SHORE ROAD HISTORIC LANDFILL,

CLIFDEN, CO. GALWAY

APPLICATION TO EPA

FOR

CERTIFICATE OF AUTHORISATION

For inspection purposes only.
Consent of copyright owner required for any other use.

VOLUME III. SECTION D - PART C

TIER 3 FURTHER SITE INVESTIGATION & UPDATED RISK ASSESSMENT OF FORMER SHORE ROAD LANDFILL (24th March 2021)

(VOLUME III - APPENDICES)

24th March, **2021**

EPA Export 03-06-2021:02:38:32

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:32

GALWAY COUNTY COUNCIL

SHORE ROAD HISTORIC LANDFILL, SHORE ROAD, CLIFDEN, COUNTY GALWAY

TIER 3 FURTHER SITE INVESTIGATION & UPDATED RISK ASSESSMENT OF FORMER SHORE ROAD LANDFILL

For inspection purposes only.
Consent of copyright owner required for any other use.

VOLUME III. APPENDICES

24th March 2021

DOCUMENT ISSUE STATUS

REPORT ISSUE	REFERENCE NO.	DATE	
FINAL	326-02	24/03/21	

TITLE	NAME	POSITION	SIGNATURE	DATE
AUTHOR	Andrena Meegan	Project Manager	A. Meegan	24/03/21
MANAGING DIRECTOR	Padraic Mulroy	Project Director	Padraic Mulroy	24/03/21

EPA Export 03-06-2021:02:38:32

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:32

APPENDIX 1

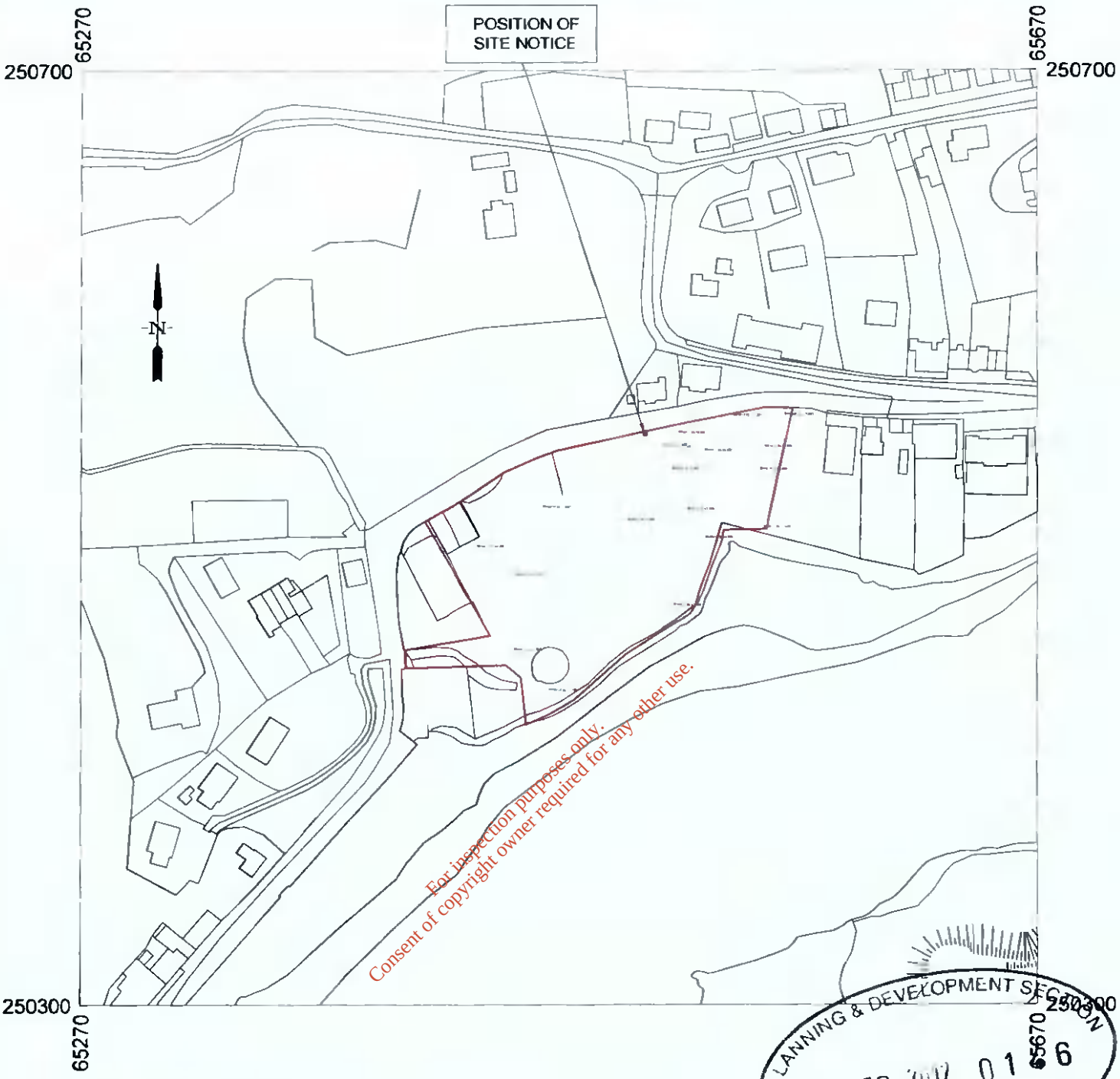
EXTRACTS OF VARIOUS PLANNING APPLICATIONS
SUBMITTED ON BEHALF OF
CLIFDEN & DISTRICT COMMUNITY COUNCIL TO
GALWAY COUNTY COUNCIL FOR THE DEVELOPMENT
OF SHORE ROAD HISTORIC LANDFILL AS
A PUBLIC PARK

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:32

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:32



For inspection purposes only.
Consent of copyright owner required for any other use.

