

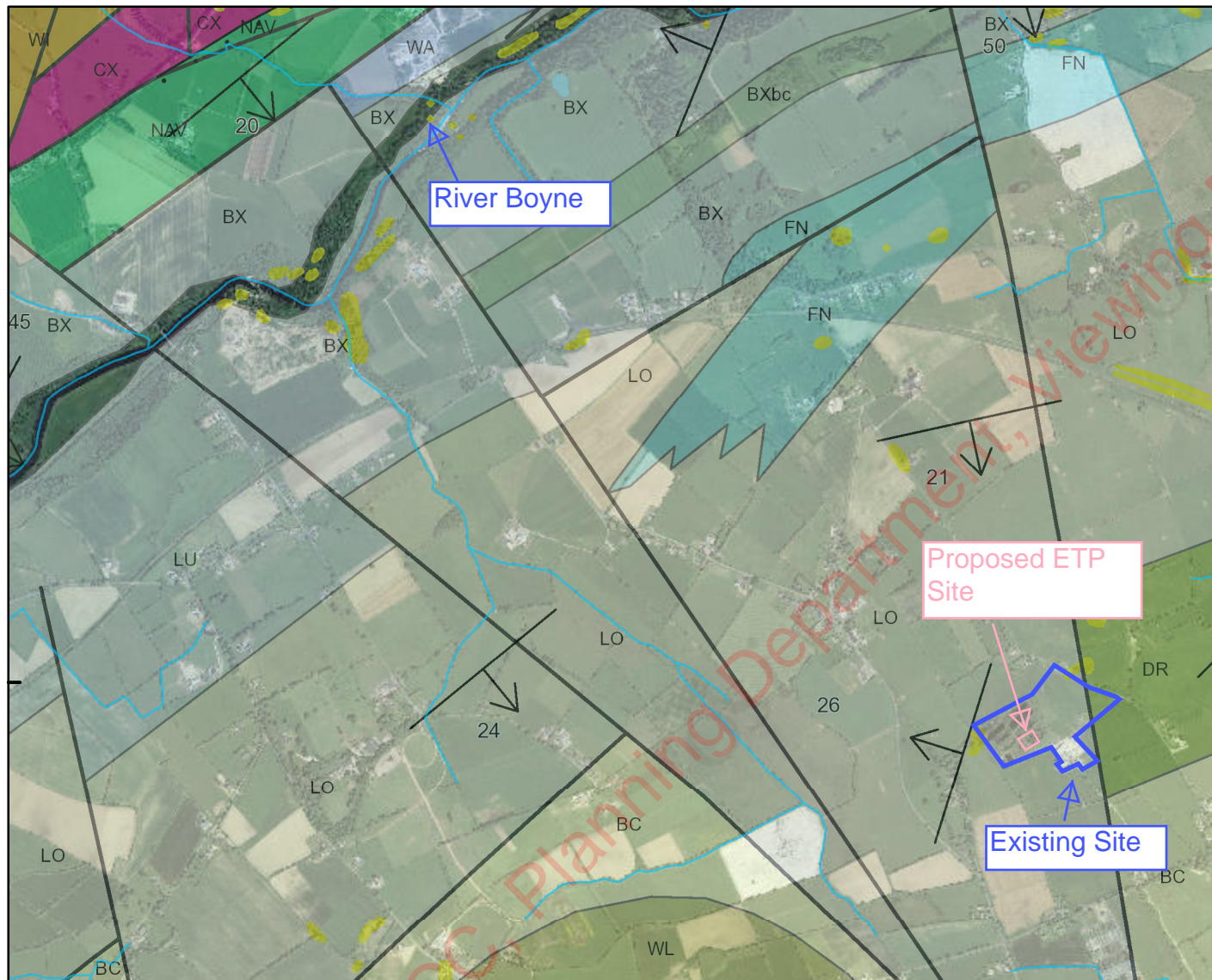
APPENDIX A

GSI Webmapping

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Figure 1 - Bedrock Geology and Structural Geology



Legend

- EPA River Segments
- EPA Lake Segment
- Structural Symbol Labels
- Bedrock Structure Symology**
 - Bedding or main foliation, old GSI data
 - Contorted bedding or main foliation, old GSI data
 - First foliation parallel to bedding
 - Foliation trend, Thor and Rosses Granite
 - Horizontal Bedding
 - Horizontal first generation fold axis
 - Horizontal second generation fold axis
 - Strike and Dip of Bedding, right way up
 - Strike and Dip of Bedding, way up unknown
 - Strike and Dip of First Foliation
 - Strike and Dip of Foliation
 - Strike and Dip of Second Foliation
 - Strike and Dip of overturned Bedding
 - Strike and plunge of first generation fold axis
 - Strike and plunge of second generation fold axis
 - Strike and plunge of third generation fold axis
 - Strike of Shear fabric
 - Strike of vertical Bedding
 - Strike of vertical First Foliation
- Bedrock Structure**
 - 10A0-2
 - 10A1-1
 - Anticline S1
 - 10A2-1
 - Anticline F2
 - Anticline F3
 - Anticline F4
 - Anticline F5
 - 10S0-2
 - 10S1-1
 - 10S2-1
 - Syncline S1
 - 10S2-2
 - Syncline S2
 - Syncline S3
 - Syncline S5
 - 11F1-2
 - 11S1-1
 - Early Slide
 - 11S2-1
 - 11S2-2
 - 11T1-2
 - 11T2-2
 - Outcrop
- Bedrock Stratigraphy**
 - Boundary of Igneous Intrusion
 - Dyke
 - Unconformity
 - Formation lines
 - Boundary of dolomitization
 - Outer limit of metamorphic aureole
 - Outer limit of higher grade aureole
 - Lithological Boundary
 - Shear Zone Boundary
 - Ghost line
 - Coal seam/Tertiary dolomite dyke
 - Metadolerite sheet/...Limit of granite sheeting(Ox Mountains)
 - 3Z

