

TIER 3

ENVIRONMENTAL RISK ASSESSMENT

APPENDICES

Prepared By:

Traynor Environmental Ltd
Belturbet Business Park,
Creeny
Belturbet
Co. Cavan

In Association With

Waste Management Section
Cavan County Council
Farnham Street
Cavan
Co. Cavan



TIER 3

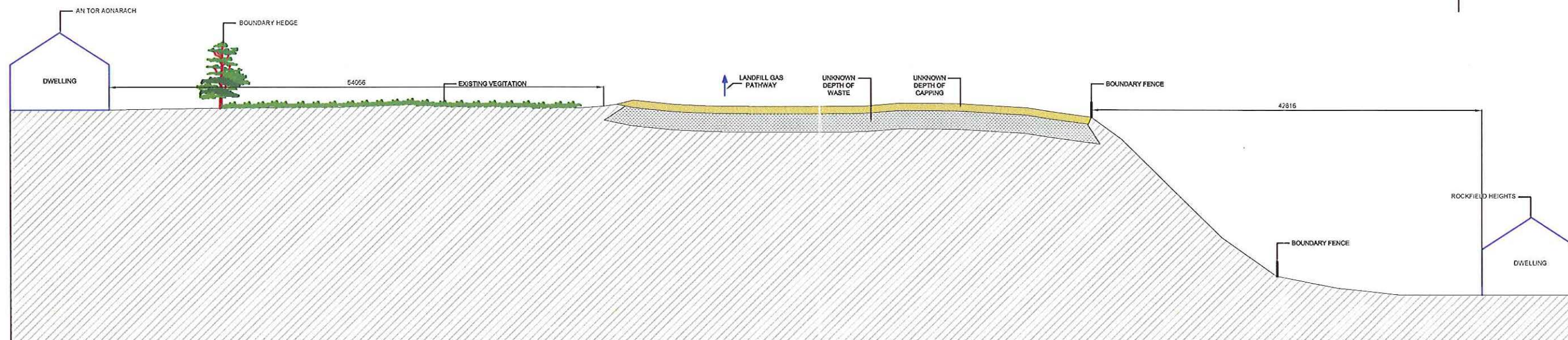
ENVIRONMENTAL RISK ASSESSMENT

APPENDIX A

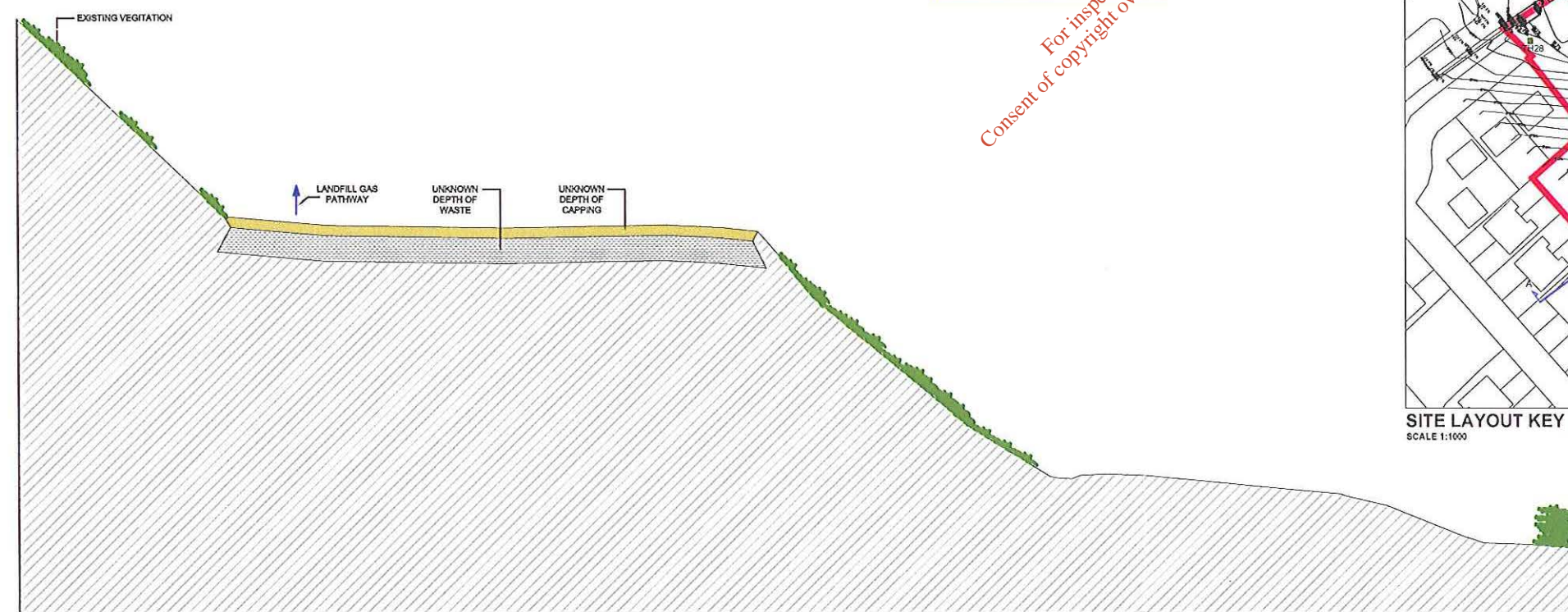
DRAWINGS 13.120.100 - 13.120.119



NOTES



CONCEPT MODEL SECTION A-A
SCALE 1:250



CONCEPT MODEL SECTION B-B
SCALE 1:250



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SITE LAYOUT KEY
SCALE 1:1000

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<p>Traynor Environmental Ltd.</p>			
<p>CLIENT CAVAN COUNTY COUNCIL</p>			
<p>PROJECT TITLE SITE INVESTIGATION & RISK ASSESSMENT OF EXISTING HISTORIC LANDFILL SITE AT DUNAREE, KINGSCOURT, CO. CAVAN</p>			
<p>DRAWING TITLE INITIAL CONCEPT MODELS OF WASTE DEPOSITED ON THE SITE</p>			
SCALE 1:250	DRAWN LUX M C EUGENI DATE SEPTEMBER 2013	CHECKED ANGELA MC DERMOTT DATE SEPTEMBER 2013	APPROVED NEVIN TRAYNOR DATE SEPTEMBER 2013
DRAWING No. 13.120.100			REV.