PLANNING & DEVELOPMENT SECTION
08 FEB 2012 01 6
GALWAY COUNTY COUNCIL

AREA OF SITE OUTLINED
RED = 1.1533 HA
EXTRACT GALWAY SHEET 35/07
CENTRE COORDS (IG):
65470 250490

Drawing Title

PLANNING APPLICATION FOR
NEW OFF ROAD PUBLIC PARK
AT BALL ALLEY, CLIFDEN
SITE LOCATION MAP

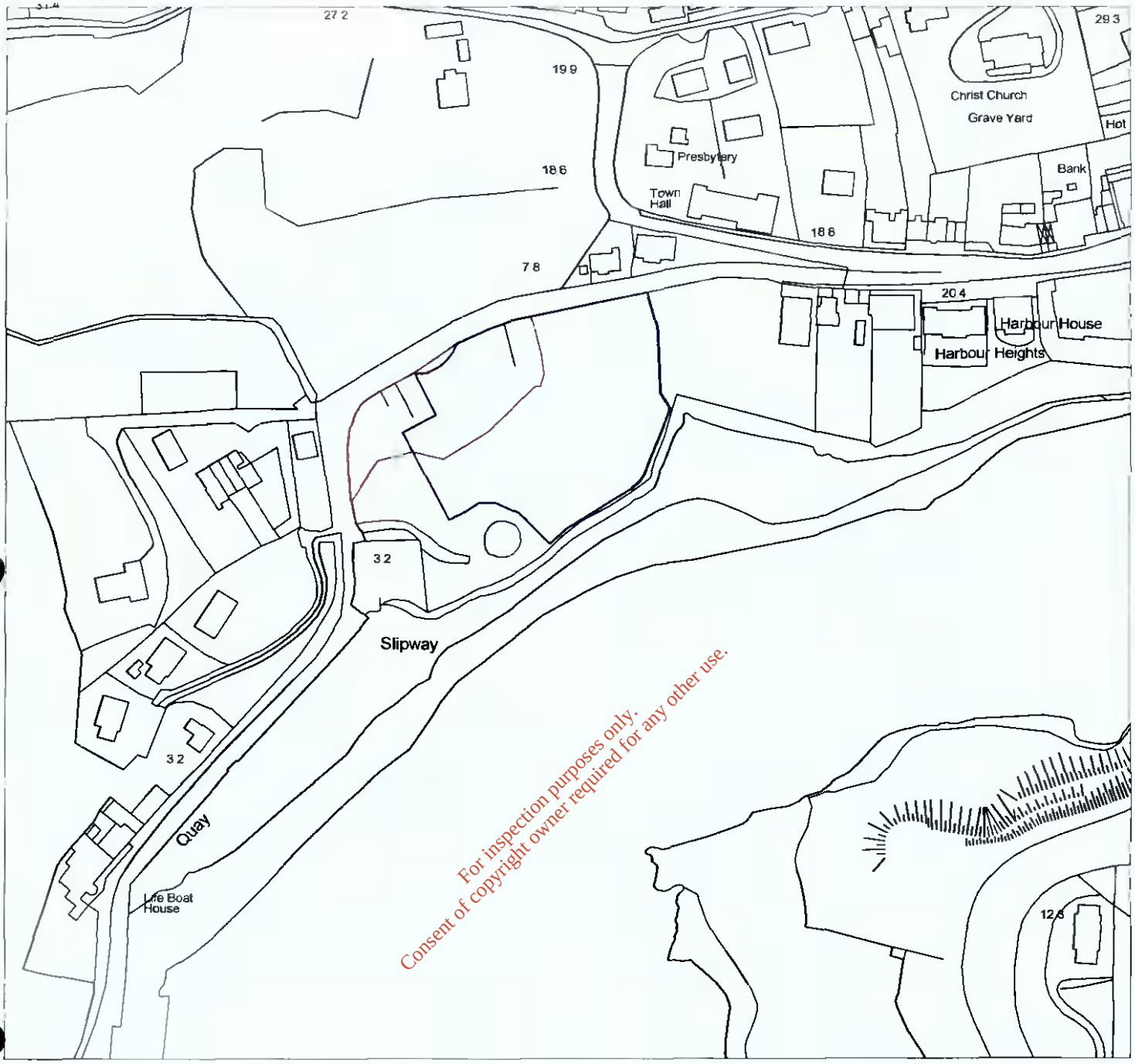
SHANE JOYCE
ENGINEERING

BEACH ROAD
CLIFDEN
CO. GALWAY

Scales	1:2500	Originator	
Checked	Approved	Date	5/2/2012
Job No	120102	Drawing No	02
Rev.			

Ordnance Survey Ireland License No. AR 0057712
© Ordnance Survey Ireland, Government of Ireland

EPA Export 03-06-2021:02:38:32



For inspection purposes only.
Consent of copyright owner required for any other use.