Scale: 1:25,000

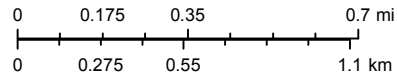
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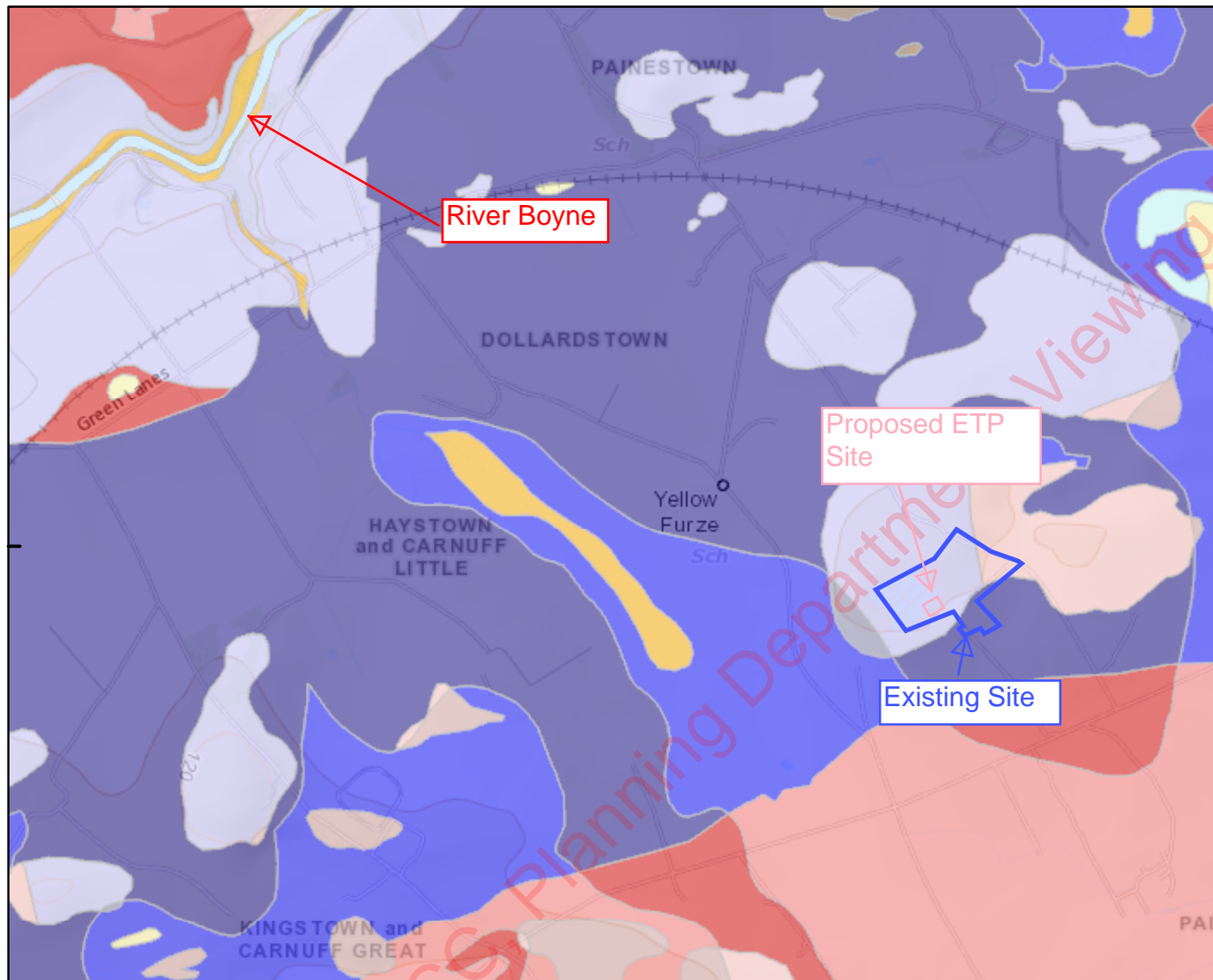


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Snapshot Date: April 20, 2017

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Figure 2 - Teagasc Soils Map



Legend

Teagasc Soils

- AminDW - Deep well drained mineral (Mainly acidic)
- AminPD - Mineral poorly drained (Mainly acidic)
- AminPDPT - Peaty poorly drained mineral (Mainly acidic)
- AminSW - Shallow well drained mineral (Mainly acidic)
- AminSP - Shallow poorly drained mineral (Mainly acidic)
- AminSPPT - Shallow peaty poorly drained mineral (Mainly acidic)
- AminSRPT - Shallow, rocky, peaty/non-peatymineral complexes (Mainly acidic)
- BminDW - Deep well drained mineral (Mainly basic)
- BminPD - Mineral poorly drained (Mainly basic)
- BminPDPT - Peaty poorly drained mineral (Mainly basic)
- BminSW - Shallow well drained mineral (Mainly basic)
- BminSP - Shallow poorly drained mineral (Mainly basic)
- BminSPPT - Shallow peaty poorly drained mineral (Mainly basic)
- BminSRPT - Shallow, rocky, peaty/non-peatymineral complexes (Mainly basic)
- BktPt - Blanket peat
- FenPt - Fen peat
- RsPt - Raised Peat
- Cut - Cutover/cutaway peat
- AlluvMIN - Alluvial (mineral)
- AlluvMRL - Alluvial (marl)
- Lac - Lacustrine type soils
- Scree - Scree
- AeoUND - Aeolian undifferentiated
- MarSands - Marine sand and gravel
- MarSed - Marine/estuarine sediments
- Made - Made ground
- Water - Water
- Unclass

Scale: 1:25,000

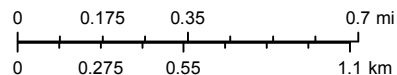
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Figure ' - Teagasc Subsoil Map



Scale: 1:25,000

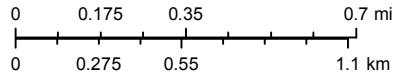
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Legend

