Suitability Ass

Prefix: First Name: Surname:

Address:

Site Location and Townland:

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Telephone No: Fax No:

E-Mail:

Maximum no. of Residents: No. of Double Bedrooms: No. of Single Bedrooms:

Proposed Water Supply: Mains ☐ Private Well/Borehole ☒ Group Well/Borehole ☐

2.0 GENERAL DETAILS (From planning application)

Soil Type, (Specify Type):

Aquifer Category: Regionally Important ☐ Locally Important Poor ☐

Vulnerability: Extreme ☐ High ☒ Moderate ☐ Low ☐ High to Low ☐ Unknown ☐

Bedrock Type:

Name of Public/Group Scheme Water Supply within 1 km:

Groundwater Protection Scheme (Y/N):

Source Protection Area: SI ☐ SO ☐
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Groundwater Protection Response:

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Presence of Significant Sites
(Archaeological, Natural & Historical):

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Past experience in the area:

Comments:

(Integrate the information above in order to comment on: the potential suitability of the site, potential targets at risk, and/or any potential site restrictions).

Note: Only information available at the desk study stage should be used in this section.

3.0 ON-SITE ASSESSMENT

3.1 Visual Assessment

Landscape Position:

Slope: Steep (>1:5) ☐ Shallow (1:5-1:20) ☐ Relatively Flat (<1:20) ☒

Surface Features within a minimum of 250m (Distance To Features Should Be Noted In Metres)

Houses:

Existing Land Use:

Vegetation Indicators:

Groundwater Flow Direction:

Ground Condition:

Site Boundaries:

Roads:

Outcrops (Bedrock And/Or Subsoil):

Surface Water Ponding:

Lakes:

Beaches/Shellfish:

Areas/Wetlands:

Karst Features:

Watercourse/Stream*:

Drainage Ditches*:

Springs / Wells*:

Comments:

(Integrate the information above in order to comment on: the potential suitability of the site, potential targets at risk, the suitability of the site to treat the wastewater and the location of the proposed system within the site).

Ground should be suitable subject to successful percolation test results

*Note and record water level

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3.2 Trial Hole (should be a minimum of 2.1m deep (3m for regionally important aquifers))

To avoid any accidental damage, a trial hole assessment or percolation tests should not be undertaken in areas, which are at or adjacent to significant sites (e.g. NHAs, SACs, SPAs, and/or Archaeological etc.), without prior advice from National Parks and Wildlife Service or the Heritage Service.

Depth of trial hole (m):

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Depth from ground surface
to bedrock (m) (if present):

Depth from ground surface
to water table (m) (if present):

Depth of water ingress:

Rock type (if present):

Date and time of excavation:

Date and time of examination:

Depth of P/T Test*	Soil/Subsoil Texture & Classification**	Plasticity and dilatancy***	Soil Structure	Density/ Compactness	Colour****	Preferential flowpaths
0.1 m	P SILT/CLAY random cobbles. T3,2,2 R 75,80,85	Dilates with difficulty, plastic	Crumb	Firm	Brown	Random rootlets
0.2 m	P					
0.3 m	P					
0.4 m	P T					
0.5 m	T					
0.6 m	T SILTY/SHALE T2,3,3 R 60,70,70	Dilates with difficulty, plastic	Blocky	Stiff	Brown	None
0.7 m	T					
0.8 m						
0.9 m						
1.0 m						
1.1 m						
1.2 m						
1.3 m	SHALE					
1.4 m					Grey/brown	Random fissures
1.5 m						
1.6 m						
1.7 m						
1.8 m						
1.9 m						
2.0 m						
2.1 m						
2.2 m						
2.3 m						
2.4 m						
2.5 m						
2.6 m						
2.7 m						
2.8 m						
2.9 m						
3.0 m						

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Likely T value:

Note: *Depth of percolation test holes should be indicated on log above. (Enter P or T at depths as appropriate).

** See Appendix E for BS 5930 classification.

*** 3 samples to be tested for each horizon and results should be entered above for each horizon.

**** All signs of mottling should be recorded.

3.2 Trial Hole (contd.) Evaluation:

Water table relatively high, ensure design allows for suitable separation distance from invert of percolation area to top of watertable/bedrock.

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3.3(a) Percolation ("T") Test for Deep Subsoils and/or Water Table

Step 1: Test Hole Preparation

Percolation Test Hole

	1	2	3
Depth from ground surface to top of hole (mm) (A)	300	300	300
Depth from ground surface to base of hole (mm) (B)	700	700	700
Depth of hole (mm) [B - A]	400	400	400
Dimensions of hole [length x breadth (mm)]	310 x 300	320 x 320	300 x 300

Step 2: Pre-Soaking Test Holes

Date and Time pre-soaking started	04/04/2013	10:00	04/04/2013	10:00	04/04/2013	10:00
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Each hole should be pre-soaked twice before the test is carried out. Each hole should be empty before refilling.

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Step 3: Measuring T_{100}

Percolation Test Hole No.

	1	2	3
Date of test	05/04/2013	05/04/2013	05/04/2013
Time filled to 400 mm	10:20	10:20	10:20
Time water level at 300 mm	11:38	11:50	11:35
Time to drop 100 mm (T_{100})	78.00	90.00	75.00
Average T_{100}			81.00

If $T_{100} > 300$ minutes then T-value > 90 – site unsuitable for discharge to ground

If $T_{100} \leq 210$ minutes then go to Step 4;

If $T_{100} > 210$ minutes then go to Step 5;

Step 4: Standard Method (where $T_{100} \leq 210$ minutes)

Percolation Test Hole	1			2			3		
Fill no.	Start Time (at 300 mm)	Finish Time (at 200 mm)	Δt (min)	Start Time (at 300 mm)	Finish Time (at 200 mm)	Δt (min)	Start Time (at 300 mm)	Finish Time (at 200 mm)	Δt (min)
1	11:38	14:19	161.00	11:50	14:53	183.00	11:35	14:27	171.00
2	14:19	17:21	182.00	14:53	18:07	194.00	14:27	17:21	174.00
3	17:21	20:18	177.00	18:07	21:22	195.00	17:21	20:13	172.00
Average Δt Value			173.33			190.67			172.33
Average $\Delta t/4 =$ [Hole No.1]			43.33 (t_1)	Average $\Delta t/4 =$ [Hole No.2]			Average $\Delta t/4 =$ [Hole No.3]		

Result of Test: $T =$ (min/25 mm)

Comments:

Ground suitable for percolation system subject to suitable separation by distance from watertable.