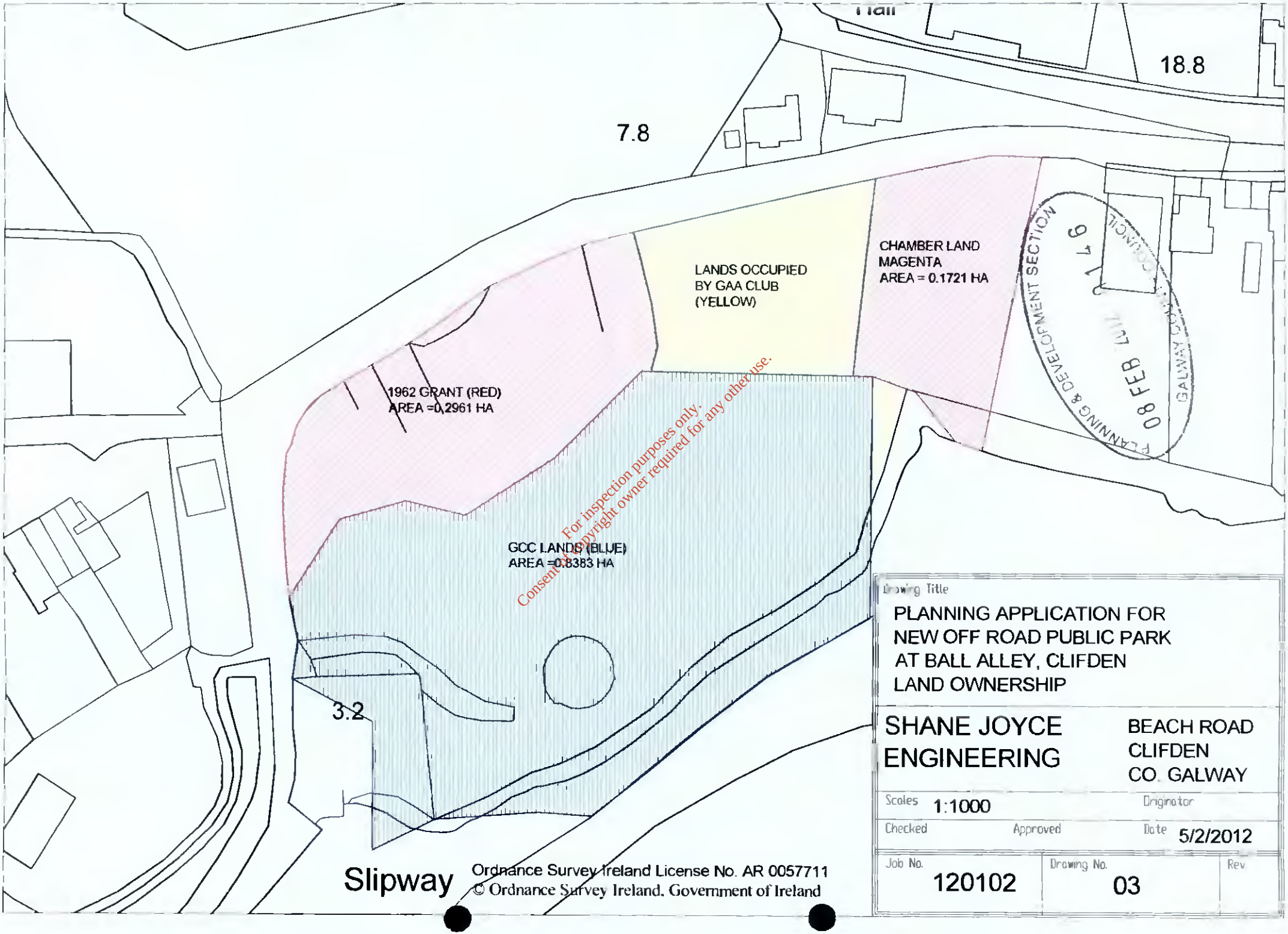
BALL ALLEY SITE
CLIFDEN
AREA OF SITE USED BY
NAOIMH FEICHIN GAA CLUB
OUTLINED BLUE

PLANNING & DEVELOPMENT SECTION
08 FEB 2012 0146
GALWAY COUNTY COUNCIL

SHANE JOYCE
21st JANUARY 2012

MAP G-02

EPA Export 03-06-2021:02:38:32



For inspection purposes only.
Consent of copyright owner required for any other use.

Drawing Title

PLANNING APPLICATION FOR
NEW OFF ROAD PUBLIC PARK
AT BALL ALLEY, CLIFDEN
LAND OWNERSHIP

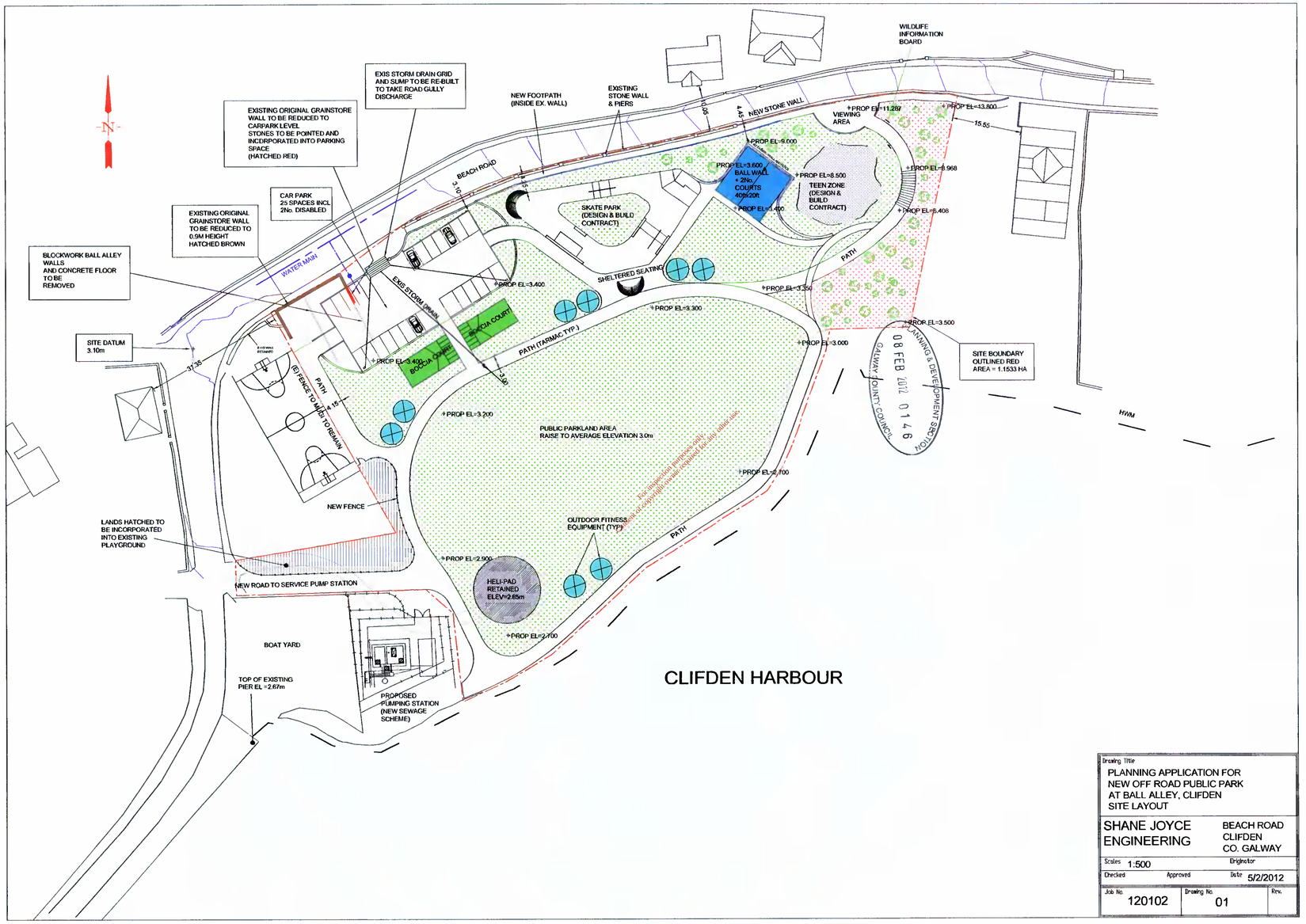
SHANE JOYCE
ENGINEERING

BEACH ROAD
CLIFDEN
CO. GALWAY

Scales 1:1000		Originator
Checked	Approved	Date 5/2/2012
Job No. 120102	Drawing No. 03	Rev

Ordnance Survey Ireland License No. AR 0057711
© Ordnance Survey Ireland, Government of Ireland

EPA Export 03-06-2021:02:38:32



Drawing Title
PLANNING APPLICATION FOR NEW OFF ROAD PUBLIC PARK AT BALL ALLEY, CLIFDEN SITE LAYOUT

SHANE JOYCE ENGINEERING
BEACH ROAD
CLIFDEN
CO. GALWAY

Scales 1:500 Originator
Checked Approved Date 5/2/2012
Job No. 120102 Drawing No. 01 Rev.