Site Boundary

Site Location

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NOTES

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CO. CAVAN

E-MAIL: nevin@traynorenvironmental.com TEL: 049 9522236
FAX: 049 9522608

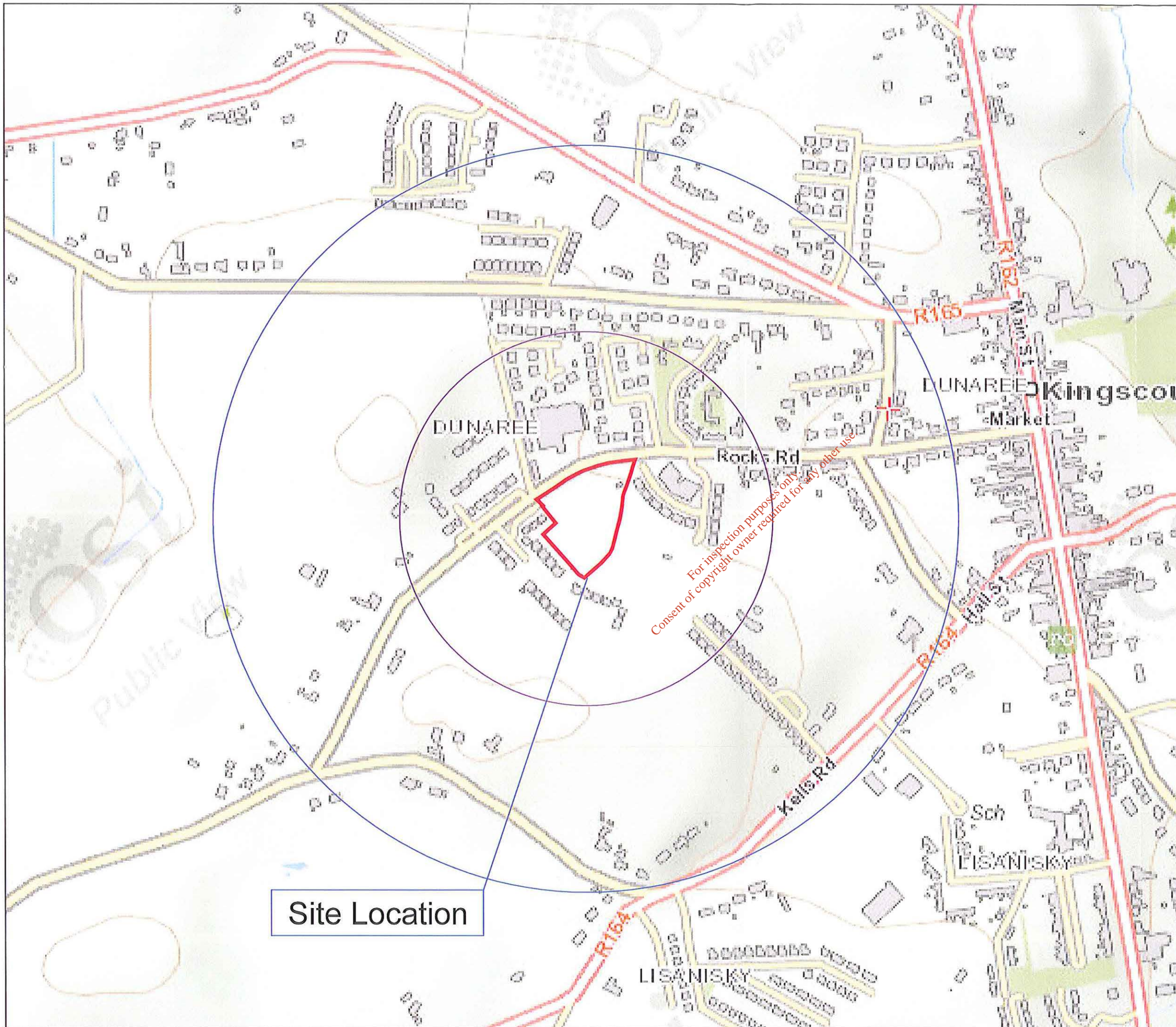
CLIENT
CAVAN COUNTY COUNCIL

PROJECT TITLE
SITE INVESTIGATION & RISK ASSESSMENT
OF EXISTING HISTORIC LANDFILL SITE AT
DUNAREE, KINGSCOURT, CO CAVAN

DRAWING TITLE
SITE LOCATION MAP

SCALE	DRAWN	CHECKED	APPROVED
1:5000	LIAM MC ELGUIN	ANGELA MC DERMOTT	NEVIN TRAYNOR
	DATE SEPTEMBER 2013	DATE SEPTEMBER 2013	DATE SEPTEMBER 2013

DRAWING No.	REV.
13.120.101	



NOTES

— SITE BOUNDARY

○ 250m RADIUS FROM THE SITE

○ 500m RADIUS FROM THE SITE

□ DWELLING HOUSE (RECEPTORS)

DUNAREE

Kingscourt

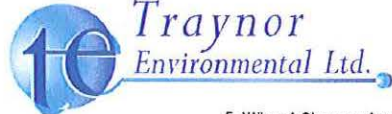
Market

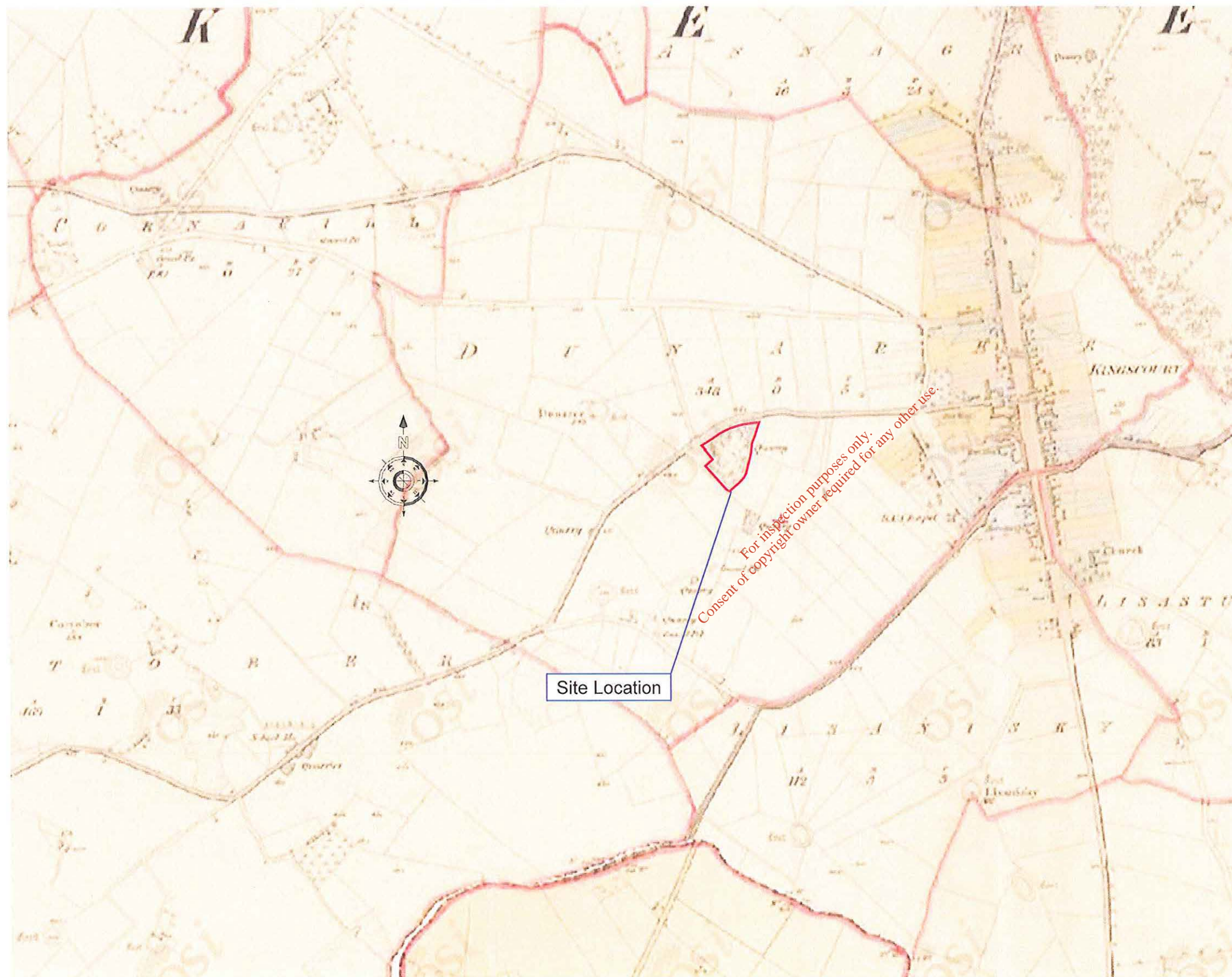
Rocks Rd

Kells Rd

LISANISKY

Sch

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PROJECT TITLE SITE INVESTIGATION & RISK ASSESSMENT OF EXISTING HISTORIC LANDFILL SITE AT DUNAREE, KINGSCOURT, CO CAVAN			
DRAWING TITLE POTENTIAL RECEPTORS IN THE VICINITY OF THE SITE			
SCALE 1:5000	DRAWN LIAM MC ELGUIN DATE SEPTEMBER 2013	CHECKED ANGELA MC DERMOTT DATE SEPTEMBER 2013	APPROVED NEVIN TRAYNOR DATE SEPTEMBER 2013
DRAWING No. 13.120.102			REV.



25 INCH MAPPING SERIES (1837 - 1842)
SCALE 1:10000

NOTES

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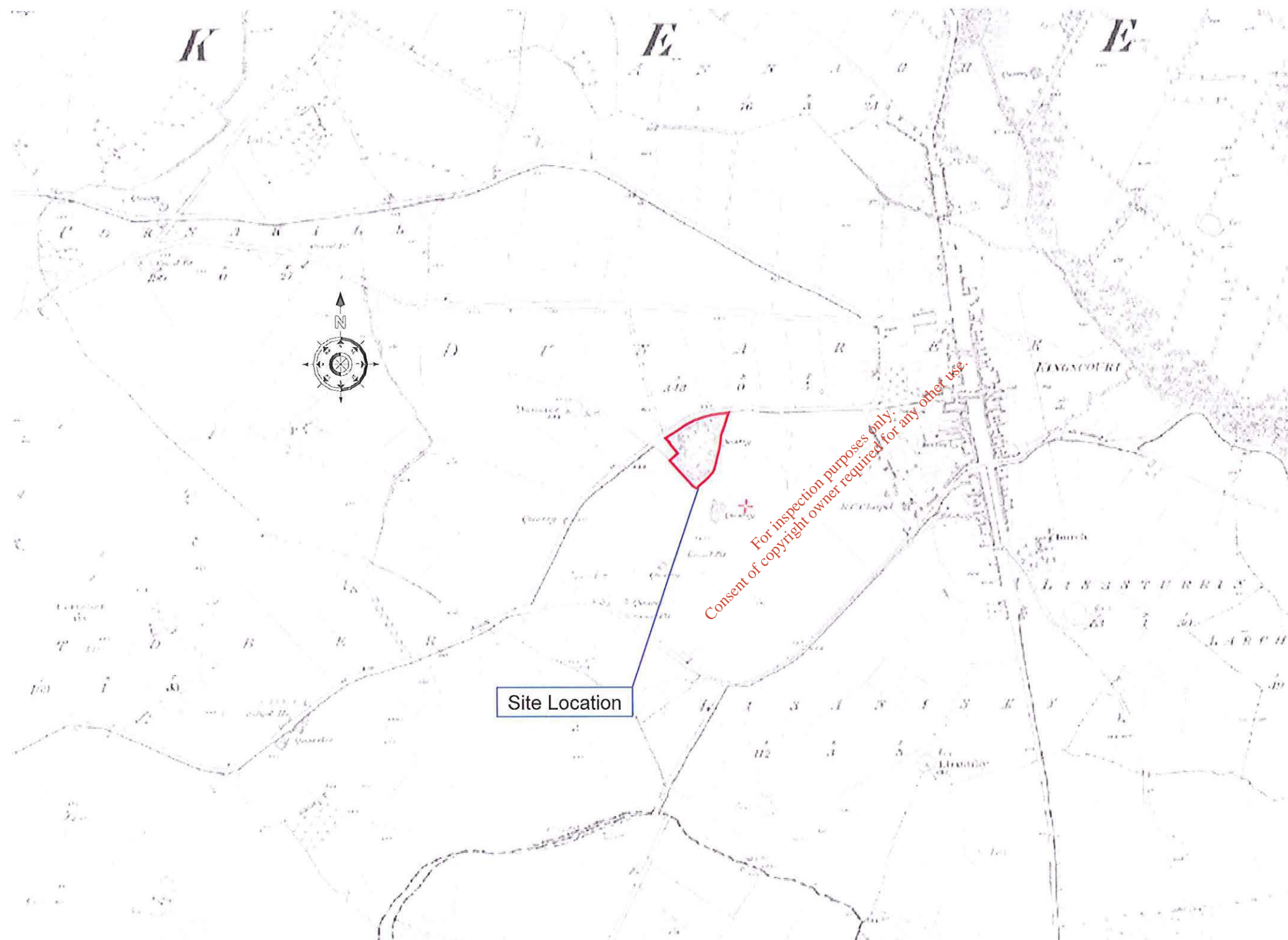
CLIENT
CAVAN COUNTY COUNCIL