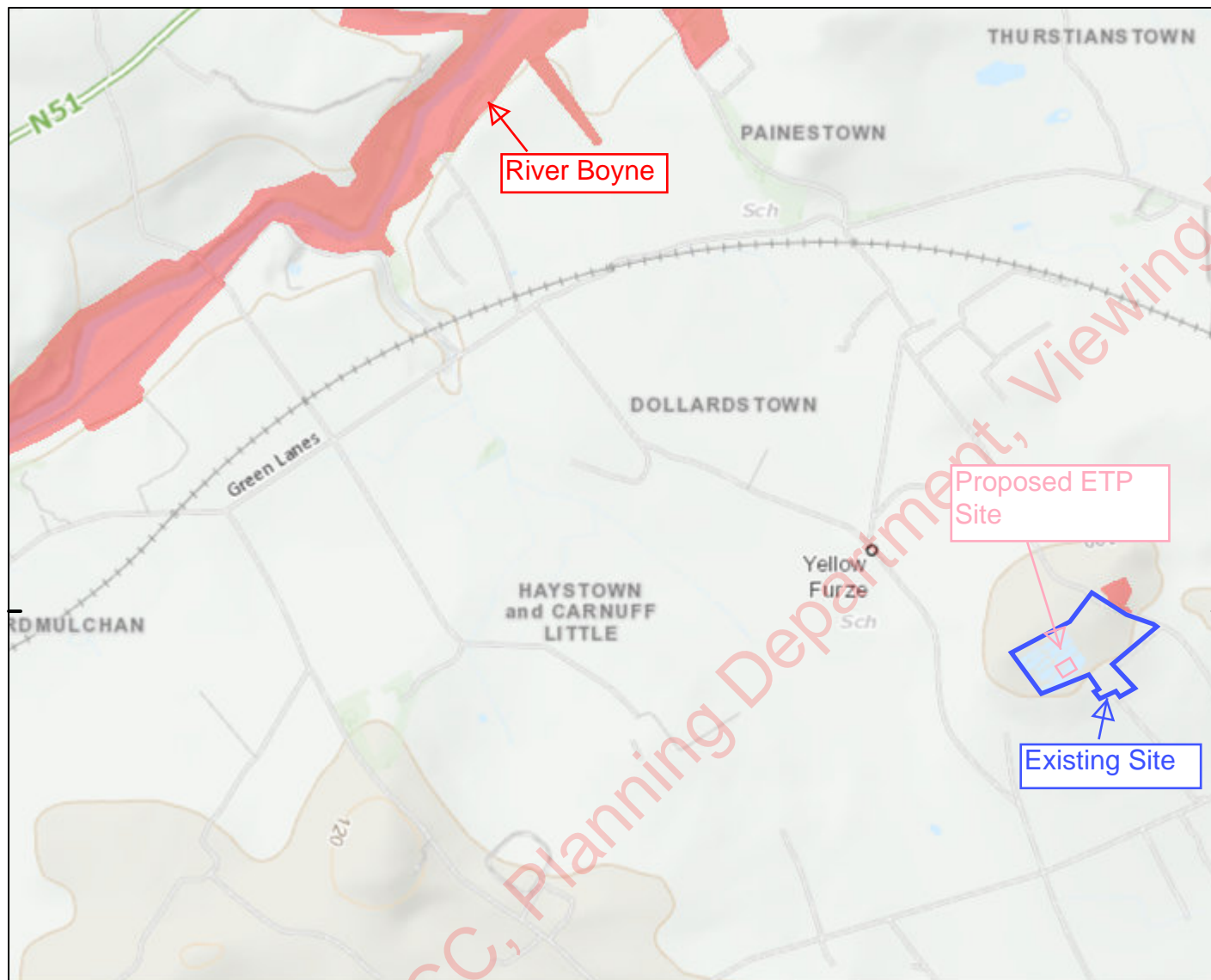
- EPA River Segments
- EPA Lake Segment
- Teagasc Subsoils**
 - A - Alluvium
 - Ac - Alluvium (clayey)
 - Ag - Alluvium (gravelly)
 - Asi - Asi
 - BktPt - Blanket peat
 - FenPt - Fen peat
 - RsPt - Raised peat (intact)
 - Cut - Cutover raised peat
 - AcEsk - Esker comprised of gravels of acidic reaction
 - BasEsk - Esker comprised of gravels of basic reaction
 - Gbi - Gravels derived from basic igneous rocks
 - GCh - Gravels derived from cherts
 - GCSs - Gravels derived from Cambrian sandstones
 - GCSsS - Gravels derived from Cambrian sandstones and shales
 - GDCSs - Gravels derived from Devonian and Carboniferous sandstones
 - GDSs - Gravels derived from Devonian sandstones
 - GLPDSs - Gravels derived from Lower Palaeozoic and Devonian sandstones
 - GLPS - Gravels derived from Lower Palaeozoic shales
 - GLPSs - Gravels derived from Lower Palaeozoic sandstones
 - GLPSSs - Gravels derived from Lower Palaeozoic sandstones and shales
 - GLs - Gravels derived from limestones
 - GNSs - Gravels derived from Namurian sandstones and shales
 - GMp - Gravels derived from metamorphic rocks
 - GGr - Gravels derived from granites
 - GQz - Gravels derived from quartzites
 - Rck - Bedrock outcrop or subcrop
 - KaRck - Karstified bedrock outcrop or subcrop
 - Scree - Scree
 - L - Lacustrine sediments
 - Lc - Lacustrine clays
 - Ls - Lacustrine sands
 - Lsi - Lacustrine silts
 - Mri - Lake marl
 - MGs - Marine gravels and sands (often raised)
 - Mbs - Marine beach sands
 - Msi - Marine silts
 - Mc - Marine clays
 - Mesc - Estuarine silts and clays
 - Marsh - Marsh
 - TdMr - Tidal marsh
 - Aeo - Aeolian sediments
 - Ws - Windblown sands
 - Wsd - Windblown sands in dunes
 - Made - Made ground
 - IrSTAv - Irish Sea Till derived from acid volcanic rocks
 - IrSTCSs - Irish Sea Till derived from Cambrian sandstones and shales
 - IrSTDs - Irish Sea Till derived from Devonian sandstones
 - IrSTLPSs - Irish Sea Till derived from Lower Palaeozoic sandstones and shales
 - IrSTLs - Irish Sea Till derived from limestones
 - TAv - Till derived from acid volcanic rocks
 - TBi - Till derived from basic igneous rocks
 - TCh - Till derived from cherts
 - TCSsCh - Till derived from Carboniferous sandstones and cherts
 - TCSSs - Till derived from Cambrian sandstones and shales
 - TDCSs - Till derived from Devonian and Carboniferous sandstones
 - TDCSSs - Till derived from Devonian and Carboniferous sandstones and shales
 - TDSs - Till derived from Devonian sandstones
 - TGr - Till derived from granites
 - TLPDSs - Till derived from Lower Palaeozoic and Devonian sandstones
 - TLPS - Till derived from Lower Palaeozoic shales
 - TLPSs - Till derived from Lower Palaeozoic sandstones
 - TLPSsS - Till derived from Lower Palaeozoic sandstones and shales
 - TLs - Till derived from limestones
 - TMP - Till derived from metamorphic rocks
 - TNSSs - Till derived from Namurian sandstones and shales
 - TNCSSs - Till derived from Namurian and Carboniferous sandstones and shales
 - TQz - Till derived from quartzites
- Water