EPA Export 03-06-2021:02:38:32

NOTE: DRAWING IS FOR TENDER PURPOSES ONLY AND ARE NOT INTENDED FOR CONSTRUCTION.

EXISTING CATTLEGRID OVERHED BARRIER AND AND SUMP TO BE REMOVED

EXISTING BALL ALLEY WALL TO BE DEMOLISHED TO WITHIN 0.9M ABOVE FINISHED STREET LEVEL - OUTLINE IN RED TO REMAIN ONLY.

EXISTING ESB OH CABLE

EXISTING EIRCOM OV CABLE

BEACH ROAD

EXISTING 100MM DIA UPVC WATER MAIN

Area In Red Not Included As Part of the Tender

PROP EL=13.800

PROP EL=3.400

PROP EL=3.400

PROP EL=3.350

PROP EL=3.300

PROP EL=3.500

PROP EL=3.000

PROP EL=3.200

PROP EL=2.900

PROP EL=2.700

PROP EL=2.700

SITE DATUM 3.10m

HYDRANT

POST AND TAP LOCATION

Clause 804 Base for Track (Bituminous Footpaths)

225mm DIA PERFORATED PVC WATER FILTER DRAIN (Fall 1:100)

225mm DIA PERFORATED PVC WATER FILTER DRAIN (Fall 1:100)

225mm DIA PE WATERMAIN

225mm DIA PERFORATED PVC WATER FILTER DRAIN (Fall 1:100)

FILTER DRAINS TO RCD DETAIL 5001 TYPE K AT END OF FILTER DRAIN/STORM DRAIN A MINIMUM DISTANCE OF 2M SHALL BE KEPT FROM THE BOUNDARY WITH THE OUTLET SURROUNDED WITH PEA GRAVEL (DRAINAGE STONE).

Existing Watermain Connection To Be Used.

NEW ROAD WITH GATE TO SERVICE PUMP STATION BY GCC

HELI PAD RETAINED ELEV=2.85m

3.2
BOAT YARD

TOP OF EXISTING PIER EL =2.67m

PROPOSED PUMPING STATION (NEW SEWAGE SCHEME)

SITE BOUNDARY OUTLINED RED AREA = 1.1533 HA

HWM

CLIFDEN HARBOUR

NORTH

EXISTING SITE LAYOUT.

SCALE 1:1000

LEGEND

- Existing ESB Overheads Powerline
- Existing Site Boundary
- Existing Eircom Overhead Line.
- Existing 100mm dia Upvc Watermain
- Proposed 25mm dia PE(100) SDR11 Watermain Connection.
- Proposed 300mm dia Storm Drain
- Proposed 225mm dia Filter Drain
- Proposed 50mm dia Public Lighting Duct
- Proposed 100mm dia Future Service Duct
- Existing Hyrant
- Existing Public Lighting Pole
- Proposed Bituminous Walkway
- Proposed Micro Pillar Location
- Proposed Public Lighting Pot/Foundation
- Proposed 1.2m Dia Precast Future Manhole
- Proposed Landscaping
- Site Datum
- Existing Levels (mAOD)
- Proposed Levels (mAOD)
- AREA OF SITE: 1.1533 HA.

For inspection purposes only. Consent of copyright owner required for any other use.

Notes:

This drawing and any design hereon is copyright and must not be reproduced without written conscent.
DO NOT SCALE from drawing use figured dimensions only
All dimensions to be checked on site and any discrepancies reported immediately to the engineer before work proceeds.
All Dimensions in meters unless stated.

O'MCE
Enda O'Malley B.Eng MIEI
Bunowen
Ballyconneely
Co. Galway
Tel: (095) 23614
Fax: (095) 23544
Mob: 086 3567851
Email:endaomalley@gmail.com

Revisions		
Date	Discription	NO.

PROJECT TITLE: *Proposed Off Road Public Park at the Ball Alley, Beach Road, Clifden, Co. Galway.*

CLIENTS: *Clifden & District Community Council.*

DRAWING TITLE: *Phase one - Proposed Drainage Layout.*

DATE:	DRAWN BY:	APPROVED BY:
20th February 2018.	EOM	EOM

SCALE: 1:750 @A3.

PROJECT NO:	DRAWING NO:	REVISION NO:
564	PP-200	-

EPA Export 03-06-2021:02:38:32

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:32

APPENDIX 2

TABLE A1.1. RESULTS OF S-P-R LINKAGE PRIORTISATION ON FORMER LANDFILL AT SHORE ROAD, CLIFDEN, COUNTY GALWAY (BY MULROY ENVIRONMENTAL)

DETAILS OF S-P-R LINKAGE PRIORTISATION ON FORMER LANDFILL AT SHORE ROAD, CLIFDEN, COUNTY GALWAY (BY MULROY ENVIRONMENTAL)

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:32

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:32

Table A1.1 Results of S-P-R Linkage Priortisation on Former Landfill at Shore Road, Clifden, County Galway

SOURCE		PATHWAYS					RECEPTORS					
LEACHATE	*LANDFILL GAS*	*GROUNDWATER VULNERABILITY (VERTICAL)*	*GROUNDWATER FLOW REGIME (HORIZONTAL)*	*SURFACE WATER DRAINAGE*	*LANDFILL GAS LATERAL MIGRATION*	*LANDFILL GAS VERTICAL MIGRATION*	*LEACHATE - HUMAN PRESENCE*	*LEACHATE - PROTECTED AREAS*	*LEACHATE - AQUIFER CLASS*	*LEACHATE - PUBLIC WATER*	*LEACHATE - SURFACE WATER*	*LANDFILL GAS - HUMAN PRESENCE*
1A	**1B**	**2A**	**2B**	**2C**	**2D**	**2E**	**3A**	**3B**	**3C**	**3D**	**3E**	**3F**
5	5	3	1	2	1	0	3	1	1	0	2	3