PROJECT TITLE
SITE INVESTIGATION & RISK ASSESSMENT OF EXISTING HISTORIC LANDFILL SITE AT DUNAREE, KINGS COURT, CO CAVAN

DRAWING TITLE
HISTORIC MAPS (1837 - 1842)

SCALE	DRAWN	CHECKED	APPROVED
1:10000	LIAM MC ELGUIN	ANGELA MC DERMOTT	NEVIN TRAYNOR
	DATE	DATE	DATE
	SEPTEMBER 2013	SEPTEMBER 2013	SEPTEMBER 2013

DRAWING No.	REV.
13.120.105A	



6 INCH MAPPING SERIES (1888 - 1913)
SCALE 1:10000

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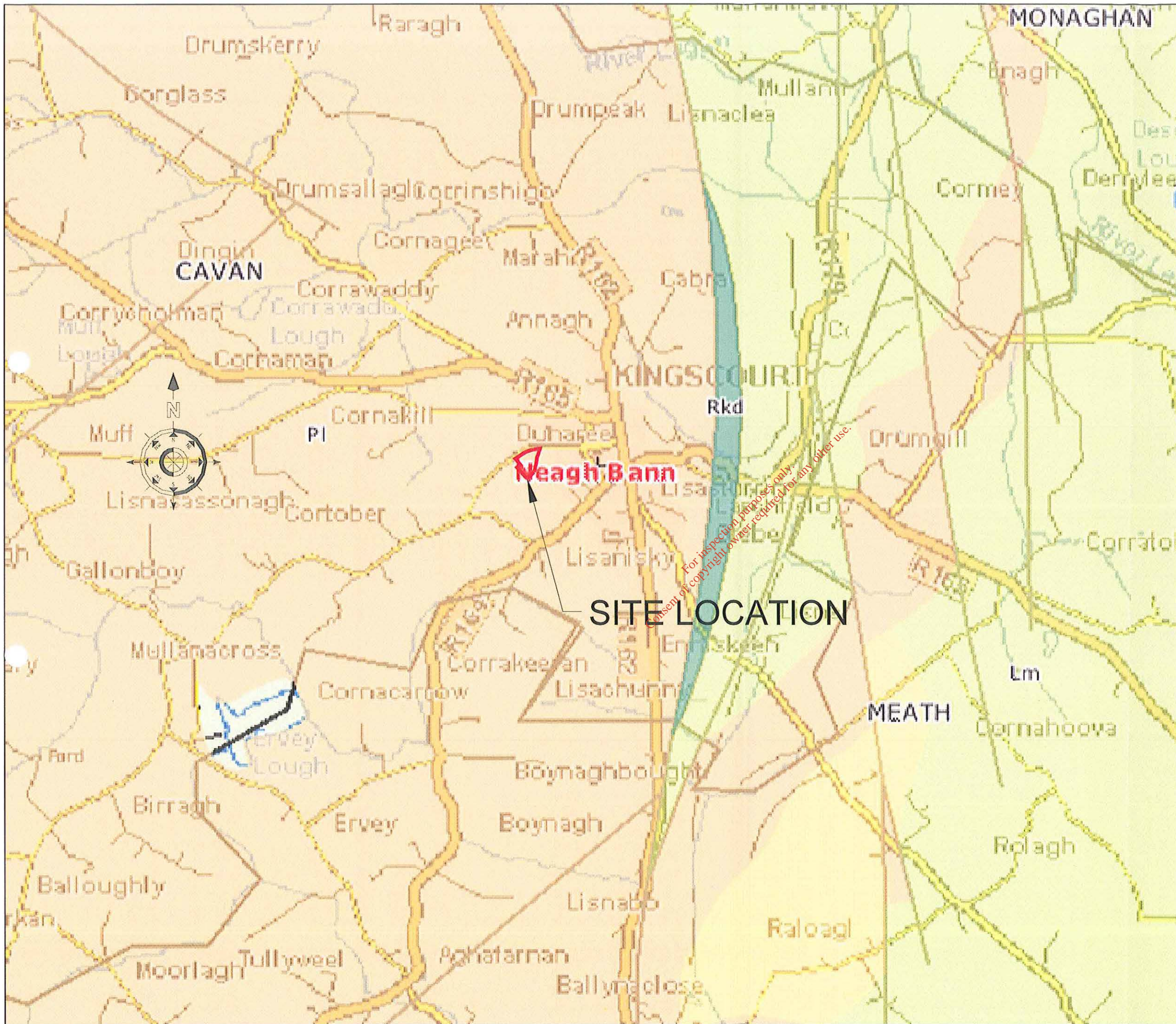
CLIENT	CAVAN COUNTY COUNCIL
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PROJECT TITLE	SITE INVESTIGATION & RISK ASSESSMENT OF EXISTING HISTORIC LANDFILL SITE AT DUNAREE, KINGSCOURT, CO CAVAN
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DRAWING TITLE	HISTORIC MAPS (1888 - 1913)
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SCALE	DRAWN	CHECKED	APPROVED
1:10000	LIAM MC ELGUIN	ANGELA MC DERMOTT	NEVIN TRAYNOR
	DATE	DATE	DATE
	SEPTEMBER 2013	SEPTEMBER 2013	SEPTEMBER 2013

DRAWING No.	REV.
13.120.105B	



NOTES

National Draft Bedrock Aquifer Map

Rf - 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

PI - Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones

Pu - Poor Aquifer - Bedrock which is Generally Unproductive

Unclassified

National Draft Gravel Aquifer Map

Rfg - Regionally Important, extensive sand/gravels aquifers

Lg - Locally Important, sand/gravel aquifers

No gravels present

Not Mapped

Bedrock Faults 100k

RBD Boundaries

County Boundaries

Watermark

REV.	DATE	DESCRIPTION	APPROVED
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Co. CAVAN

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FAX: 049 9522808

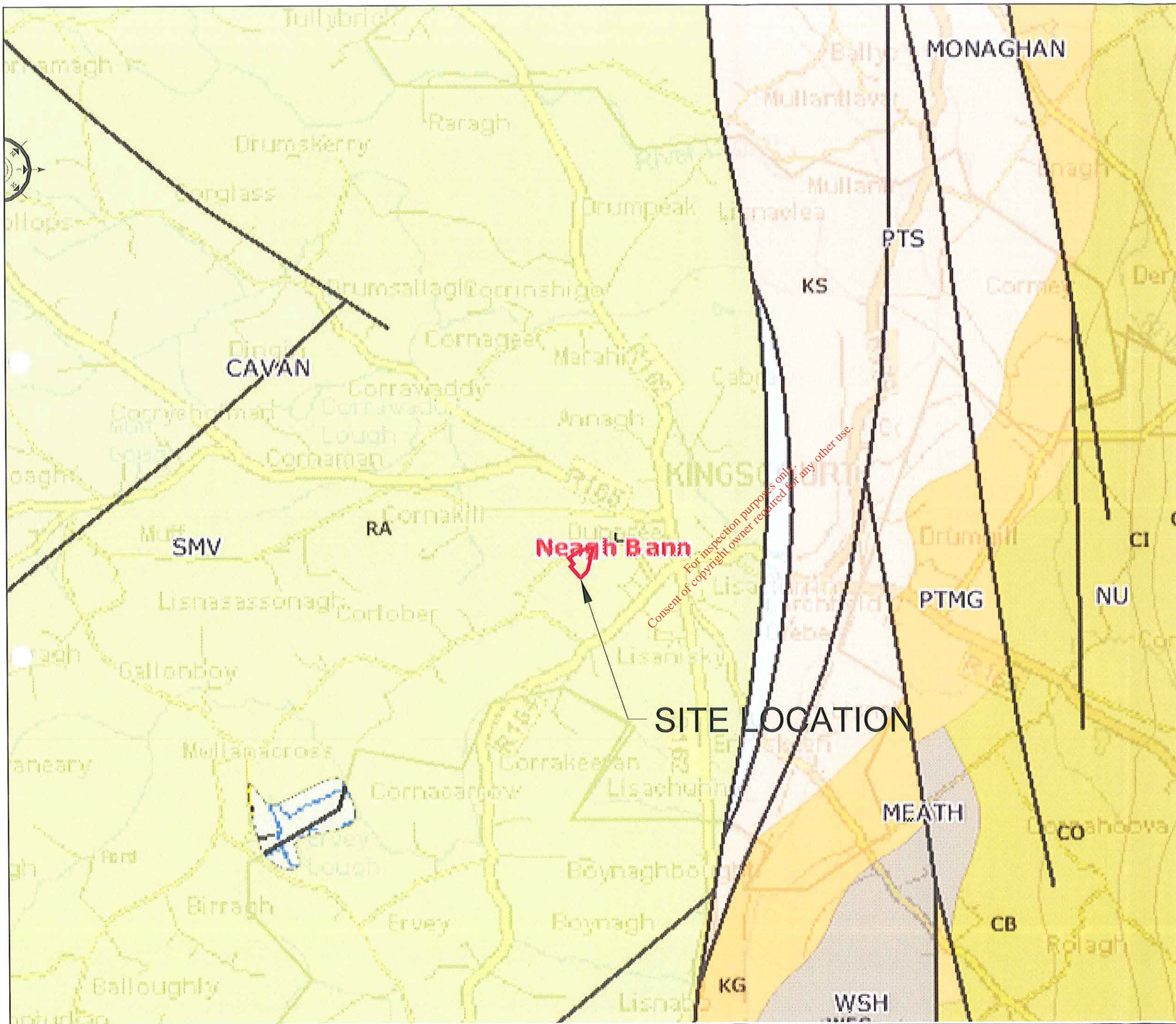
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PROJECT TITLE
SITE INVESTIGATION & RISK ASSESSMENT OF EXISTING HISTORIC LANDFILL SITE AT DUNAREE, KINGS COURT, CO CAVAN