Figure (-Geological Heritage

Legend

- Heritage Site Audited Boundaries
- Heritage Sites
- Unaudited Boundaries

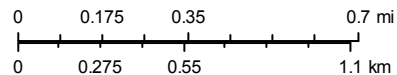


Scale: 1:25,000

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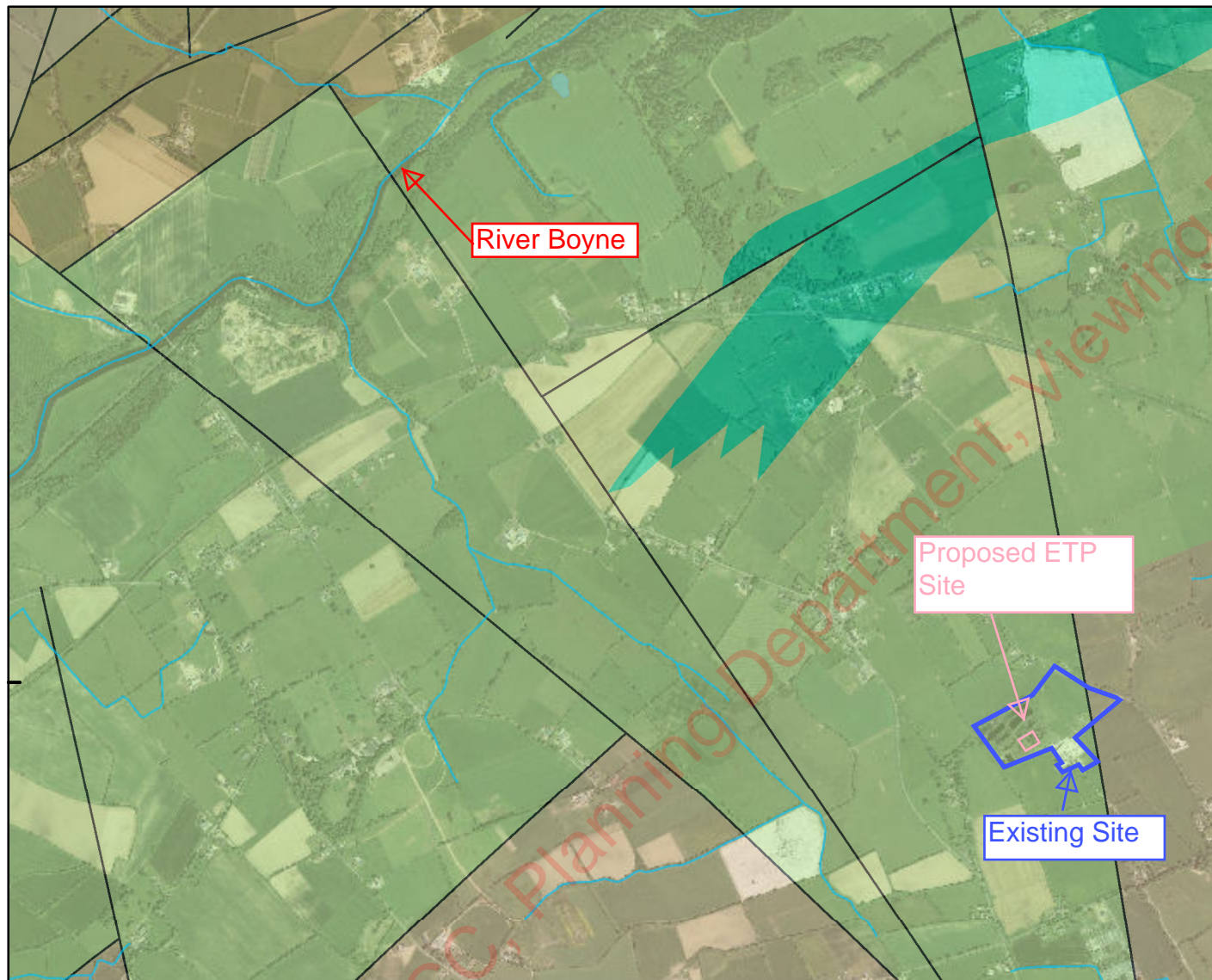


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Figure) - Aquifer Map



Legend

- EPA River Segments
- EPA Lake Segment
- Bedrock Aquifer Faults
- Gravel Aquifer**
 - Locally Important Gravel Aquifer
 - Regionally Important Gravel Aquifer
- Bedrock Aquifer**
 - Rkc - Regionally Important Aquifer - Karstified (conduit)
 - Rkd - Regionally Important Aquifer - Karstified (diffuse)
 - RK - Regionally Important Aquifer - Karstified
 - Rf - Regionally Important Aquifer - Fissured bedrock
 - 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
 - Pf - Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones
 - Pu - Poor Aquifer - Bedrock which is Generally Unproductive
- Lake

Scale: 1:25,000

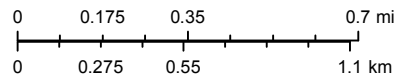
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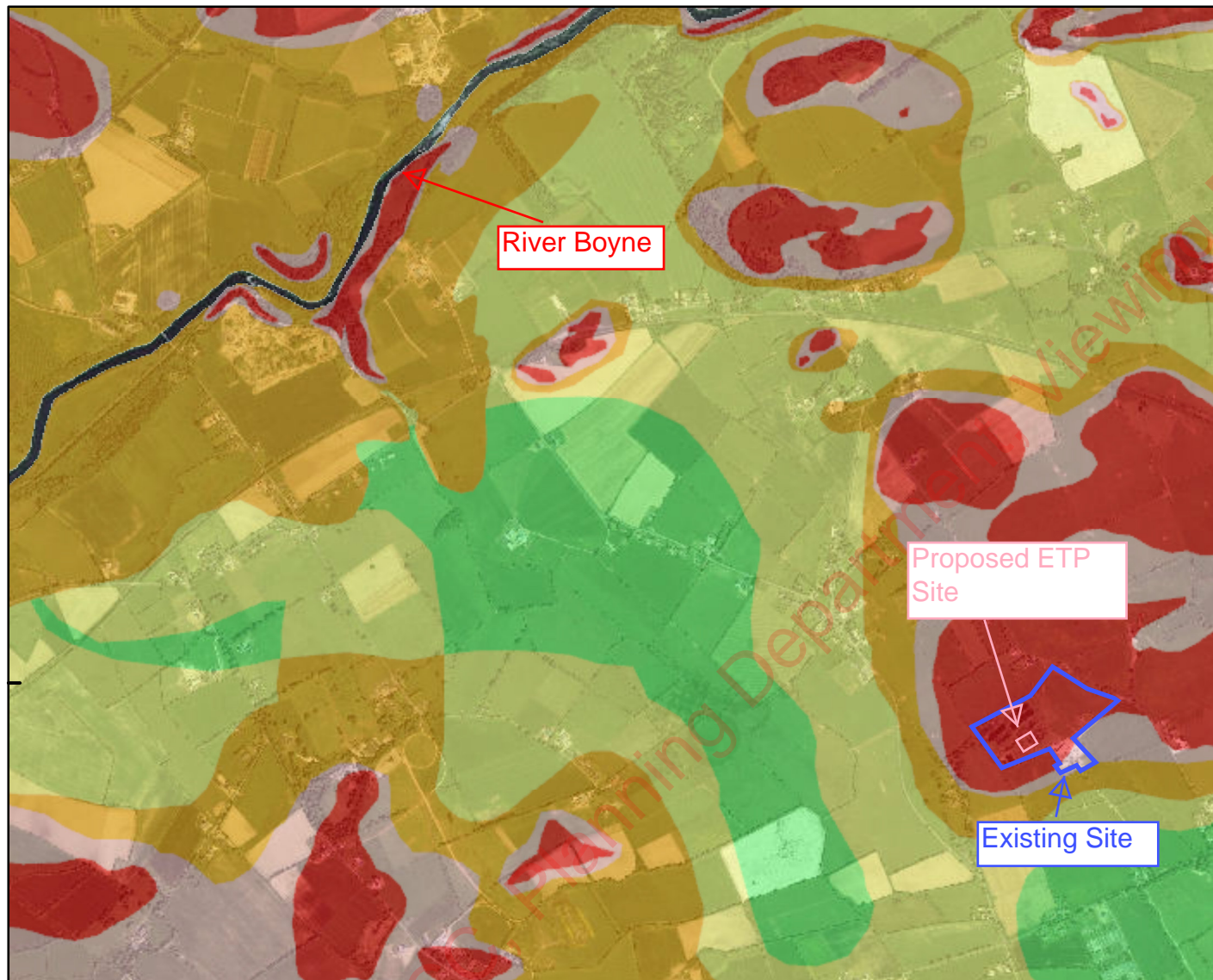
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Figure * - Groundwater Vulnerability Map