Source Pathway Receptor	Formula	Score	% Score	Linkages	
SPR 1	1a * (2a + 2b + 2c) * 3e	60	20.0	Leachate to SW	
SPR 2	1a * (2a + 2b + 2c) * 3b	30	10.0	Leachate to GWDTE	
SPR 3	1a * (2a + 2b) * 3a	60	25.0	Leachate to Private Well	
SPR 4	1a * (2a + 2b) * 3b	20	8.3	Leachate to GWDTE	
SPR 5	1a * (2a + 2b) * 3c	20	5.0	Leachate to aquifer	
SPR 6	1a * (2a + 2b) * 3d	0	0.0	Leachate to PWS	
SPR 7	1a * (2a + 2b) * 3e	40	16.7	Leachate to SW	
SPR 8	1a *2c*3e	20	33.3	Leachate to SW	Highest score but no allowance has been given to age of waste i.e. over 45 years old and subsequent lack of leachate.
SPR 9	1a *2c*3b	10	16.7	Leachate to GWDTE	
SPR 10	1b *2d*3f	15	10.0	Landfill gas - humans	House 60m from edge of domestic waste 45 years old
SPR 11	1b *2e*3f	0	0.0	Landfill gas - humans	No house directly on top of waste body
HIGHEST INDIVIDUAL SCORE		**75**	**50.0**	**Landfill gas - humans**	

For inspection purposes only.
Consent of copyright owner required for any other use.

Risk Classification	Range of Risk Scores
Highest Risk (Class A)	Greater than or equal to 70% for any individual SPR linkage
Moderate Risk (Class B)	Between 40 to 70% for any individual SPR linkage
Lowest Risk (Class C)	Less than or equal to 40% for any individual SPR linkage

EPA Export 03-06-2021:02:38:32

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:32

Table 1a: Leachate: Source/Hazard Scoring Matrix

	WASTE FOOTPRINT (ha)		
WASTE TYPE	≤ 1 ha	> 1 ≤ 5 ha	> 5 ha
C&D [20]	0.5	1	1.5
Municipal [21]	5	7	10
Industrial [22]	5	7	10
Pre-1977 sites [23]	1	2	3
		MAX	10

Most of the site's waste is C & D with only a small % (i.e. xx%) classified as Muncipal (i.e. Domestic Waste).

Table 1b: Landfill Gas: Source/Hazard Scoring Matrix

	WASTE FOOTPRINT (ha)		
WASTE TYPE	≤ 1 ha	> 1 ≤ 5 ha	> 5 ha
C&D [20]	0.5	0.75	1
Municipal [21]	5	7	10
Industrial [22]	3	5	7
Pre-1977 sites [23]	0.5	0.75	1
		MAX	10

For inspection purposes only. Consent of copyright owner required for any other use.

[20] ***Predominantly inert waste with low biodegradable fraction and/or small industrial waste fraction.***
[21] ***Typically non-hazardous domestic waste (highly biodegradable) with potentially small hazardous waste fraction and/or small industrial waste fraction, e.g. town dump.***
[22] ***Generally industrial waste where hazardous waste was known to have been deposited or there is a strong likelihood that hazardous waste was deposited due to the close proximity of such industries.***
[23] ***Pre 1977 wastes would have been substantially degraded within the landfill.***

EPA Export 03-06-2021:02:38:32

Table 2a: Leachate Migration: Pathways

Parameters	Points available
GROUNDWATER VULNERABILITY (Vertical pathway)	
Extreme Vulnerability	3
High Vulnerability	2
Moderate Vulnerability	1
Low Vulnerability	0.5
High – Low Vulnerability	2

Table 2b: Leachate Migration: Pathways

Parameters	Points available
GROUNDWATER FLOW REGIME (Horizontal pathway)	
Karstified Groundwater Bodies (Rk) [25]	5
Productive Fissured Bedrock Groundwater Bodies (Rf and Lm)[25]	3
Gravel Groundwater Bodies (Rg and Lg) [25]	2
Poorly Productive Bedrock Groundwater Bodies (Ll, Pl, Pu) [25]	1

For inspection purposes only.
Consent of copyright owner required for any other use.

Table 2c: Leachate Migration: Pathways

Parameters	Points available
SURFACE WATER DRAINAGE [26] (surface water pathway)	
Is there a direct connection between drainage ditches associated with the waste body and adjacent surface water body? Yes	2
If no direct connection	0

[25] ***Refer to DEHLG/EPA/GSI 1999, Groundwater Protection Schemes.***

EPA Export 03-06-2021:02:38:32

Table 2d: Landfill Gas: Pathway Assuming Receptor Within 250m of Source

Parameters	Points available
LANDFILL GAS LATERAL MIGRATION POTENTIAL	
Sand and Gravel, Made ground, urban, karst	3
Bedrock	2
All other Tills (including limestone, sandstone etc – moderate permeability)	1.5
All Namurian or Irish Sea Tills (low permeability)	1
Clay, Alluvium, Peat	1

* Residence approx. 30m to NE and another 40m to the NW of site. It is likely that there is made ground directly on top of bedrock to the north and west of the waste body which would be relatively permeable (i.e. the foundations of the handball alley, the shore road foundations, old building foundations, etc). However, the domestic waste is 60m from the nearest house and the predominant soil within the native soil, imported capping and infilled C & D material are impermeable clays and silts.

Table 2e: Landfill Gas: Pathway Assuming Receptor Located Above Source

Parameters	Points available
LANDFILL GAS VERTICAL (UPWARDS) MIGRATION POTENTIAL	
Sand and Gravel, Made ground, urban, karst	5
Bedrock [2]	3
All other Tills (including limestone, sandstone etc – moderate permeability) [2]	2
All Namurian or Irish Sea Tills (low permeability)	1
Clay, Alluvium, Peat	1

* Assigned a score of 0 – Nearest residence approx. 30m to the NE of site. There is a handball alley, basketball court and playground possibly located on top of the edges of the waste body but these don't class as receptors as there are no confined spaces. However, the domestic waste is 60m from the nearest house and the predominant soil within the native soil, imported capping and infilled C & D material are impermeable clays and silts.