DRAWING TITLE
GROUNDWATER MAP

SCALE	DRAWN	CHECKED	APPROVED
1:20000	LIAM MC ELGUIN	ANGELA MC DERMOTT	NEVIN TRAYNOR
	DATE	DATE	DATE
	SEPTEMBER 2013	SEPTEMBER 2013	SEPTEMBER 2013


DRAWING No.	REV.
13.120.106	



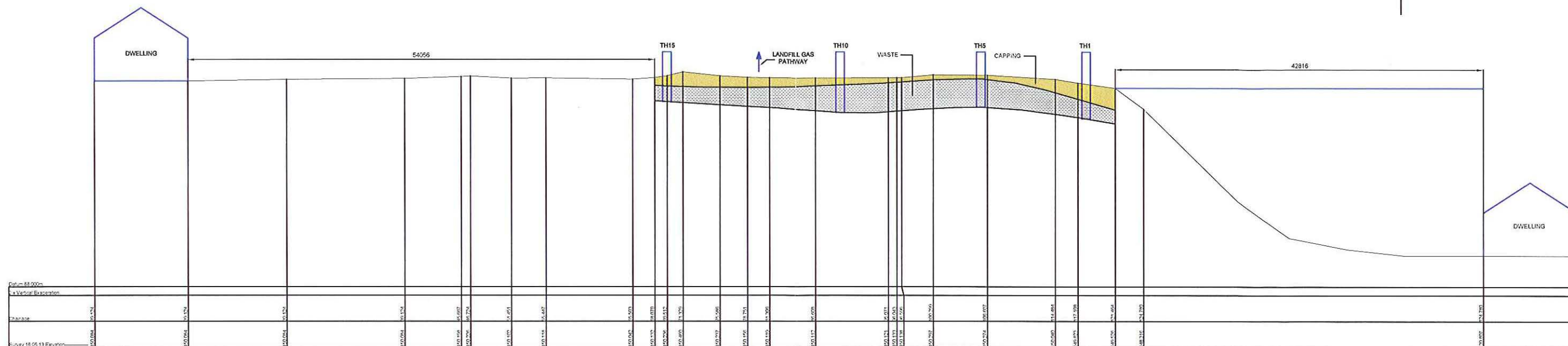
NOTES			
<div><div></div><div>Bedrock Faults 100k</div></div> <div><div></div><div>National Draft Generalised Bedrock Map</div></div>			
<div><div></div><div>BV - Basalts and other Volcanic rocks</div></div> <div><div></div><div>CM - Cambrian Metasediments</div></div> <div><div></div><div>DDL - Dinantian Dolomitised Limestones</div></div> <div><div></div><div>DESSL - Dinantian early Sandstones, Shales and Limestones</div></div> <div><div></div><div>DKS - Devonian Killorean type Sandstones</div></div> <div><div></div><div>DLIL - Dinantian Lower Impure Limestones</div></div> <div><div></div><div>DMSC - Dinantian Mudstones and Sandstones Cork Group</div></div> <div><div></div><div>MSSL - Dinantian Mixed Sandstones, Shales and Limestones</div></div> <div><div></div><div>DORS - Devonian Old Red Sandstones</div></div> <div><div></div><div>DPBL - Dinantian Pure Bedded Limestones</div></div> <div><div></div><div>DPUL - Dinantian Pure Unbedded Limestones</div></div> <div><div></div><div>DS - Dinantian Sandstones</div></div> <div><div></div><div>DSL - Dinantian Shales and Limestones</div></div> <div><div></div><div>DUIL - Dinantian Upper Impure Limestones</div></div> <div><div></div><div>GII - Granites and other Igneous Intrusive rocks</div></div> <div><div></div><div>NSA - Namurian Sandstones</div></div> <div><div></div><div>NSH - Namurian Shales</div></div> <div><div></div><div>NU - Namurian Undifferentiated</div></div> <div><div></div><div>OM - Ordovician Metasediments</div></div> <div><div></div><div>OV - Ordovician Volcanics</div></div> <div><div></div><div>PM - Precambrian Marbles</div></div> <div><div></div><div>PQGS - Precambrian Quartzites, Gneisses and Schists</div></div> <div><div></div><div>PTMG - Permo Triassic Mudstones and Gypsum</div></div> <div><div></div><div>PTS - Permo Triassic Sandstones</div></div> <div><div></div><div>SMV - Silurian Metasediments and Volcanics</div></div> <div><div></div><div>WSA - Westphalian Sandstones</div></div> <div><div></div><div>WSH - Westphalian Shales</div></div>			
<div><div></div><div>RBD Boundaries</div></div> <div><div></div><div>County Boundaries</div></div> <div><div></div><div>Watermark</div></div>			
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CLIENT		CAVAN COUNTY COUNCIL	
PROJECT TITLE		SITE INVESTIGATION & RISK ASSESSMENT OF EXISTING HISTORIC LANDFILL SITE AT DUNAREE, KINGSCOURT, CO CAVAN	
DRAWING TITLE		BEDROCK MAP	
SCALE	DRAWN	CHECKED	APPROVED
1:20000	LIAM MC ELGUNI	ANGELA MC DERMOTT	NEVIN TRAYNOR
	DATE	DATE	DATE
	SEPTEMBER 2013	SEPTEMBER 2013	SEPTEMBER 2013
DRAWING No.			REV.
13.120.108			



LATERAL EXTENT OF WASTE
SCALE 1:1000

NOTES			
<div><div><div></div><div>WASTE</div></div><div><div></div><div>NO WASTE</div></div></div>			
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PROJECT TITLE SITE INVESTIGATION & RISK ASSESSMENT OF EXISTING HISTORIC LANDFILL SITE AT DUNAREE, KINGS COURT, CO CAVAN			
DRAWING TITLE LATERAL EXTENT OF WASTE DEPOSITED ON THE SITE			
SCALE 1:1000	DRAWN LIAM MC ELGUNN DATE SEPTEMBER 2013	CHECKED ANGELA MC DERMOTT DATE SEPTEMBER 2013	APPROVED NEVIN TRAYNOR DATE SEPTEMBER 2013
DRAWING No. 13.120.111			REV.