Legend

Groundwater Vulnerability

- X - Rock at or near surface or Karst
- E - Extreme
- H - High
- M - Moderate
- L - Low
- W - Water

Scale: 1:25,000

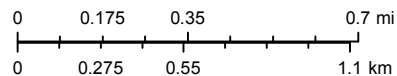
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Snapshot Date: April 20, 2017

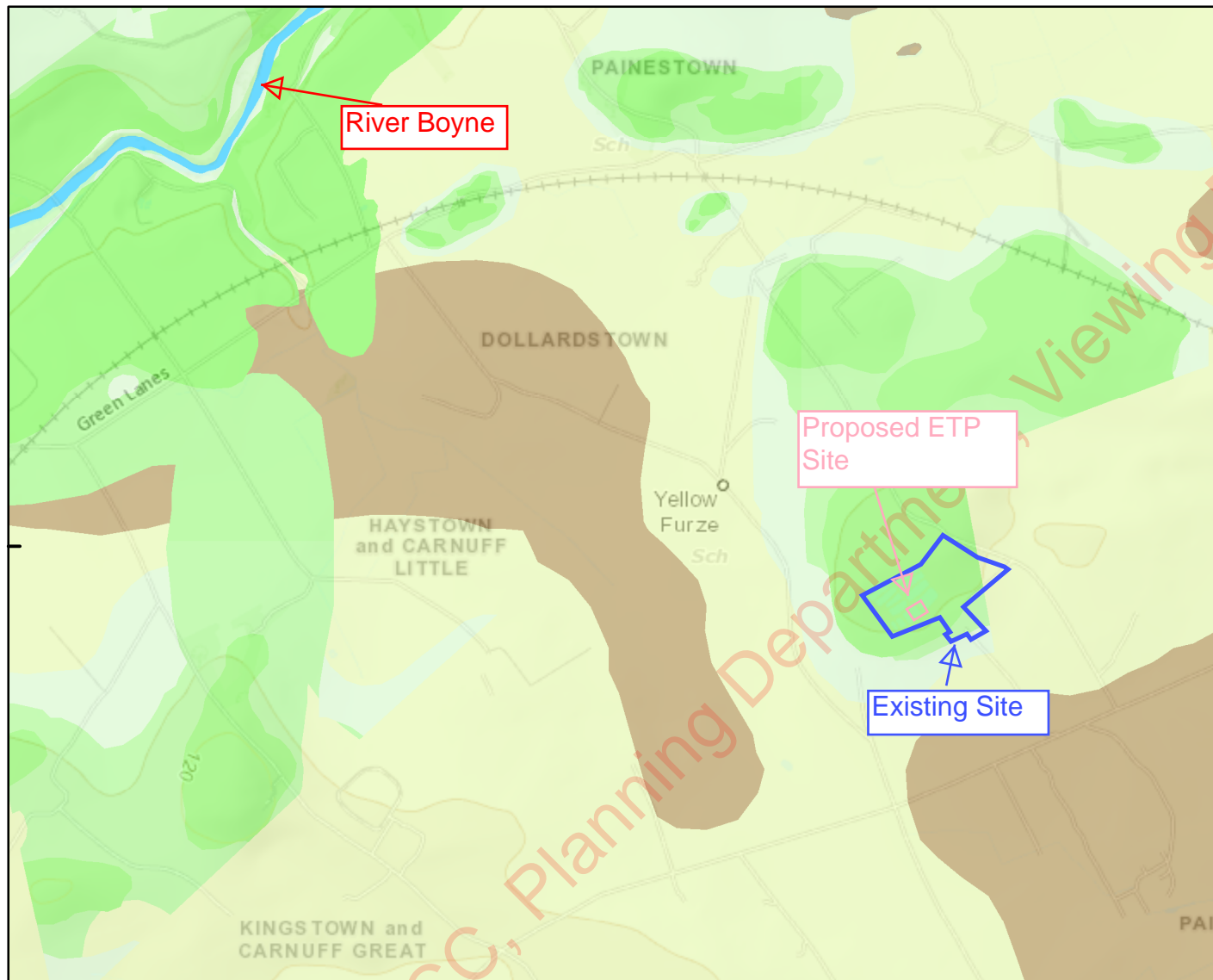
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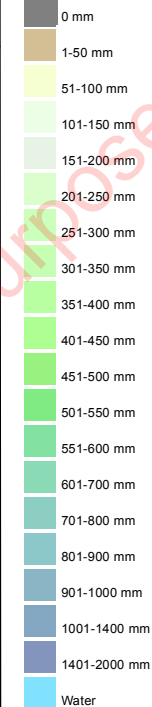


Figure 7 - Recharge Map



Legend

Groundwater Recharge (mm/yr)



Scale: 1:25,000

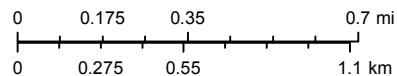
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APPENDIX B

Trial Pit Logs

Meath CC, Planning Department, Viewing Purposes Only!