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Step 5: Modified Method (where $T_{100} > 210$ minutes)

Percolation Test Hole No.	1				2				3			
Fall of water in hole (mm)	Time Factor $= T_f$	Time of fall (mins) $= T_m$	$K_{fs} = T_f / T_m$	$T - \text{Value} = 4.45 / K_{fs}$	Time Factor $= T_f$	Time of fall (mins) $= T_m$	$K_{fs} = T_f / T_m$	$T - \text{Value} = 4.45 / K_{fs}$	Time Factor $= T_f$	Time of fall (mins) $= T_m$	$K_{fs} = T_f / T_m$	$T - \text{Value} = 4.45 / K_{fs}$
300 - 250	8.1				8.1				8.1			
250 - 200	9.7				9.7				9.7			
200 - 150	11.9				11.9				11.9			
150 - 100	14.1				14.1				14.1			
Average T- Value	T- Value Hole 1 = (t_1)			0.00	T- Value Hole 1 = (t_2)			0.00	T- Value Hole 1 = (t_3)			0.00

Result of Test: $T =$ (min/25 mm)

Comments:

3.3(b) Percolation ("P") Test for Shallow Soil / Subsoils and/or Water Table

Step 1: Test Hole Preparation

Percolation Test Hole

	1	2	3
Depth from ground surface to top of hole (mm)			
Depth from ground surface to base of hole (mm)			
Depth of hole (mm)	0	0	0
Dimensions of hole [length x breadth (mm)]	x	x	x

Step 2: Pre-Soaking Test Holes

Date and Time pre-soaking started

04/04/2013	10:00	04/04/2013	10:00	04/04/2013	10:00
------------	-------	------------	-------	------------	-------

Each hole should be pre-soaked twice before the test is carried out. Each hole should be empty before refilling.

Step 3: Measuring P_{100}

Percolation Test Hole No.

	1	2	3
Date of test	05/04/2013	05/04/2013	05/04/2013
Time filled to 400 mm	10:20	10:20	10:20
Time water level at 300 mm	11:04	11:25	11:12
Time to drop 100 mm (P_{100})	44.00	65.00	52.00
Average P_{100}	53.67		

If $P_{100} > 300$ minutes then P-value > 90 – site unsuitable for discharge to ground

If $P_{100} \leq 210$ minutes then go to Step 4;

If $P_{100} > 210$ minutes then go to Step 5;

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Step 4: Standard Method (where $P_{100} \leq 210$ minutes)

Percolation Test Hole	1			2			3		
Fill no.	Start Time (at 300 mm)	Finish Time (at 200 mm)	Δp (min)	Start Time (at 300 mm)	Finish Time (at 200 mm)	Δp (min)	Start Time (at 300 mm)	Finish Time (at 200 mm)	Δp (min)
1	11:04	13:15	131.00	11:25	13:40	135.00	11:12	13:37	145.00
2	13:15	15:35	140.00	13:40	16:08	148.00	13:37	16:04	147.00
3	15:35	17:54	139.00	16:08	18:40	152.00	16:04	18:30	146.00
Average Δp Value			136.67			145.00			146.00
	Average $\Delta p/4 =$ [Hole No.1] 34.17 (p_1)			Average $\Delta p/4 =$ [Hole No.2] 36.25 (p_2)			Average $\Delta p/4 =$ [Hole No.3] 36.50 (p_3)		

Result of Test: $P =$ 35.64 (min/25 mm)

Comments:

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Step 5: Modified Method (where $P_{100} > 210$ minutes)

Percolation Test Hole No.	1				2				3			
Fall of water in hole (mm)	Time Factor $= T_f$	Time of fall (mins) $= T_m$	$K_{fs} = T_f / T_m$	P-Value $= 4.45 / K_{fs}$	Time Factor $= T_f$	Time of fall (mins) $= T_m$	$K_{fs} = T_f / T_m$	P-Value $= 4.45 / K_{fs}$	Time Factor $= T_f$	Time of fall (mins) $= T_m$	$K_{fs} = T_f / T_m$	P-Value $= 4.45 / K_{fs}$
300 - 250	8.1				8.1				8.1			
250 - 200	9.7				9.7				9.7			
200 - 150	11.9				11.9				11.9			
150 - 100	14.1				14.1				14.1			
Average P-Value	P-Value Hole 1 = (p_1) 0.00				P-Value Hole 1 = (p_2) 0.00				P-Value Hole 1 = (p_3) 0.00			

Result of Test: $P =$ 0.00 (min/25 mm)

Comments:

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3.4 The following associated Maps, Drawings and Photographs should be appended to this site characterisation form.

1. Discovery Series 1:50,000 Map indicating overall drainage, groundwater flow direction and housing density in the area.
2. Supporting maps for vulnerability, aquifer classification, soil, bedrock.
3. North point should always be included.
4. (a) Sketch of site showing measurements to Trial Hole location and
 - (b) Percolation Test Hole locations,
 - (c) wells and
 - (d) direction of groundwater flow (if known),
 - (e) proposed house (incl. distances from boundaries)
 - (f) adjacent houses,
 - (g) watercourses,
 - (h) significant sites
 - (i) and other relevant features.
5. Cross sectional drawing of the site and the proposed layout¹ should be submitted.
6. Photographs of the trial hole, test holes and site (date and time referenced).

¹ The calculated percolation area or polishing filter area should be set out accurately on the site layout drawing in accordance with the code of practice's requirements.

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4.0 CONCLUSION of SITE CHARACTERISATION

Integrate the information from the desk study and on-site assessment (i.e. visual assessment, trial hole and percolation tests) above and conclude the type of system(s) that is (are) appropriate. This information is also used to choose the optimum final disposal route of the treated wastewater.