NOTES



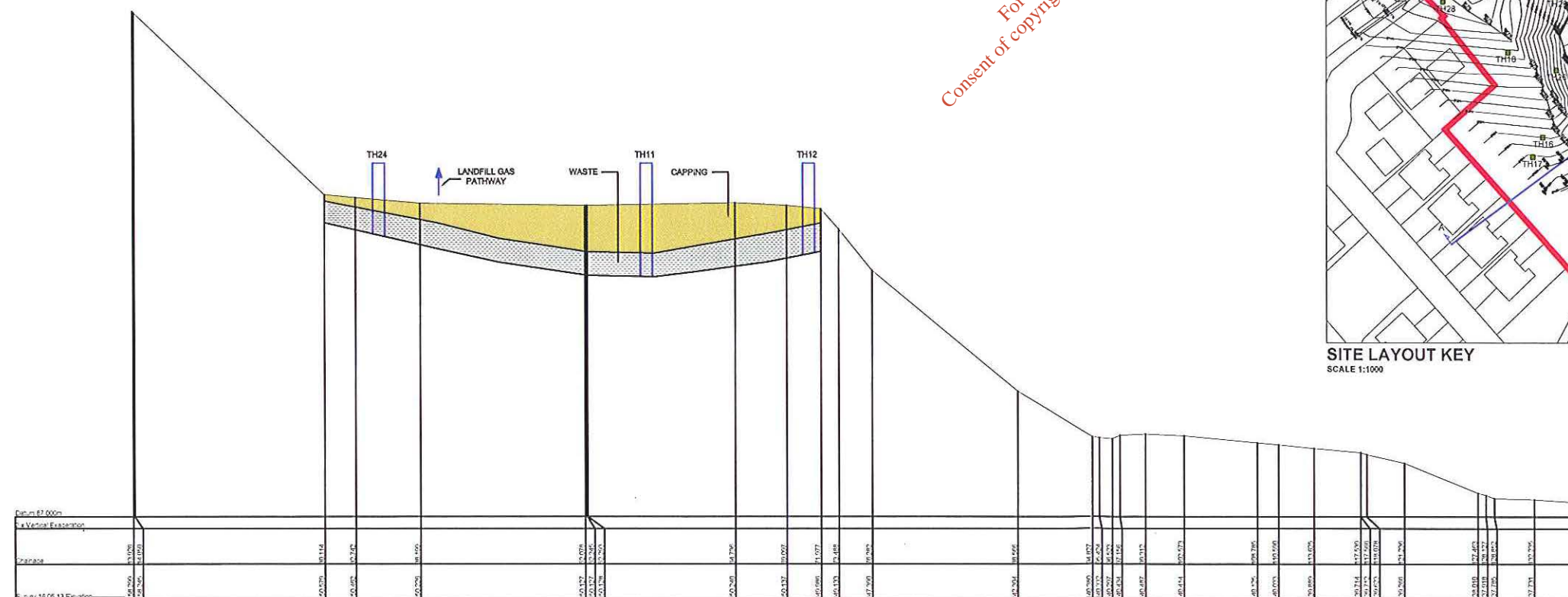
SECTION A-A
SCALE 1:250



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SITE LAYOUT KEY
SCALE 1:1000



SECTION B-B
SCALE 1:250

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SITE INVESTIGATION & RISK ASSESSMENT
OF EXISTING HISTORIC LANDFILL SITE AT
DUNAREE, KINGSCOURT, CO. CAVAN



DRAWING TITLE
CROSS SECTIONS OF WASTE DEPOSITED
ON THE SITE

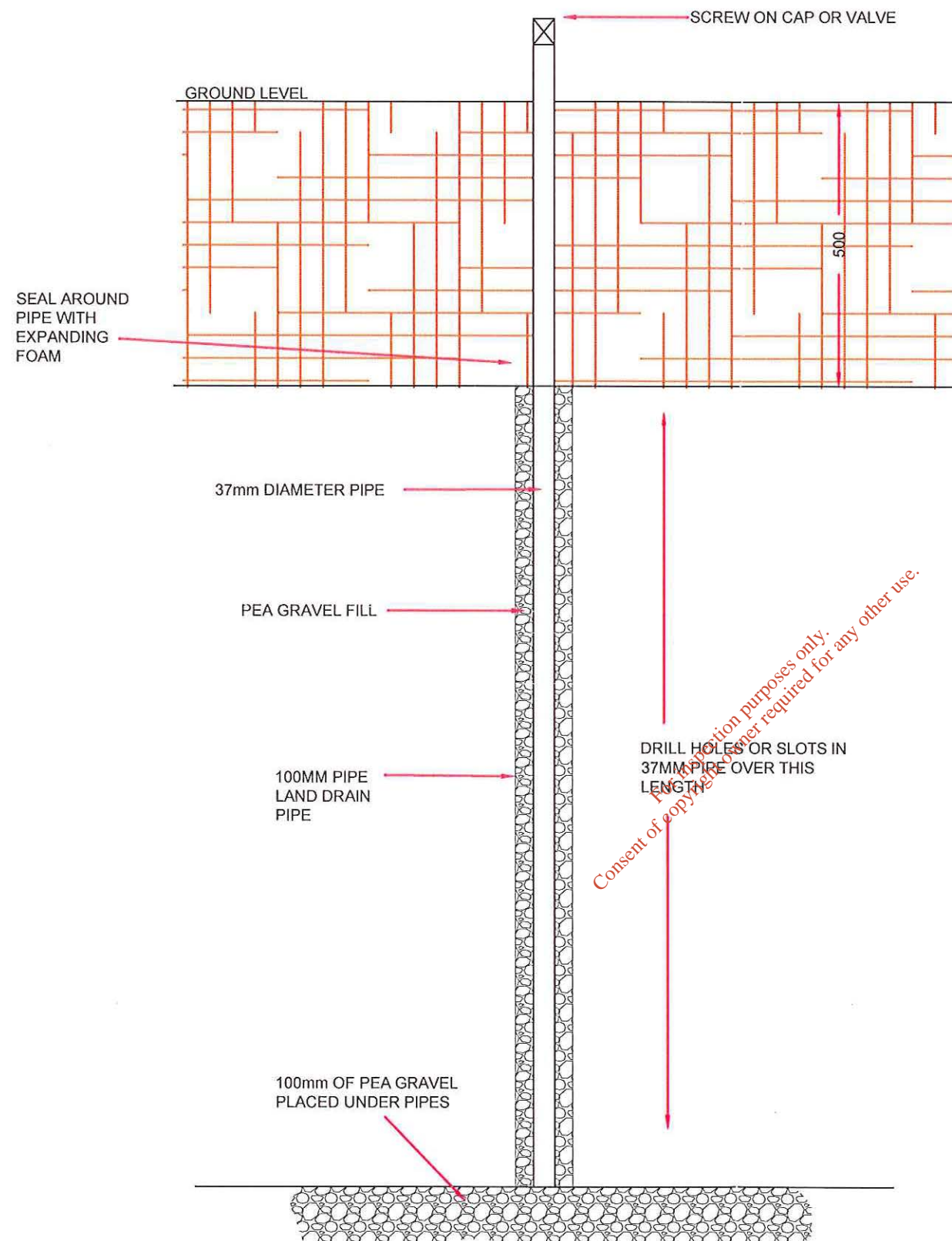
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1:250	Liam McElroy	Angela McElroy	Rev. Traynor
DATE	DATE	DATE	DATE
SEPTEMBER 2013	SEPTEMBER 2013	SEPTEMBER 2013	SEPTEMBER 2013

DRAWING No. 13.120.112



GAS MONITORING POINTS
SCALE 1:1000

NOTES			
<div> LOCATION OF GAS MONITORING STAND PIPES</div>			
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CLIENT CAVAN COUNTY COUNCIL			
PROJECT TITLE SITE INVESTIGATION & RISK ASSESSMENT OF EXISTING HISTORIC LANDFILL SITE AT DUNAREE, KINGSCOURT, CO CAVAN			
DRAWING TITLE GAS MONITORING LOCATIONS			
SCALE 1:1000	DRAWN LIAM MC ELGURN DATE SEPTEMBER 2013	CHECKED ANGELA MC DERMOTT DATE SEPTEMBER 2013	APPROVED NEVIN TRAYNOR DATE SEPTEMBER 2013
DRAWING No. 13.120.113			REV.



INSTALL 100MM LAND DRAIN PIPE IN TRIAL PIT AND BACK FILL TO WITHIN 500MM OF THE SURFACE.
 STAND 37MM PIPE INTO 100MM PIPE AND FILL WITH PEA GRAVEL.
 BACK FILL REMAINDER OF TRIAL PIT WITH EXTRACTED MATERIAL BACK AROUND 37MM PIPE TO FORM A SEAL