		<u>Geotechnical & Environmental Services</u> Campus Innovation Centre, Green Rd., Carlow.				Trial Hole	
						TH1	
		Ph: 059-9130314 Fax: 059-9140499				Sheet 1 of 1	
Method: Excavation		Date: 16/01/07		Site: Greenhills, Beauparc, Navan, Co. Meath			
Dia.mm:		Coords:		G.L.mO.D.		Client: Dunbia Slane	
Soil Samples		Water & Progress		Depth (m)		Description of Strata	
Type test	Depth					Legend	
				-0.00m			
				-0.50 -0.60		Light Brown Slightly Sandy Clay Topsoil	
				-1.00 -1.30		Stiff Slightly Gravelly Silty Clay	
				-1.50 -2.00 -2.50 -3.00 -3.50 -4.00 -5.00		End of Trial Hole	
Remarks:				Logged by: EF		Scale: 1/25	
				End Casing Depth:		Job No: 07-08	



Geotechnical & Environmental Services

Campus Innovation Centre,
Green Rd.,
Carlow.

Ph: 059-9130314
Fax: 059-9140499

Trial Hole

TH2

Sheet 1 of 1

Method: Excavation		Date: 16/01/07		Site: Greenhills, Beauparc, Navan, Co. Meath	
Dia.mm:		Coords:		G.L.mO.D.	
Client: Dunbia Slane					
Soil Samples		Water& Progress		Depth (m)	
Type test		Depth		Description of Strata	
				Legend	
		-0.00m		Light Brown Sandy Clay Topsoil	
		-0.40			
		-0.50		Brown Gravelly Clay in angular fragments with Cobbles	
		-1.00			
		-1.40			
		-1.50		End of Trial Hole	
		-2.50			
		-3.00			
		-3.50			
		-4.00			
		-5.00			
Remarks: 1. Trial Hole groundlevel 1.2m below base of wetland system.				Logged by: EF	
				Scale: 1/25	
				End Casing Depth:	
				Job No: 07-08	



Geotechnical & Environmental Services

Campus Innovation Centre,
Green Rd.,
Carlow.

Ph: 059-9130314
Fax: 059-9140499

Trial Hole

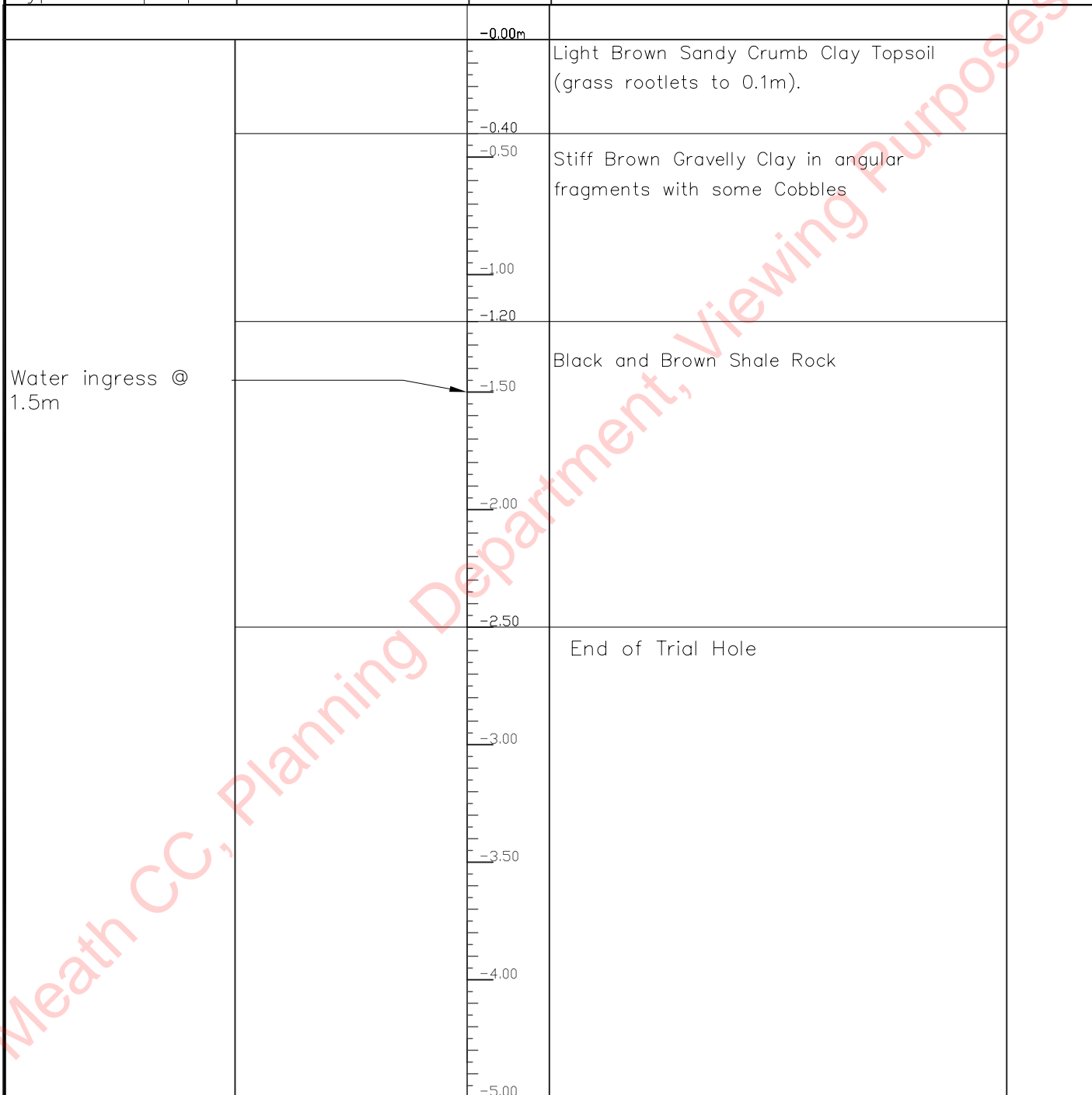
TH3

Sheet 1 of 1

Method: Excavation Date: 09/01/07 Site: Greenhills, Beuparc,
Navan, Co. Meath

Dia.mm: Coords: G.L.mO.D. Client: Dunbia Slane

Soil Samples		Water & Progress	Depth (m)	Description of Strata	Legend
Type test	Depth				



Remarks:

1. Trial Hole groundlevel 1.5m below base of wetland system.

Logged by:

Scale:

End Casing Depth:

Job No:

EF

1/25

07-08



Geotechnical & Environmental Services

Campus Innovation Centre,
Green Rd.,
Carlow.

Ph: 059-9130314
Fax: 059-9140499

Trial Hole

TH4

Sheet 1 of 1

Method:	Excavation	Date:	09/01/07	Site:	Greenhills, Beauparc, Navan, Co. Meath
Dia.mm:	Coords:	G.L.mO.D.		Client:	Dunbia Slane

Soil Samples		Water & Progress	Depth (m)	Description of Strata	Legend
Type test	Depth				
			-0.00m		
			-0.50 -0.60	Slightly Sandy Light Brown Topsoil (tree rootlets to 0.1m–0.2m).	
			-1.00 -1.50 -1.60	Stiff Light Brown Silty Gravelly Clay in Stiff angular fragments.	
			-2.00	Black and Brown Shale Rock	
			-2.50 -3.00 -3.50 -4.00 -5.00	End of Trial Hole	

Remarks:

1. Trial Hole groundlevel 1.2m below base of
wetland system.

Logged by:

EF

Scale:

1/25

End Casing Depth:

Job No:

07-08

APPENDIX C

Irish Geological Heritage

Meath CC, Planning Department, Viewing Purposes Only!