Not Suitable for Development ☐

Suitable for ¹

1. Septic tank system (septic tank and percolation area)

Yes

2. Secondary Treatment System

a. septic tank and filter system constructed on-site and polishing filter; or

Yes

b. packaged wastewater treatment system and polishing filter

Yes

Discharge Route

Discharge to Surface Water

5.0 RECOMMENDATION

Propose to install:

Septic tank system (septic tank and percolation area)

and discharge to:

Ground Water

Trench Invert level (m):

0.00

Site Specific Conditions (e.g. special works, site improvement works testing etc.

Percolation trenches to be installed at ground level to ensure min 1200m separation from maximum watertable & bedrock. Percolation area to consist of min 72 m of percolation trench consisting of 6 trenches of 12 m length at 2.5 c/c.

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¹ note: more than one option may be suitable for a site and this should be recorded

² A discharge of sewage effluent to "waters" (definition includes any or any part of any river, stream, lake, canal, reservoir, aquifer, pond, watercourse or other inland waters, whether natural or artificial) will require a licence under the Water Pollution Acts 1977-90. Refer to Section 2.6.2.

6.0 TREATMENT SYSTEM DETAILS

SYSTEM TYPE: Septic Tank System

Tank Capacity (m ³)	3.00	Percolation Area		Mounded Percolation Area	
		No. of Trenches		No. of Trenches	6.00
		Length of Trenches (m)		Length of Trenches (m)	12
		Invert Level (m)		Invert Level (m)	0.00

SYSTEM TYPE: Secondary Treatment System

Filter Systems

Media Type	Area (m ²)*	Depth of Filter	Invert Level
Sand/Soil			
Soil			
Constructed Wetland			
Other			

Package Treatment Systems

Type	
Capacity PE	
Sizing of Primary Compartment	
	m ³

SYSTEM TYPE: Tertiary Treatment System

Polishing Filter: Surface Area (m²)*

or **Gravity Fed:**

No. of Trenches

Length of Trenches (m)

Invert Level (m)

Package Treatment System: Capacity (pe)

Constructed Wetland: Surface Area (m²)*

DISCHARGE ROUTE:

Groundwater	☒	Hydraulic Loading Rate * (l/m ² .d)	20.00
Surface Water **	☐	Discharge Rate (m ³ /hr)	0.05

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TREATMENT STANDARDS:

Treatment System Performance Standard (mg/l)	BOD	SS	NH ₄ - N	Total N	Total P
	20.00	30.00	20.00	5.00	2.00

QUALITY ASSURANCE:

Installation & Commissioning

Septic Tank & filter system to be installed by a competent person.
Manhole to be left available for inspection.

On-going Maintenance

Septic tank to be emptied annually and system inspected by homeowner regularly.

* Hydraulic loading rate is determined by the percolation rate of subsoil

** Water Pollution Act discharge licence required

7.0 SITE ASSESSOR DETAILS

Company: OMB & Associates

Prefix:

Mr.

First Name: Noel

Surname: Browne

Address:

10 Market St.
Skibbereen,
Co. Cork

Qualifications/Experience: MSc. BSc. Dip. Arch. Tech. 10 years + experience of percolation tests

Date of Report: 18/01/2014

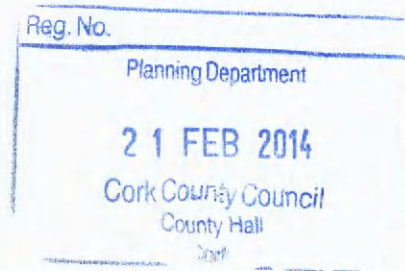
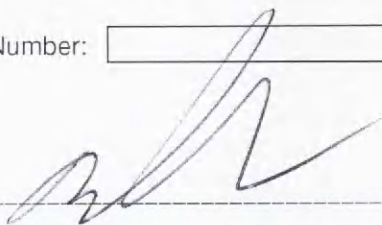
Phone: 028-21552

Fax: 028-21598

e-mail: noel@omb.ie

Indemnity Insurance Number:

Signature:





Percolation test hole.

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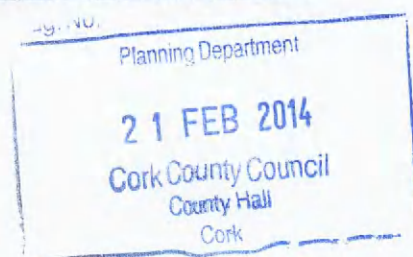
Test hole location.

Kieran O' Regan, application for poultry development
At: Knockbrown, Bandon, Co. Cork

24 JAN 2014



Trial Hole





Knockbrown Source Protection



Legend

- EPA Source Protection Area
- SI - Inner Protection Area
- SO - Outer Protection Area
- GSI Source Protection Area
- SI - Inner Protection Area
- SO - Outer Protection Area
- RBD Boundaries
- County Boundaries