NOTES

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 BELTURBET BUSINESS PARK
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 Co. CAVAN
 TEL: 049 9522236
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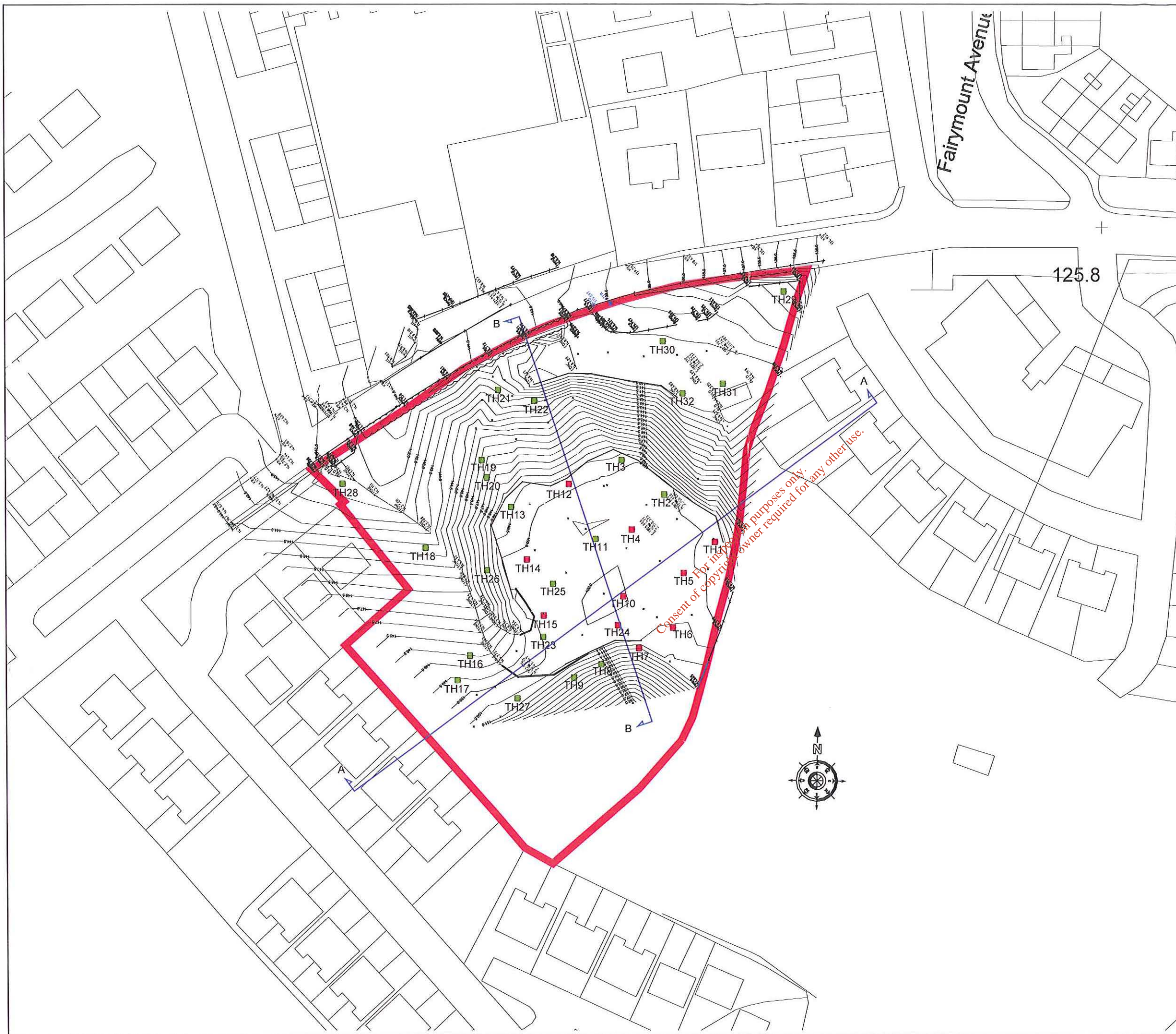
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 SITE INVESTIGATION & RISK ASSESSMENT
 OF EXISTING HISTORIC LANDFILL SITE AT
 DUNAREE, KINGSCOURT, CO CAVAN

DRAWING TITLE
 CROSS SECTION OF STAND PIPE
 FOR GAS MONITORING

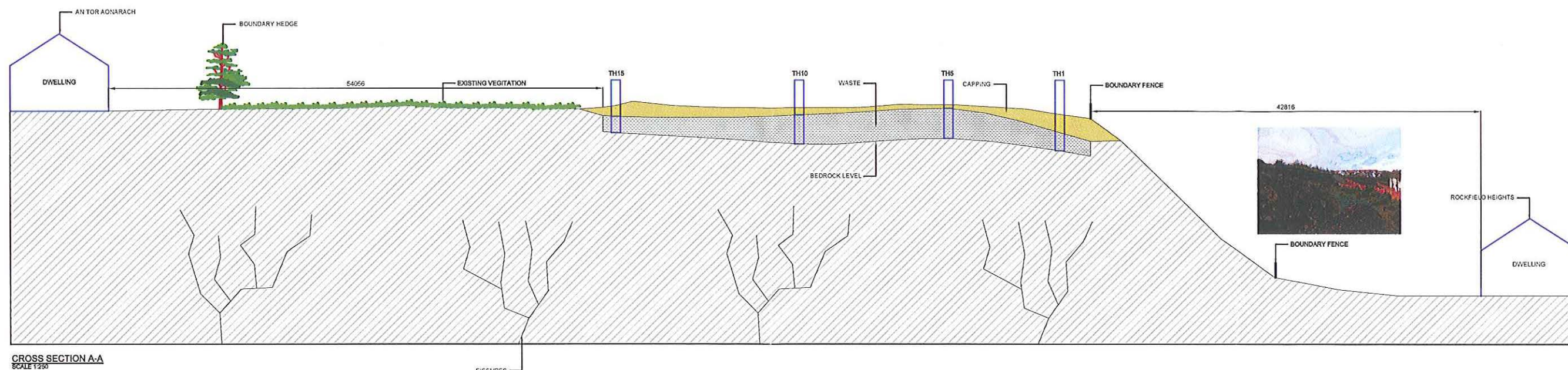
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N.T.S.	LIAM MC ELGURN	ANGELA MC DERMOTT	NEVIN TRAYNOR
	DATE	DATE	DATE
	SEPTEMBER 2013	SEPTEMBER 2013	SEPTEMBER 2013

DRAWING No.	REV.
13.120.114	

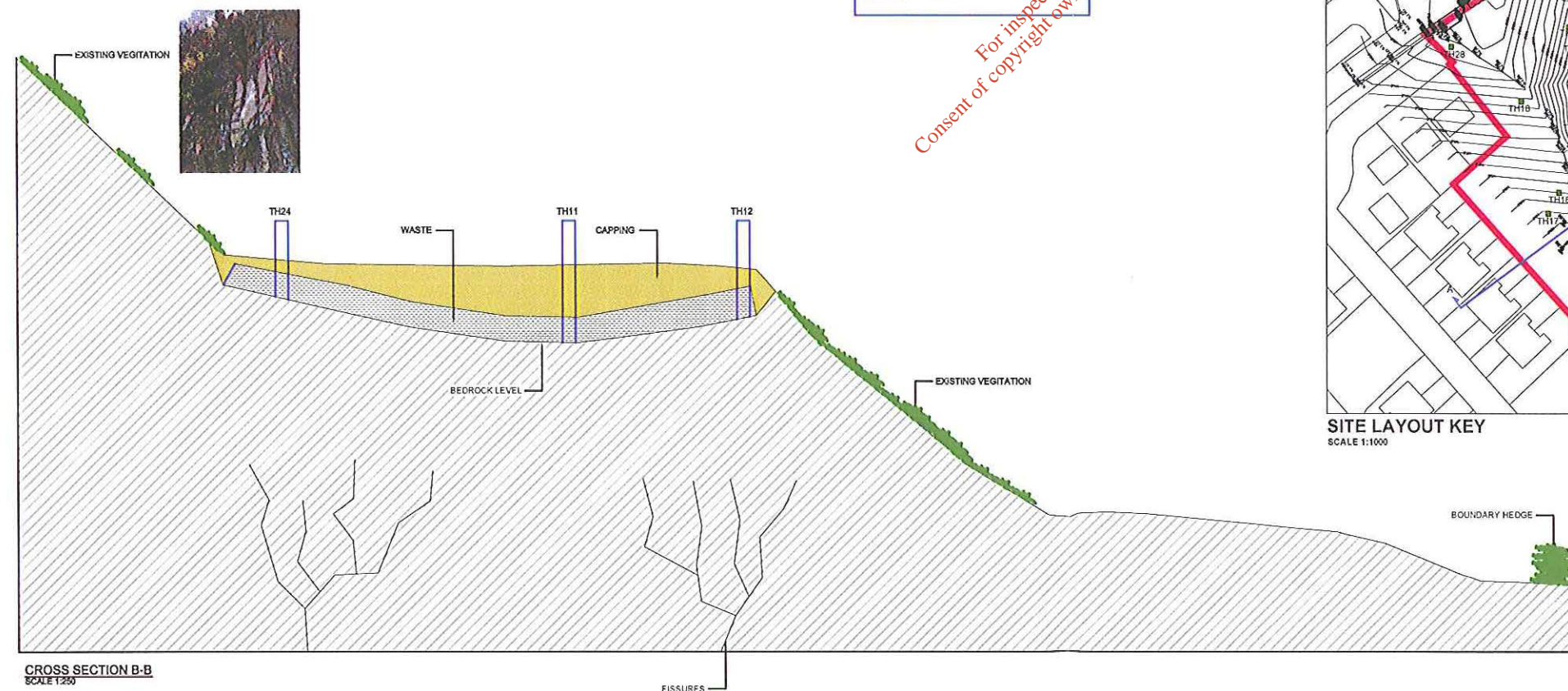


NOTES			
<div><div><div></div><div>TRIAL HOLES CONTAINING WASTE</div></div><div><div></div><div>TRIAL HOLES CONTAINING NO WASTE</div></div><div><div></div><div>SITE BOUNDARY IN RED</div></div><div><div></div><div>2300m² SUSPECTED AREA OF WASTE</div></div></div>			
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CLIENT		CAVAN COUNTY COUNCIL	
PROJECT TITLE		SITE INVESTIGATION & RISK ASSESSMENT OF EXISTING HISTORIC LANDFILL SITE AT DUNAREE, KINGS COURT, CO CAVAN	
DRAWING TITLE		TRIAL HOLE LOCATIONS	
SCALE	DRAWN	CHECKED	APPROVED
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DRAWING No.			REV.
13.120.115			