MEATH - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	Painestown Quarry		
Other names used for site			
IGH THEME:	IGH 8 (Lower Carboniferous)		
TOWNLAND(S)	Painestown		
NEAREST TOWN	Slane		
SIX INCH MAP NUMBER	26		
NATIONAL GRID REFERENCE	295350 270000 = N 9535 7000		
1:50,000 O.S. SHEET NUMBER	43	1/2 inch Sheet No.	13

Outline Site Description

A disused quarry now heavily vegetated.

Geological System/Age and Primary Rock Type

Lower Carboniferous (Viséan) thin to medium bedded limestone and shale of the Loughshinny Formation.

Main Geological or Geomorphological Interest

This disused quarry has cut into thinly bedded limestone and shale, which displays a series of angular, zig-zag folds called chevron folds. These occur when pressure is exerted on thinly bedded sequences of alternating rocks, where one rock type (limestone) is competent and the other (shale) is incompetent. These features are also found in the same rock formation along the coast at Loughshinny.

Site Importance

This is a spectacular and easily accessible example of chevron folds, which could make an excellent teaching locality. It complements the example of coastal geology at Loughshinny. It should become a County Geological Site.

Management/promotion issues

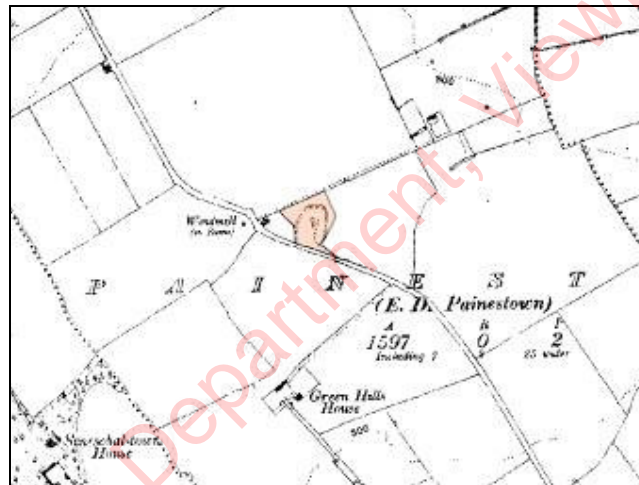
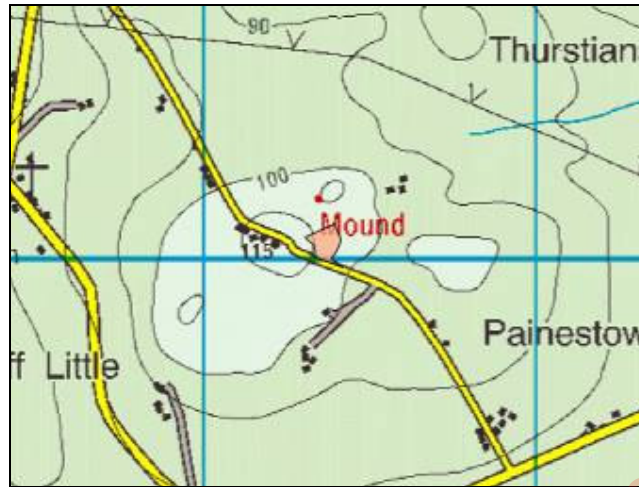
This site is found just off a third class road and is on private agricultural land, which is occasionally used for grazing cattle. Access to the site is through a farm gate along the road. This is not suitable for general promotion without suitable arrangements being made with the landowner. Only one exposed face still remains within the old quarry as the rest of the site has been filled in. It is important to keep this last face exposed and if possible, relatively free of vegetation cover.



Left: Exposed quarry face displaying excellent examples of chevron folding.

Right: A closer look at the zig-zag shaped folds. The limbs of the folds usually form at a 45°- 60° angle, as seen here at Painestown.

Painestown Quarry



MEATH - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	Boyne Valley
Other names used for site	Boyne Terraces
IGH THEME:	IGH 7 (Quaternary)
TOWNLAND(S)	Numerous
NEAREST TOWN	Navan, Slane, Drogheda
SIX INCH MAP NUMBER	18, 19, 20, 25, 26
NATIONAL GRID REFERENCE	298000 273000 = N 98 73
1:50,000 O.S. SHEET NUMBER	42, 43 1/2 inch Sheet No. 13

Outline Site Description

River valley.

Geological System/Age and Primary Rock Type

Quaternary deposits, channels and terraces of a relict glaciofluvial system.

Main Geological or Geomorphological Interest

The Boyne Valley is a characteristic glacially modified lowland valley formed during the last Ice Age (before c. 10,000 years ago). It is characterised by hummocky topography and steep sided valley walls that have cut into the surrounding landscape. Features within the valley include suites of glaciofluvial and delta terraces. These are significant linear shelves generally subparallel to the meanders along the river gorge. The terraces were formed by the meandering of the river after the channel had been deepened by large volumes of glacial meltwater. The Boyne Valley is complimented by many glacial meltwater channels, which feed into the Boyne system from either side.

Site Importance

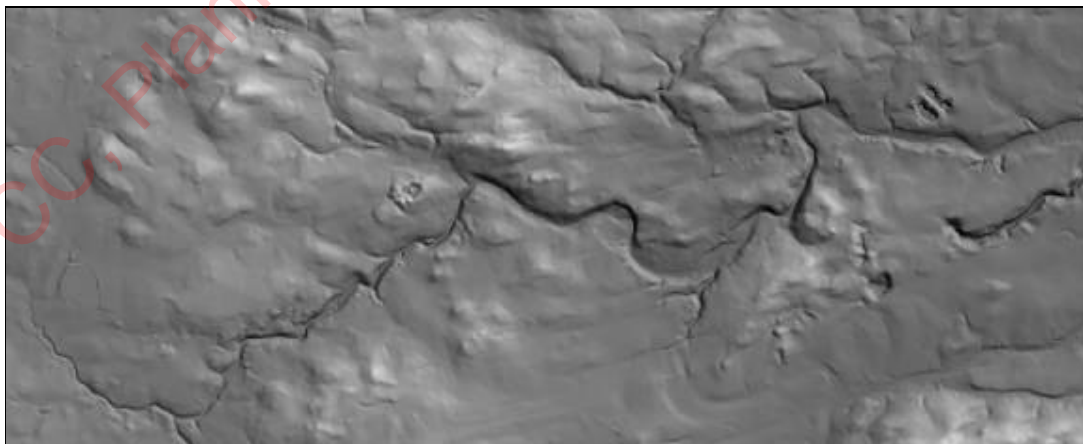
This is a nationally important example of a glacially derived valley, with easily accessible features along both sides of the Boyne River. It is an excellent teaching locality and is commonly used by the public for recreational purposes (walking, canoeing, etc). Many of the important glacial features detailed above already lie within the Boyne Woods NHA (01592) and the River Boyne SAC (02299).