Consent of copyright owner required for any other use. For inspection purposes only.

EPA Export 03-06-2021:02:38:32

Table 3a: Leachate Migration: Receptors

Parameters	Points available
HUMAN PRESENCE (presence of a house indicates potential private wells)	
On or within 50m of the waste body	3
Greater than 50m but less than 250m of the waste body	2
Greater than 250m but less than 1km of the waste body	1
Greater than 1 km of the waste body	0

* Nearest residence approx. 30m and upgradient to the NE of site boundary. However, the distance to the waste body (i.e. specifically containing domestic waste is 60m). It is likely that there is made ground directly on top of bedrock to the north and west of the waste body which would be relatively permeable (i.e. the foundations of the handball alley, the shore road foundations, old building foundations, etc). However, given the age of the waste proven through the site investigation to be over 44 years old and the distance to the domestic waste, the risk is relatively low.

Table 3b: Leachate Migration: Receptors

Parameters	Points available
PROTECTED AREAS (SWDTE or GWDTE)	
Within 50m of the waste body	3
Greater than 50m but less than 250m of the waste body	2
Greater than 250m but less than 1km of waste body	1
Greater than 1 km of the waste body	0
Undesignated sites[24] within 50m of site of the waste body	1
Undesignated sites [24] greater than 50m but less than 250m of the waste body	0.5
Undesignated sites [24] greater than 250m of the waste body	0

- SAC 002031 The Twelve Bens/Garraun Complex located approximately 275m to east of site.

Consent of copyright owner required for any other use. For inspection purposes only.

[24] ***The term 'Undesignated sites' refers to wetland sites that are not designated under the Habitats or Birds Directive or Wildlife Act but are considered to the important on a local scale. Consultation with NPWS is required to identify such sites.***

EPA Export 03-06-2021:02:38:32

Table 3c: Leachate Migration: Receptors

Parameters	Points available
AQUIFER CATEGORY [26] (resource potential)	
Regionally Important Aquifers (Rk, Rf, Rg)	5
Locally Important Aquifers (Ll, Lm, Lg)	3
Poor Aquifers (Pl, Pu)	1

Table 3d: Leachate Migration: Receptors

PUBLIC WATER SUPPLIES (other than private wells)	
Within 100m of site boundary	7
Greater than 100m but less than 300m or within Inner SPA (SI) for GW supplies	5
Greater than 300m but less than 1km or within Outer SPA (SO) for GW supplies	3
Greater than 1km (karst aquifer)	3
Greater than 1km (no karst aquifer)	0

Table 3e: Leachate Migration: Receptors

Parameters	Points available
SURFACE WATER BODIES	
Within 50m of site boundary	3
Greater than 50m but less than 250m	2
Greater than 250m but less than 1km	1
Greater than 1km	0

*Clifden Bay immediately to south of site. Site infilled on former harbour inlet.

For inspection purposes only.
Consent of copyright owner required for any other use.

[26] ***This element needs to be determined during the site inspection (including walkover survey). The presence of a direct link between surface water drainage from the waste body and any adjacent surface water body implies the existence of a pathway.***

EPA Export 03-06-2021:02:38:32

Table 3f: Landfill Gas: Receptor

Parameters	Points available
HUMAN PRESENCE	
On site or within 50m of site boundary	5
Greater than 50m but less than 150m	3
Greater than 150m but less than 250m	1
Greater than 250m	0.5

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:32

APPENDIX 3

ORDNANCE SURVEY IRELAND HISTORICAL AERIAL MAPPING

GOOGLE EARTH HISTORICAL MAPPING

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:32

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:32

For inspection purposes only.
Consent of copyright owner required for any other use.

AERIAL PHOTOGRAPH TAKEN FROM ORDNANCE SURVEY IRELAND SHOWING SITE BEFORE THE DEMOLITION OF THE HANDBALL ALLEY (POSSIBLY TAKEN IN LATE 2017). GROUNDWORKS ON THE INSTALLATION OF NEW SEWERAGE DRAINAGE INFRASTRUCTURE IS VISIBLE.

EPA Export 03-06-2021:02:38:32

For inspection purposes only.
Consent of copyright owner required for any other use.

AERIAL PHOTOGRAPH TAKEN FROM GOOGLE EARTH SHOWING SITE AFTER THE DEMOLITION OF THE HANDBALL ALLEY, THE IMPORTATION OF C&D WASTE AND THE INSTALLATION OF THE 5 LAND DRAINS (MOST LIKELY TAKEN IN 2019)

EPA Export 03-06-2021:02:38:32

APPENDIX 4

2020 SITE INVESTIGATION
TRIALPIT LOGS CDTP1-CDTP12

TRIALPIT PHOTOGRAPHIC LOGS FOR CDTP1-CDTP12 (2020)

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:32

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:32

MULROY environmental

Trial Pit Log

Trialpit No
C/D-TP1
Sheet 1 of 1

Project Name: Shore Road COA	Project No. Shore Road Historic Landfill	Co-ords: 65510.11 - 250525.28 Level:	Date 29/06/2020
Location: Shore Road, Clifden, CO. Galway		Dimensions (m): 3 × 2 Depth 2.25	Scale 1:25
Client: Galway County Council			Logged PM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							soft yellow sandy CLAY (MADE GROUND)
				0.20			soft brown/grey gravelly CLAY, blocks, timber, electric cable, concrete post (MADE GROUND and C&D Waste)
				1.75			soft/firm grey/black and brown sandy CLAY (INDIGENOUS) *some minor water ingress from drain*
				2.25			End of pit at 2.25 m

For inspection purposes only.
Consent of copyright owner required for any other use.

Remarks: NEOC, cut through an old land drain, waste identified most likely old waste prior to 2014. No sample taken
Soil Vapour = 0 ppm

Stability:

AGS

EPA Export 03-06-2021:02:38:32

MULROY environmental

Trial Pit Log

Trialpit No
C/D-TP2
Sheet 1 of 1

Project Name: Shore Road COA	Project No. Shore Road Historic Landfill	Co-ords: 65521.14 - 250516.05 Level:	Date 29/06/2020
Location: Shore Road, Clifden, CO. Galway		Dimensions (m): 3 × 2, Depth 1.25	Scale 1:25
Client: Galway County Council			Logged PM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.25	ES		0.25			soft yellow sandy CLAY (MADE GROUND)
				0.80			soft to firm light brown and grey sandy gravelly CLAY with blocks, electric cables, timber, large boulders plastic pipe, some ash (MADE GROUND and C&D WASTE)
				1.50			soft grey/green sandy CLAY (INDIGENOUS) End of pit at 1.25 m

For inspection purposes only.
Consent of copyright owner required for any other use.