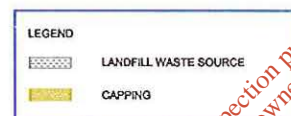
NOTES



CROSS SECTION A-A
SCALE 1:250



CROSS SECTION B-B
SCALE 1:250

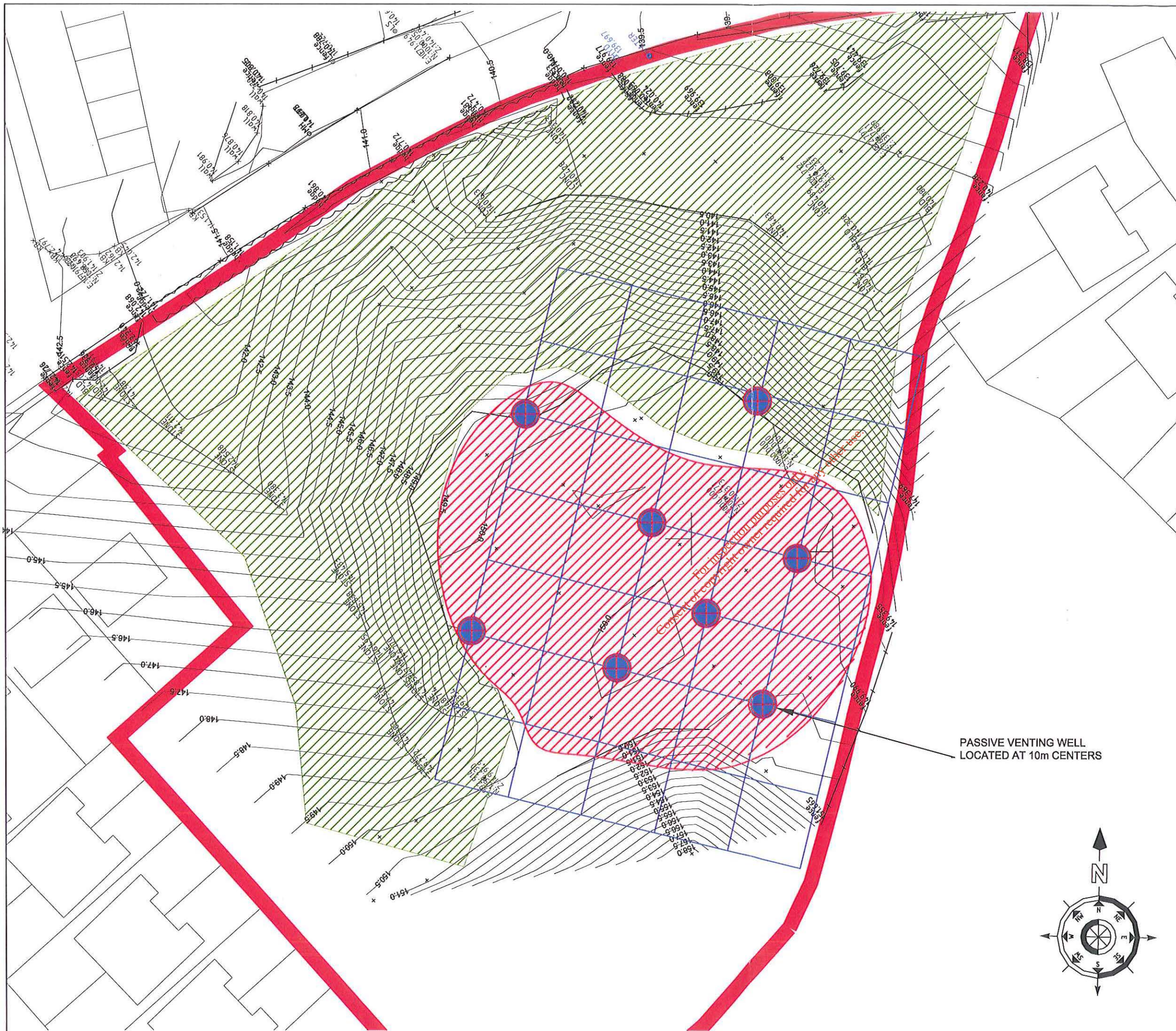






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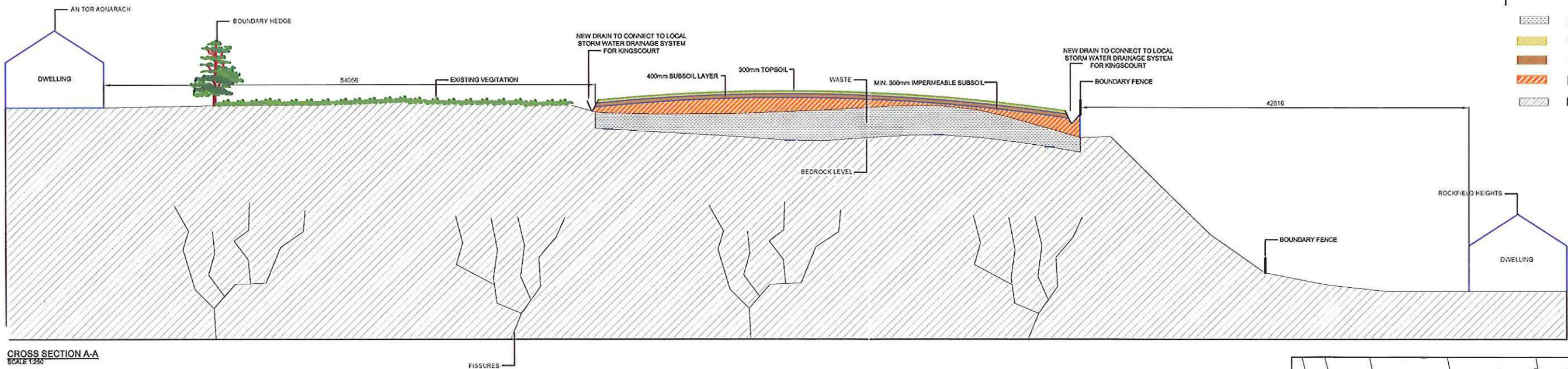


SITE LAYOUT KEY
SCALE 1:1000

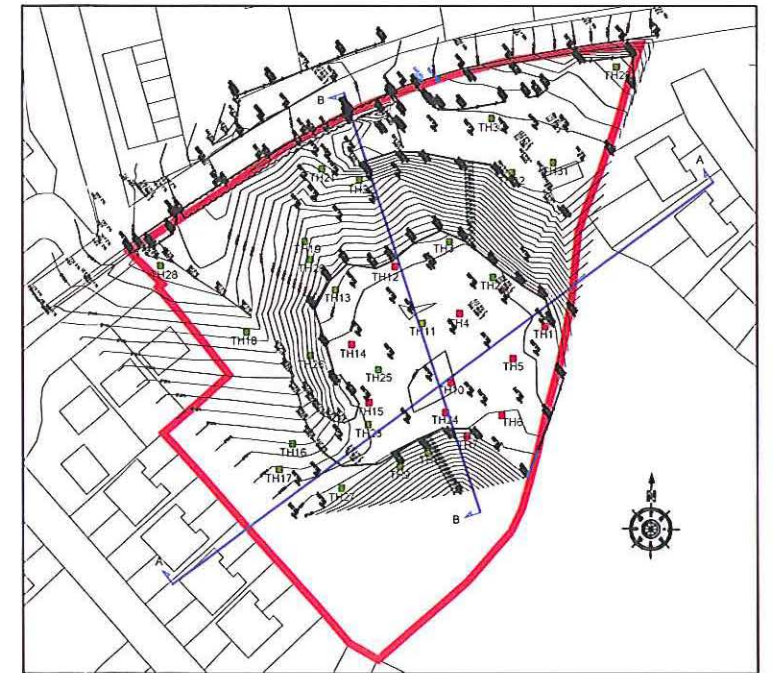
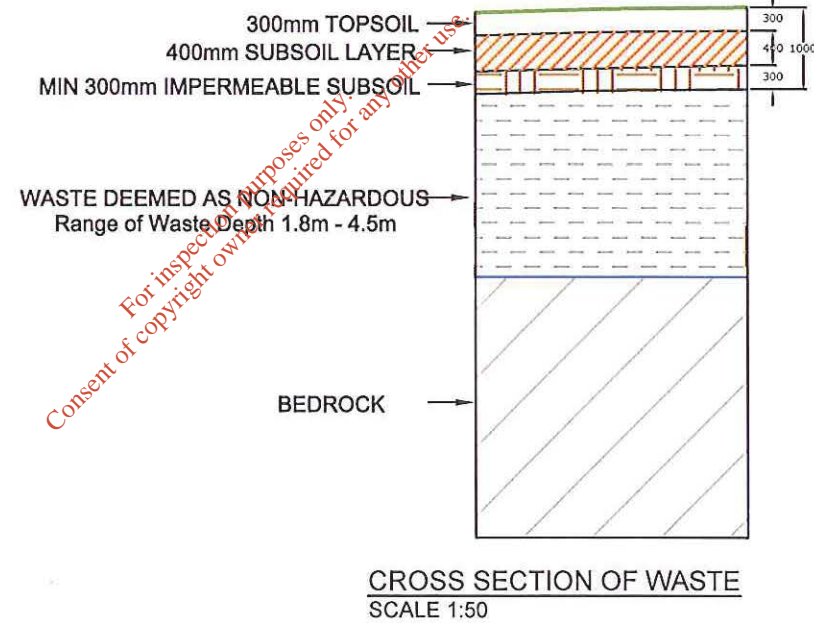
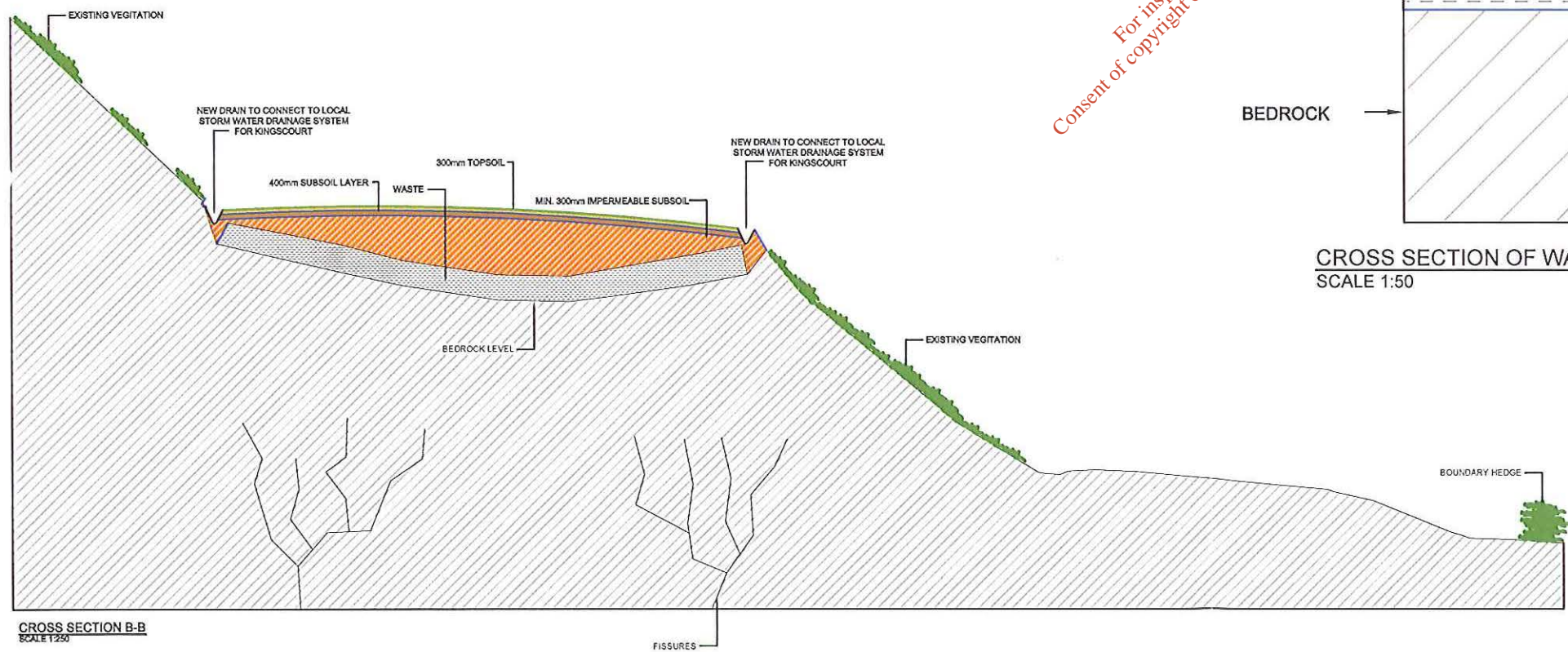
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<p>PROJECT TITLE SITE INVESTIGATION & RISK ASSESSMENT OF EXISTING HISTORIC LANDFILL SITE AT DUNAREE, KINGSCOURT, CO. CAVAN</p>			
<p>DRAWING TITLE REVISED CONCEPT MODEL OF WASTE DEPOSITED ON THE SITE</p>			
SCALE 1:250	DRAWN LIAM MC ELOUGH DATE SEPTEMBER 2013	CHECKED ANGELA MC EERWITT DATE SEPTEMBER 2013	APPROVED NEVIN TRAYNOR DATE SEPTEMBER 2013
DRAWING No. 13.120.116			REV.