2014

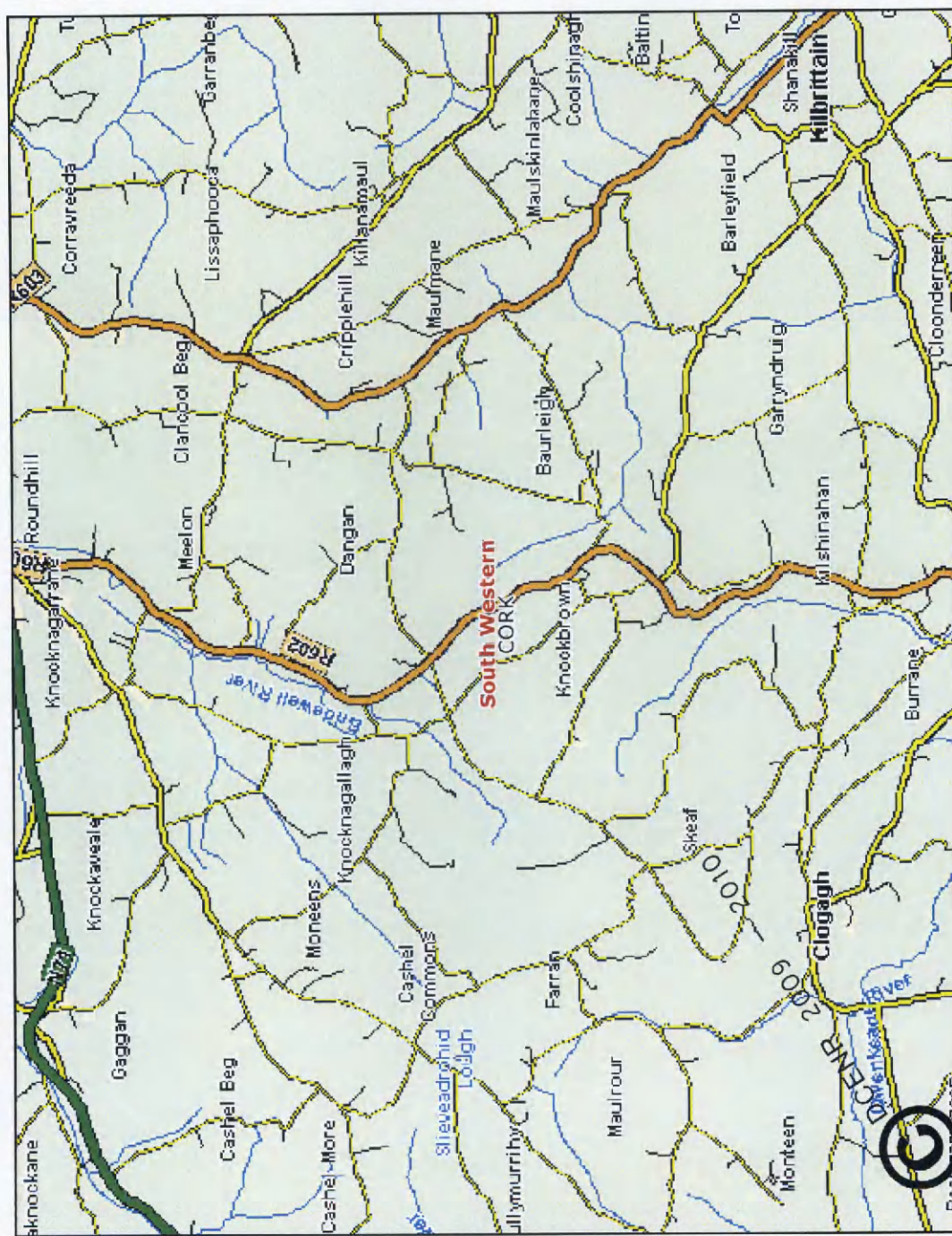
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Scale: 1:50,000



0 1250 2500 3750 m.

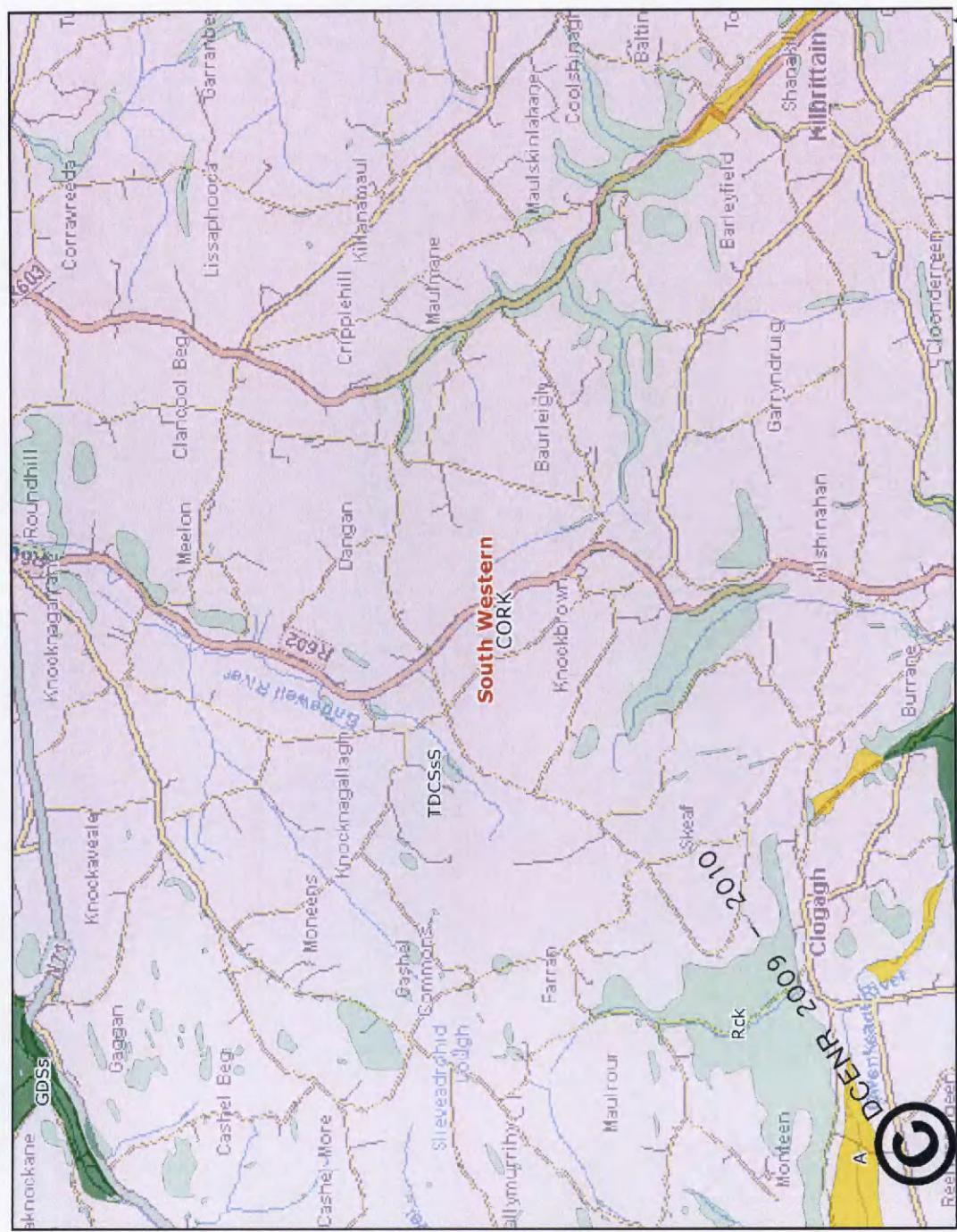
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Snapshot Date: 10-Jan-2013