Remarks: NEOC, Soil Vapour = 0 ppm, waste identified most likely recently deposited waste from school

Stability:

AGS

EPA Export 03-06-2021:02:38:32

Trial Pit Log

MULROY environmental

Trialpit No
C/D-TP3
Sheet 1 of 1

Project Name: Shore Road COA	Project No. Shore Road Historic Landfill	Co-ords: 65527.46 - 250504.74 Level:	Date 29/06/2020
Location: Shore Road, Clifden, CO. Galway		Dimensions (m): 3 × 2 Depth 2.50	Scale 1:25
Client: Galway County Council			Logged PM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.25			soft light brown sandy CLAY (MADE GROUND)
				0.90			soft green/dark grey gravelly CLAY (MADE GROUND), some pockets of peat
				2.25			soft dark brown/black peaty gravelly CLAY with ash, blocks, bricks glass, cinders, metal cable, timber, large boulders (MADE GROUND and C&D WASTE)
				2.50			soft light brown/green gravelly CLAY (INDIGENOUS) End of pit at 2.50 m

For inspection purposes only.
Consent of copyright owner required for any other use.

Remarks: NEOC, Soil Vapour = 0 ppm, waste identified was identical to old waste in 2014, No Sample Taken

Stability:

AGS

EPA Export 03-06-2021:02:38:32

MULROY environmental

Trial Pit Log

Trialpit No
C/D-TP4
Sheet 1 of 1

Project Name: Shore Road COA	Project No. Shore Road Historic Landfill	Co-ords: 65517.50 - 250505.02 Level:	Date 29/06/2020
Location: Shore Road, Clifden, CO. Galway		Dimensions (m): 3 × 2, Depth 1.75	Scale 1:25
Client: Galway County Council			Logged PM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.25			soft yellow gravelly sandy CLAY (MADE GROUND)
				1.50			soft to firm light brown and grey sandy gravelly CLAY with large concrete rubble, metal rebar, blocks, metal cable, timber, large boulders (MADE GROUND and C&D WASTE)
				1.75			soft grey/green sandy CLAY (INDIGENOUS) End of pit at 1.75 m

For inspection purposes only.
Consent of copyright owner required for any other use.

Remarks: NEOC, Soil Vapour = 0 ppm, No Sample Taken

Stability:

AGS

EPA Export 03-06-2021:02:38:32

MULROY environmental

Trial Pit Log

Trialpit No
C/D-TP5
Sheet 1 of 1

Project Name: Shore Road COA	Project No. Shore Road Historic Landfill	Co-ords: 65512.65 - 250512.31 Level:	Date 29/06/2020
Location: Shore Road, Clifden, CO. Galway		Dimensions (m): 3 × 2 Depth 1.75	Scale 1:25
Client: Galway County Council			Logged PM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.25	ES		0.25			soft yellow gravelly CLAY (MADE GROUND)
							soft to firm light brown and grey sandy gravelly CLAY with large land drain hose, metal rebar, blocks, metal cable, timber, large angular boulders, pockets of sand (MADE GROUND and C&D WASTE)
				1.50			soft grey/green sandy CLAY (INDIGENOUS)
				1.75			End of pit at 1.75 m

For inspection purposes only.
Consent of copyright owner required for any other use.

Remarks: NEOC, Soil Vapour = 0 ppm Waste identified was most likely deposited recently from school

Stability:

AGS

EPA Export 03-06-2021:02:38:32

MULROY environmental

Trial Pit Log

Trialpit No
C/D-TP6
Sheet 1 of 1

Project Name: Shore Road COA	Project No. Shore Road Historic Landfill	Co-ords: 65479.58 - 250526.14 Level:	Date 29/06/2020
Location: Shore Road, Clifden, CO. Galway		Dimensions (m): 3 x 2 Depth 1.10	Scale 1:25
Client: Galway County Council			Logged PM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.00	ES					soft brown and grey gravelly CLAY with large concrete rubble, metal rebar, blocks, metal cable, timber, large angular, sub-angular cobbles and boulders (MADE GROUND and C&D WASTE)
				0.90			soft grey/black sandy CLAY (INDIGENOUS)
				1.10			End of pit at 1.10 m

For inspection purposes only.
Consent of copyright owner required for any other use.

Remarks: NEOC, Soil Vapour = 0 ppm, large masonry possibly from demolished handball alley, this waste is older than school waste

Stability:

AGS

EPA Export 03-06-2021:02:38:32

Trial Pit Log

MULROY environmental

Trialpit No
C/D-TP7
Sheet 1 of 1

Project Name: Shore Road COA	Project No. Shore Road Historic Landfill	Co-ords: 65487.19 - 250513.68 Level:	Date 29/06/2020
Location: Shore Road, Clifden, CO. Galway		Dimensions (m): 3 × 2 Depth 2.50	Scale 1:25
Client: Galway County Council			Logged PM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.25	ES		0.25			soft yellow sandy CLAY (MADE GROUND)
							soft to firm light brown and grey sandy gravelly CLAY with large concrete rubble, metal rebar and ducting, blocks, window frames, felt strips, drainage hose (MADE GROUND and C&D WASTE)
				2.25			soft grey/green sandy CLAY (INDIGENOUS)
				2.50			End of pit at 2.50 m

For inspection purposes only.
Consent of copyright owner required for any other use.

Remarks: NEOC, Soil Vapour = 0 ppm, dominated by poorly settled C&D rubble from school

Stability: +Pit Collapsing

AGS

EPA Export 03-06-2021:02:38:32

Trial Pit Log

MULROY environmental

Trialpit No
C/D-TP8
Sheet 1 of 1

Project Name: Shore Road COA	Project No. Shore Road Historic Landfill	Co-ords: 65496.52 - 250514.53 Level:	Date 29/06/2020
Location: Shore Road, Clifden, CO. Galway		Dimensions (m): 3 × 2, Depth 1.00	Scale 1:25
Client: Galway County Council			Logged PM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							soft red/yellow organic gravelly sandy CLAY, some concrete shards, metal (MADE GROUND and C&D WASTE)
				0.75			soft grey/green sandy CLAY (INDIGENOUS)
				1.00			End of pit at 1.00 m

For inspection purposes only.
Consent of copyright owner required for any other use.