NOTES			
<p> PASSIVE VENTING WELL</p> <p> WASTE</p> <p> NO WASTE</p>			
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CLIENT CAVAN COUNTY COUNCIL			
PROJECT TITLE SITE INVESTIGATION & RISK ASSESSMENT OF EXISTING HISTORIC LANDFILL SITE AT DUNAREE, KINGSCOURT, CO CAVAN			
DRAWING TITLE LOCATION OF PASSIVE GAS VENTING WELLS			
SCALE 1:500	DRAWN LIAM MC ELGUNNI DATE APRIL 2013	CHECKED ANGELA MC DERMOTT DATE APRIL 2013	APPROVED NEVIN TRAYNOR DATE APRIL 2013
DRAWING No. 13.120.117			REV.



- NOTES
- LANDFILL WASTE SOURCE
 - CAPPING
 - SUBSOIL
 - IMPERMEABLE SUBSOIL
 - BEDROCK



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CLIENT CAVAN COUNTY COUNCIL			
PROJECT TITLE SITE INVESTIGATION & RISK ASSESMENT OF EXISTING HISTORIC LANDFILL SITE AT DUNAREE, KINGS COURT, CO. CAVAN			
DRAWING TITLE CAPPING CROSS SECTION FOR THE EXISTING HISTORIC LANDFILL			
SCALE	DRAWN	CHECKED	APPROVED
1:250	ANGELA MC DERWOTT	ANGELA MC DERWOTT	NEVIN TRAYNOR
	DATE	DATE	DATE
	APRIL 2013	APRIL 2013	APRIL 2013
DRAWING No.	REV.		
13.120.118			

NOTES ON PLANTING

Trees should be planted when they are dormant, usually between late autumn and early spring (before the end of March).Autumn planting is preferred for broadleaves and some conifers. Care should be taken to avoid damage by frost during planting operations in mid-winter.Planting and subsequent maintenance must be carried out by competent an experienced staff

- All tress listed 1-8 should be planted in a staggered pattern to create a natural effect this will also encourage biodiversity and form a natural screening belt. See picture below of desired effect

- Small trees marked 5-8 should be inter planted among the larger trees marked 1-4

- Trees in the central area to be planted in a stagared fashion away from drains and inspection or sampling points.

All trees to be spaced as per EPA Landfill Maduals

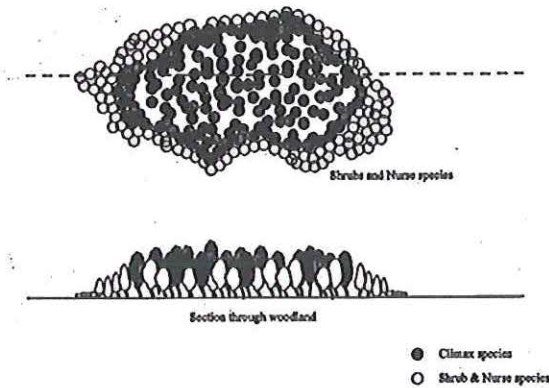


Table 15: Tall/Medium trees to be planted on site as part of the landscaping scheme

No.	Species	Height at year 20(m)	Remarks
1	Silver birch * <i>Betula pendula</i>	9	Fast growing, useful nurse crop, tolerates low fertility
2	Common alder * <i>Alnus glutinosa</i>	8	Nitrogen fixing, grows well in damp areas, good for wildlife
3	Sycamore <i>Acer pseudoplatanus</i>	8	Tolerant to exposure and air pollution, good for wildlife
4	Scots pine * <i>Pinus sylvestris</i> (conifer)	7	Visually attractive tree, grows well on poor exposed sites

Table 16: Small trees to be planted on site as part of the landscaping scheme

No.	Species	Height at year 20(m)	Remarks
5	Holly* <i>Ilex aquifolium</i>	3	Good for wildlife and screening
6	Hawthorn * <i>Crataegus monogyna</i>	4	Commonly found in hedgerows, attractive tree with white blooms in the spring and deep red haws in autumn
7	Rowan * (mountain ash) <i>Sorbus aucuparia</i>	6	Hardy tree suitable for exposed site, good for wildlife
8	Goat willow <i>Salix caprea</i>	4	Associated with damp conditions

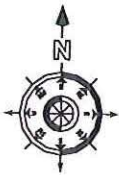
Trees suitable for central area of the Landfill site (* indicates native species)

PLANTING LEGEND

EXISTING VEGETATION

EXISTING COUNCIL STORAGE YARD

EXISTING VEGETATION AND OUT CROPPING ROCK



NOTES



All tree and shrub planting to be carried out, in accordance with EPA Maduels for Landfill Restoration and Aftercare.

REV.	DATE	DESCRIPTION	APPROVED
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Traynor
Environmental Ltd.

BELTUBET BUSINESS PARK
CREENY BELTUBET
Co. CAVAN

TEL: 049 9522236
E-MAIL: nevin@traynorenvironmental.com FAX: 049 9522808

CLIENT
CAVAN COUNTY COUNCIL

PROJECT TITLE
SITE INVESTIGATION & RISK ASSESSMENT
OF EXISTING HISTORIC LANDFILL SITE AT
DUNAREE, KINGSCOURT, CO CAVAN

DRAWING TITLE
PROPOSED LANDSCAPE PLAN
FOR KINGSCOURT HISTORIC LANDFILL

SCALE	DRAWN	CHECKED	APPROVED
1:1000	LIAM MC ELGUNN	ANGELA MC DERMOTT	NEVIN TRAYNOR
DATE	DATE	DATE	DATE
SEPTEMBER 2013	SEPTEMBER 2013	SEPTEMBER 2013	SEPTEMBER 2013

DRAWING No.	REV.
13.120.119	