Knockbrown Subsoils



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Snapshot Date: 10-Jan-2013



Legend

- EPA Source Protection Area
- SI - Inner Protection Area
- SI - Outer Protection Area
- GSI Source Protection Area
- SI - Inner Protection Area
- SI - Outer Protection Area
- RBD Subsoils
- Alluvium
- Beach sands and gravels
- Bedrock outcrop and subcrop
- Esker sands and gravels
- Glaciofluvial sands and gravels
- Lake sediments
- Made ground
- Marine/estuarine silts and clays
- Marsh
- Peat
- Screes
- Till derived chiefly from Devonian sandstones
- Till derived chiefly from Lower Palaeozoic rocks
- Till derived chiefly from Namurian rocks
- Till derived chiefly from granite
- Till derived chiefly from limestone
- Till derived chiefly from metamorphic rocks
- Till derived from metamorphic rocks
- Till derived from mixed Devonian and Carboniferous rocks
- Water
- Windblown sands
- RBD Boundaries
- County Boundaries

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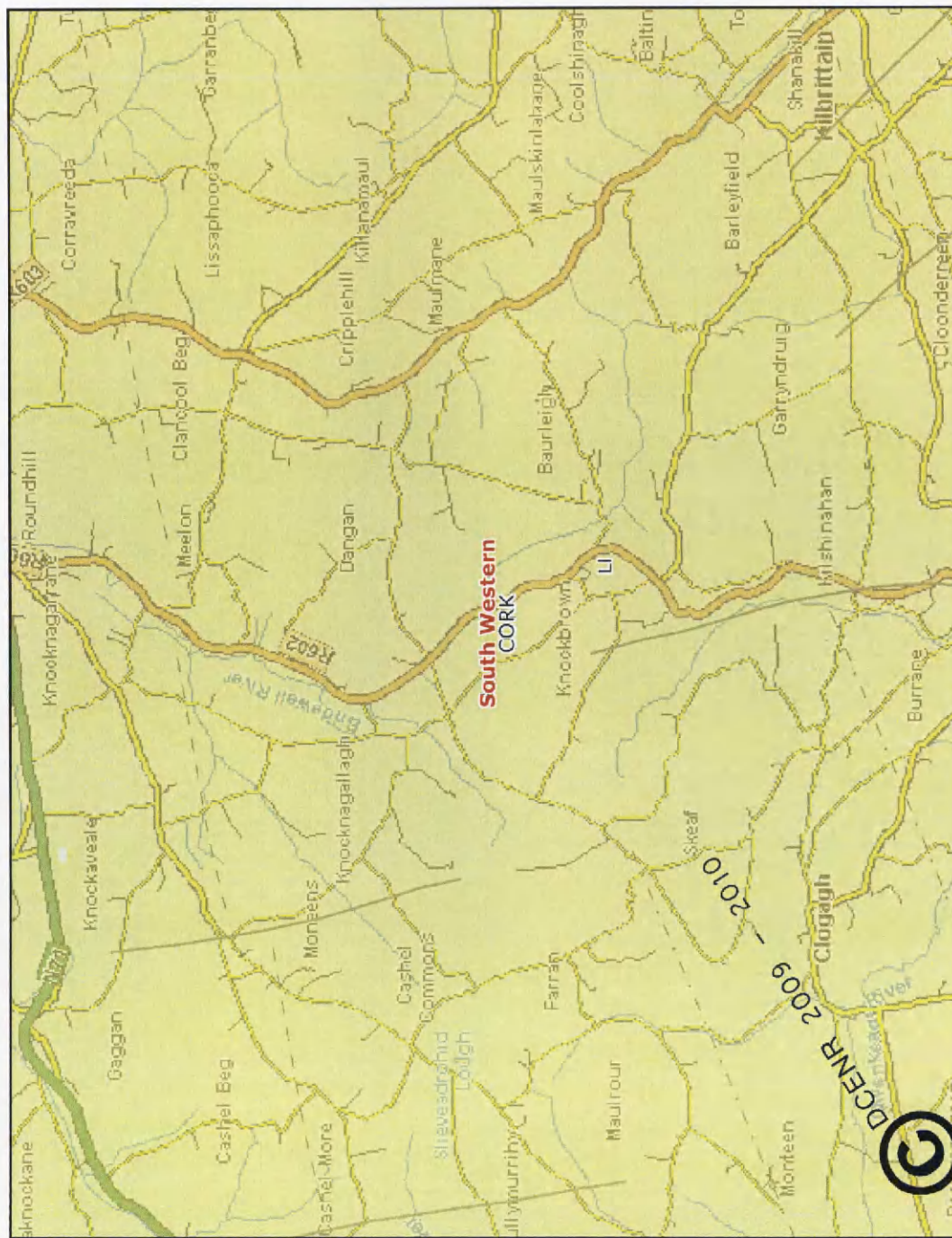
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Scale: 1:50,000



Knockbrown Aquifer



- Legend**
- National Draft Gravel Aquifer Map
- Rg - Regionally important, extensive sand/gravels aquifers
 - Lg - Locally important, sand/gravel aquifers
- National Draft Bedrock Aquifer Map
- Rt - Regionally Important Aquifer - Fissured bedrock
 - Rk - Regionally Important Aquifer - Karstified
 - Rkd - Regionally Important Aquifer - Karstified (diffuse)
 - Rkc - Regionally Important Aquifer - Karstified (conduit)
 - Lm - Locally Important Aquifer - Bedrock which is Generally Moderately Productive
 - Lk - Locally Important Aquifer - Karstified
 - LI - Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones
 - PL - Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones
 - Pu - Poor Aquifer - Bedrock which is Generally Unproductive
 - Unclassified
- Bedrock Faults 100k
- Anticlinal axis
 - Antiformal axis
 - Fault
 - line of cross section
 - Slide
 - Synclinal axis
 - Synformal axis
 - Thrust
- RBD Boundaries
- County Boundaries