Management/promotion issues

This is a well maintained stretch of the River Boyne with many sites along its banks detailing significant sections of Ireland's history. The addition of signage would greatly enhance people's awareness of this area's equally significant geological history.



Above: The Boyne Valley, beside Slane. This broad, flat, steep sided glacial valley represents a period in Meath's geological history, when the land was dominated by massive, slow moving ice sheets and the large volume of erosive meltwater they generated.



Top: A delta terrace (terrace or slope left behind by an ancient meandering river channel).
 Middle: The River Boyne with its steep sided wooded banks (commonly used for recreational sports such as kayaking).
 Bottom: Digital elevation model (DEM) illustrating the pronounced glacially derived valley that is cut into the Meath landscape.

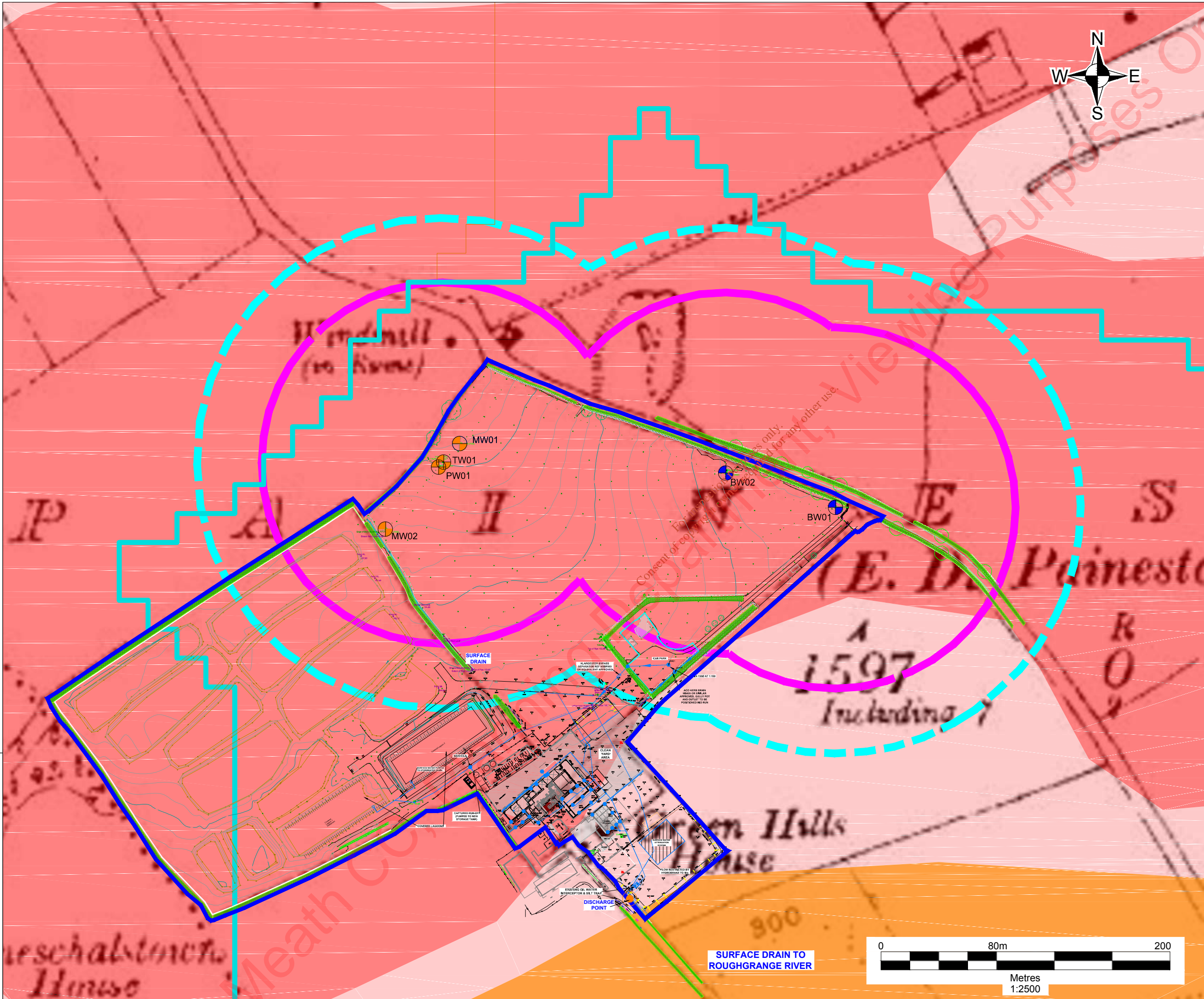
Boyne Valley



APPENDIX D

SLR Well Source Protection Zones

Meath CC, Planning Department, Viewing Purposes Only!



NOTES

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2. Based on Digital 25 inch OSI Mapping No. 2440 provided by Ordnance Survey Ireland

LEGEND

DUNBIA (SLANE)
LAND OWNERSHIP (C. 11.5 HA)

PROPOSED OUTER SOURCE
PROTECTION ONE (SO) 170M
RADIUS

PROPOSED INNER SOURCE
PROTECTION ONE (S1) 125M
RADIUS FOR TRAVEL TIME T100
DAYS

VULNERABILITY ROCK NEAR
SURFACE OR KARST -

VULNERABILITY EXTREME - E

VULNERABILITY HIGH - H

SURFACE WATER CATCHMENT

EXISTING SUPPLY WELLS (BW01
 BW02)

TEST AND MONITORING WELLS
(2014)

dunbia
naturally better...

SLR

SLR CONSULTING IRELAND
7 DUNDUM BUSINESS PARK
WINDY ARBOUR
DUBLIN 14
T: +353-1-2964667
F: +353-1-2964676
www.slrconsulting.com

DUNBIA (SLANE)
ENVIRONMENTAL IMPACT STATEMENT
PAINESTOWN, NAVAN, CO. MEATH
WELL SOURCE PROTECTION ONES

FIGURE 6.12

Scale
1:2,500 @ A3

Date
SEPTEMBER 2014