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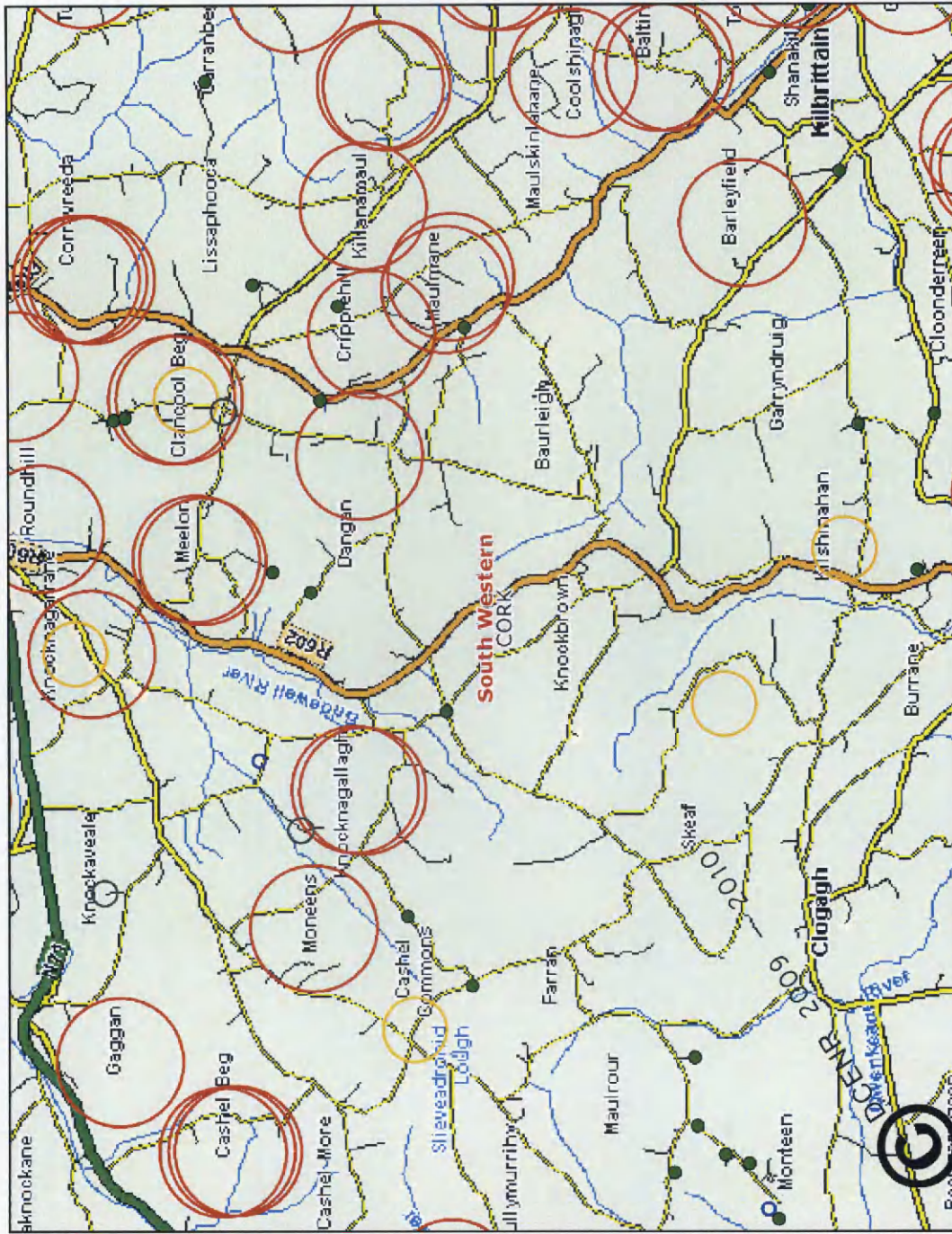
Map center: 147125, 49813

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Knockbrown Wells



0 1250 2500 3750 m.

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Legend

- Wells Accuracy within 10m to 50m
- Wells Accuracy within 100m
- Wells Accuracy within 200m
- Wells Accuracy within 500m
- Wells Accuracy within 1km
- RBD Boundaries
- County Boundaries

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Scale: 1:50,000

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Snapshot Date: 10-Jan-2013



Knockbrown Karst



Legend

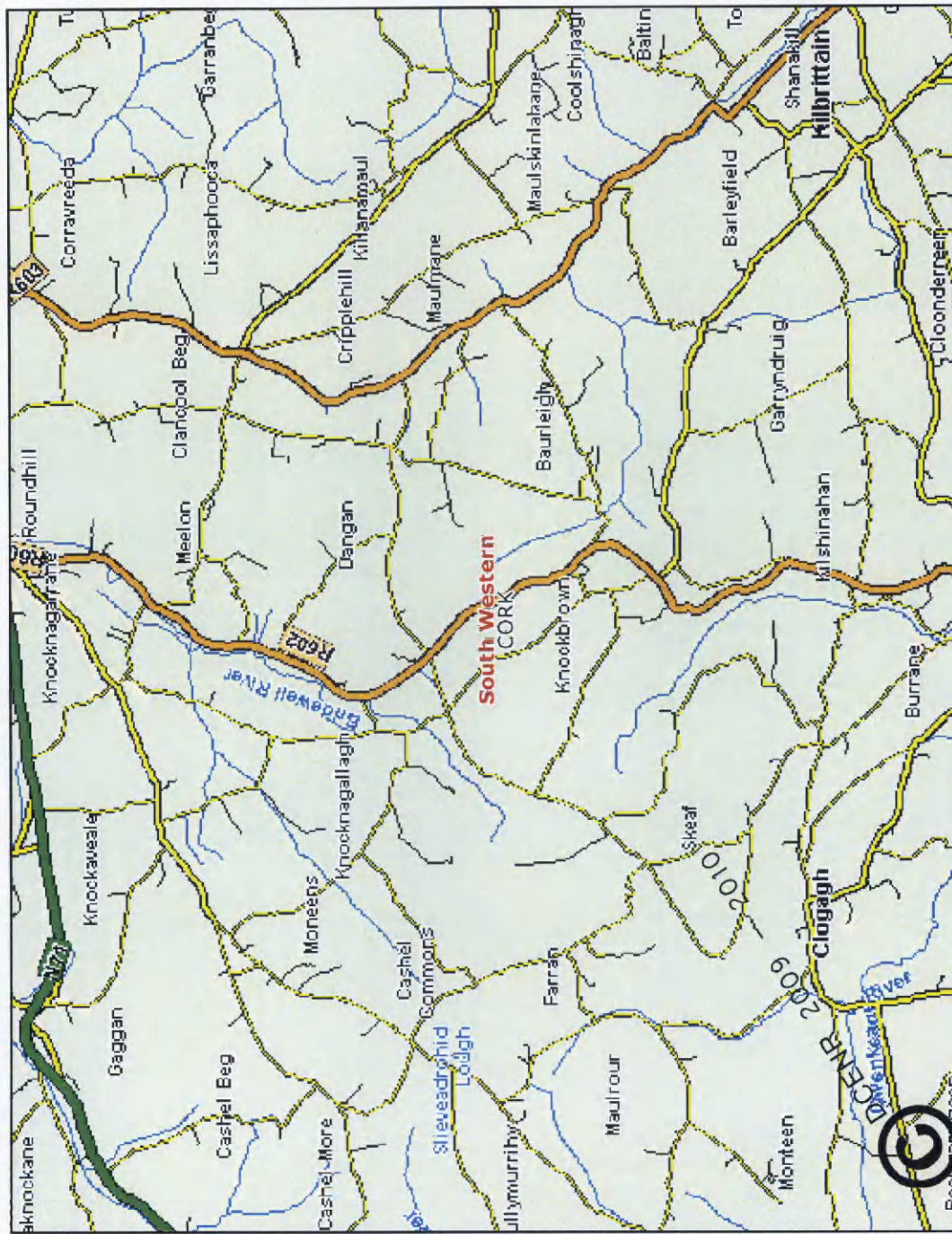
- Karst Features
 - Borehole
 - Cave
 - Dry Valley
 - Enclosed Depression
 - Estavelle
 - Spring
 - Superficial Solution Features
 - Swallow Hole
 - Turfrough
- Tracer Lines
- Tracer Output Site
- RBD Boundaries
- County Boundaries

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Scale: 1:50,000



0 1250 2500 3750 m.

Map center: 147125, 49813

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Map center: 147125, 49813

Snapshot Date: 10-Jan-2013



Legend

- | | |
|---|--|
| EPA Source Protection Area | |
| SI - Inner Protection Area | |
| SO - Outer Protection Area | |
| GSI Source Protection Area | |
| SI - Inner Protection Area | |
| SO - Outer Protection Area | |
| Vulnerability | |
| X (Rock near Surface or Karst) | |
| E - Extreme | |
| H - High | |
| M - Moderate | |
| L - Low | |
| HL - High to Low. Only an interim study took place. | |
| Water | |
| No Data Available | |
| RBD Boundaries | |
| County Boundaries | |

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Scale: 1:50,000

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Cork



Legend

- EPA Source Protection Area
- SI - Inner Protection Area
- SO - Outer Protection Area
- GSI Source Protection Area
- SI - Inner Protection Area
- SO - Outer Protection Area
- Bedrock Faults 100k

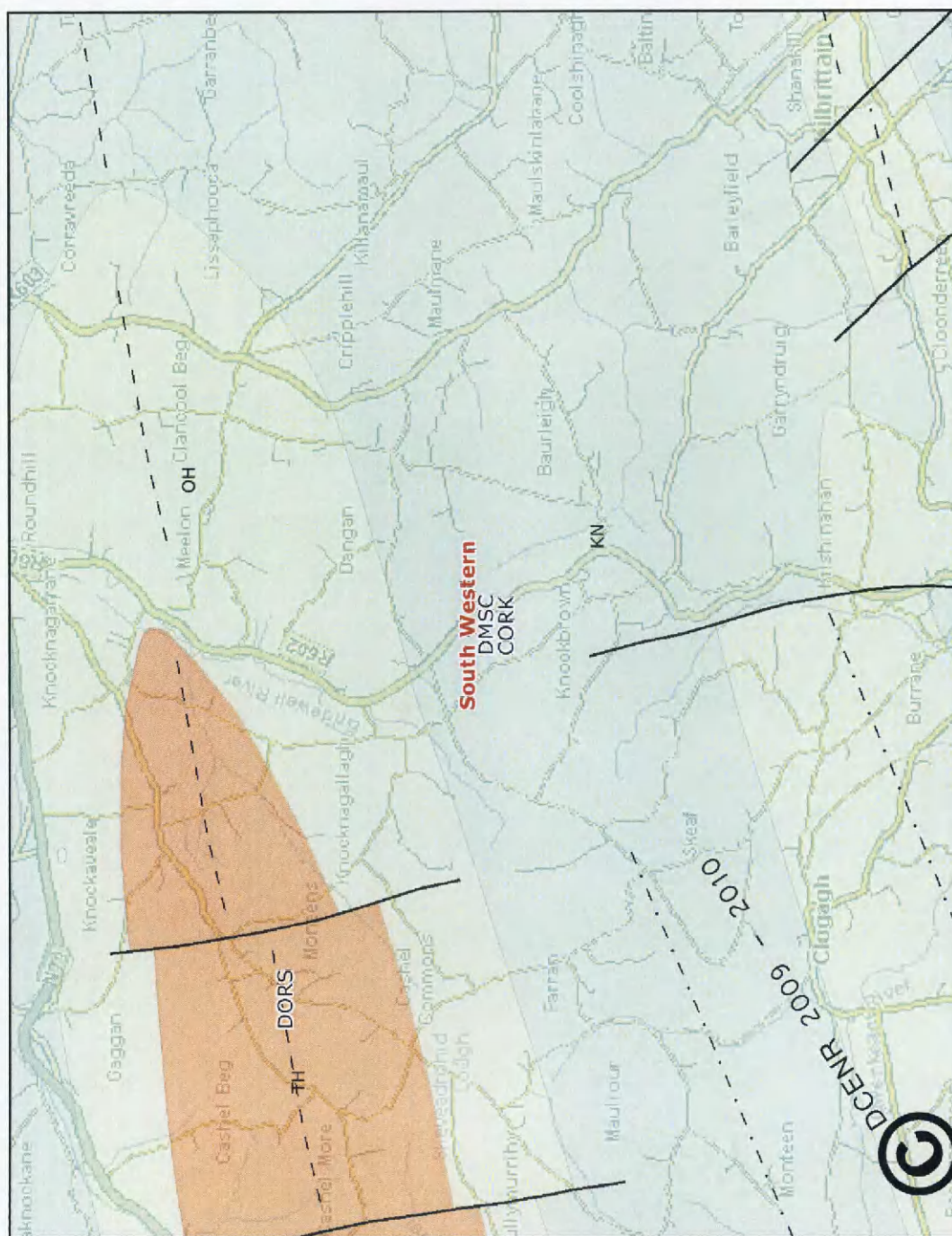
- Anticlinal axis
- Antiformal axis
- Fault
- line of cross section
- Slide
- Synclinal axis
- Synformal axis
- Thrust

National Draft Generalised Bedrock Map

- BV - Basalts and other Volcanic rocks
- CM - Cambrian Metasediments
- DDL - Dinantian Dolomitised Limestones
- DESSL - Dinantian early Sandstones, Shales and Limestones
- DKS - Devonian Kiltoran type Sandstones
- DUL - Dinantian Lower Impure Limestones
- DMSC - Dinantian Mudstones and Sandstones Cork Group
- MSSL - Dinantian Mixed Sandstones, Shales and Limestones
- DORS - Devonian Old Red Sandstones
- DPGL - Dinantian Pure Bedded Limestones
- DPUL - Dinantian Pure Unbedded Limestones
- DS - Dinantian Sandstones
- DSL - Dinantian Shales and Limestones
- DUL - Dinantian Upper Impure Limestones
- GIL - Granites and other Igneous Intrusive rocks
- NSA - Namurian Sandstones
- NSH - Namurian Shales
- NU - Namurian Undifferentiated
- OM - Ordovician Metasediments
- OV - Ordovician Volcanics
- PM - Precambrian Marbles

Scale: 1:50,000

Knockbrown Bedrock



Map center: 147125, 49813

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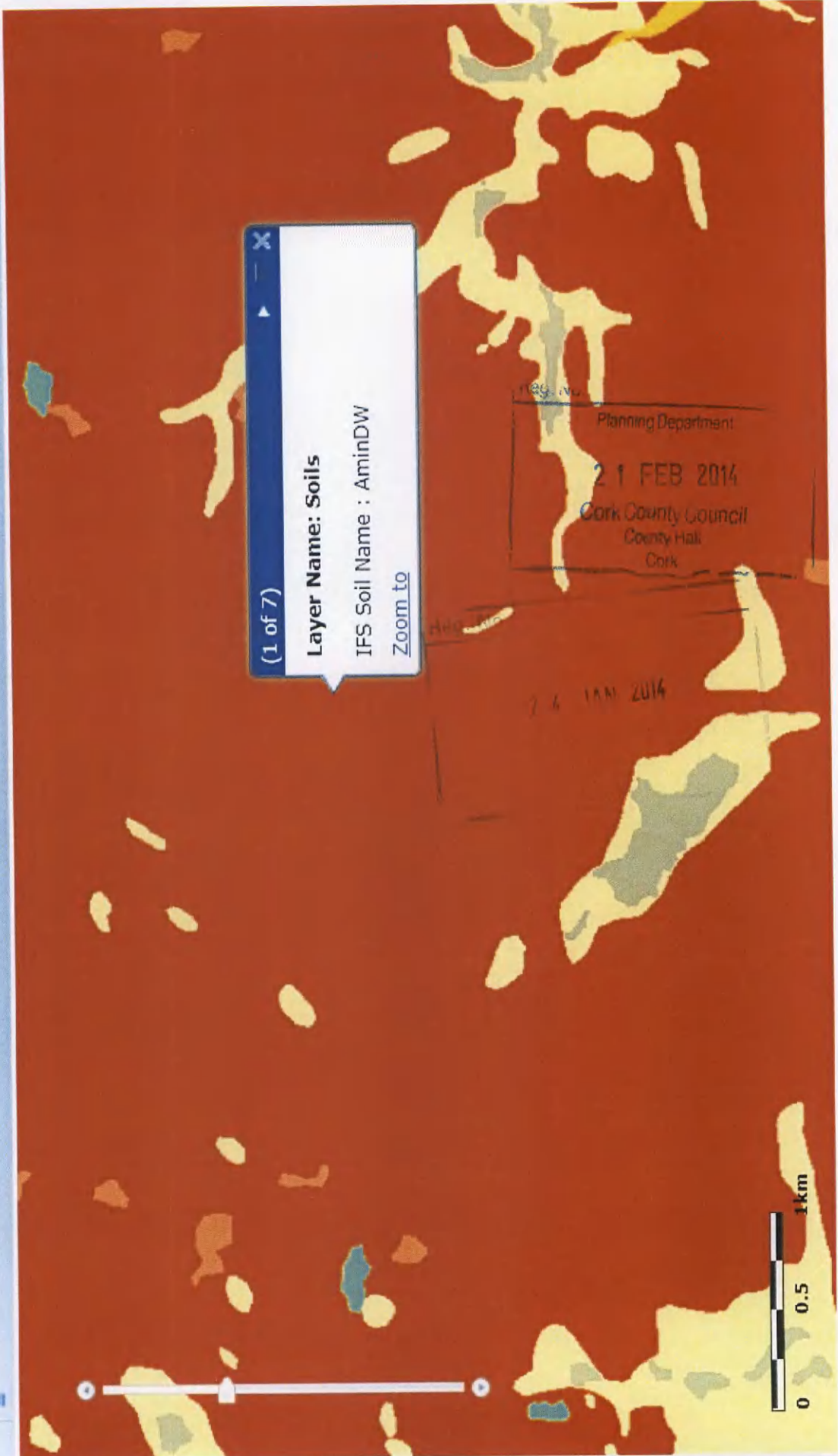
Snapshot Date: 10-Jan-2013

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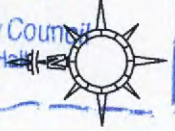
INFORMATION



Areas

21 FEB 2014

Cork County Council
County Hall
Cork



SITE LOCATION MAP

Applicant: Kieran O'Regan
Application for: Poultry Development
At: Knockbrow, Bandon, Co. Cork
Site Marked by X

O.S.S. No.:
Scale - 1:50000.
O.S. License No. AR0030902