Remarks: NEOC, Soil Vapour = 0 ppm, waste most likely deposited from school. No sample taken

Stability:

AGS

EPA Export 03-06-2021:02:38:32

Trial Pit Log

Trialpit No
C/D-TP9
Sheet 1 of 1

Project Name: Shore Road COA	Project No. Shore Road Historic Landfill	Co-ords: 65488.81 - 250523.66 Level:	Date 29/06/2020
Location: Shore Road, Clifden, CO. Galway		Dimensions (m): 3 × 2 Depth 2.00	Scale 1:25
Client: Galway County Council			Logged PM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							soft dark brown/black gravelly CLAY with concrete, ash, bike, metal, bricks, plastic, timber, tree roots (MADE GROUND and C&D/DOMESTIC WASTE)
				1.75			soft grey/green sandy CLAY (INDIGENOUS)
				2.00			End of pit at 2.00 m

For inspection purposes only.
Consent of copyright owner required for any other use.

Remarks: NEOC, Soil Vapour = 0 ppm, waste identified most likely old waste. No Sample Taken

Stability:

EPA Export 03-06-2021:02:38:32

Trial Pit Log

Trialpit No: **C/D-TP10**

Sheet 1 of 1

Project Name:	Shore Road COA	Project No.: Shore Road Historic Landfill	Co-ords: 65505.18 - 250515.39 Level:
Location:	Shore Road, Clifden, CO. Galway	Dimensions (m): 3 × 2 Depth 2.00	Scale 1:25
Client:	Galway County Council		Logged PM

Date: 29/06/2020

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.25	ES		0.25			soft yellow sandy CLAY (MADE GROUND)
							soft to firm light brown and grey sandy gravelly CLAY with large concrete rubble, metal rebar, blocks, metal cable, timber, large boulders (MADE GROUND and C&D WASTE)
				1.50			soft grey sandy CLAY (INDIGENOUS) *minor water ingress*
				2.00			End of pit at 2.00 m

For inspection purposes only.
Consent of copyright owner required for any other use.

Remarks: NEOC, Soil Vapour = 0 ppm

Stability:

EPA Export 03-06-2021:02:38:32

Trial Pit Log

MULROY environmental

Trialpit No
C/D-TP11
Sheet 1 of 1

Project Name: Shore Road COA	Project No. Shore Road Historic Landfill	Co-ords: 65500.69 - 250521.09 Level:	Date 29/06/2020
Location: Shore Road, Clifden, CO. Galway		Dimensions (m): 3 × 2 Depth 1.75	Scale 1:25
Client: Galway County Council			Logged PM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							soft yellow sandy CLAY (MADE GROUND)
				0.25			soft to firm light brown and grey sandy gravelly CLAY with large concrete rubble, metal rebar, blocks, metal cable, timber, large boulders (MADE GROUND and C&D WASTE)
				1.50			soft grey sandy CLAY (INDIGENOUS)
				1.75			End of pit at 1.75 m

For inspection purposes only.
Consent of copyright owner required for any other use.

Remarks: NEOC, Soil Vapour = 0 ppm

Stability:

AGS

EPA Export 03-06-2021:02:38:32

Trial Pit Log

MULROY environmental

Trialpit No
C/D-TP12
Sheet 1 of 1

Project Name: Shore Road COA	Project No. Shore Road Historic Landfill	Co-ords: 65502.24 - 250528.84 Level:	Date 29/06/2020
Location: Shore Road, Clifden, CO. Galway		Dimensions (m): 3 x 2 Depth 0.75	Scale 1:25
Client: Galway County Council			Logged PM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			soft brown sandy CLAY (TOPSOIL)
							soft brown grey sandy CLAY (MADE GROUND/C&D)
				0.50			soft dark grey CLAY (INDIGENOUS) *iron mottling*
				0.75			End of pit at 0.75 m

For inspection purposes only.
Consent of copyright owner required for any other use.

Remarks: NEOC, Soil Vapour = 0 ppm, No sample taken

Stability:

AGS

EPA Export 03-06-2021:02:38:33

Plate A1.1 Photograph of soil profile TP1

For inspection purposes only.
Consent of copyright owner required for any other use.

Plate A1.2 Photograph of stockpile of material in TP1

EPA Export 03-06-2021:02:38:33

Plate A3.3 Photograph of soil profile TP2

For inspection purposes only.
Consent of copyright owner required for any other use.

Plate A3.4 Photograph of stockpile of material in TP2

EPA Export 03-06-2021:02:38:33

Plate A1.5 Photograph of soil profile TP3

For inspection purposes only.
Consent of copyright owner required for any other use.

Plate A1.6 Photograph of stockpile of material in TP3

EPA Export 03-06-2021:02:38:33

Plate A1.7 Photograph of soil profile TP4

For inspection purposes only.
Consent of copyright owner required for any other use.

Plate A1.8 Photograph of stockpile of material in TP4

EPA Export 03-06-2021:02:38:33

Plate A1.9 Photograph of soil profile TP5

For inspection purposes only.
Consent of copyright owner required for any other use.

Plate A1.10 Photograph of stockpile of material in TP5

EPA Export 03-06-2021:02:38:33

Plate A1.11 Photograph of soil profile TP6

For inspection purposes only.
Consent of copyright owner required for any other use.

Plate A1.12 Photograph of stockpile of material in TP6

EPA Export 03-06-2021:02:38:33

Plate A1.13 Photograph of soil profile TP7

Plate A1.14 Photograph of stockpile of material in TP7

Consent of copyright owner required for any other use.
For inspection purposes only.

EPA Export 03-06-2021:02:38:33

Plate A1.15 Photograph of soil profile TP8

For inspection purposes only.
Consent of copyright owner required for any other use.

Plate A1.16 Photograph of stockpile of material in TP8

EPA Export 03-06-2021:02:38:33

Plate A1.17 Photograph of soil profile TP9

For inspection purposes only.
Consent of copyright owner required for any other use.

Plate A1.18 Photograph of stockpile of material in TP9

EPA Export 03-06-2021:02:38:33

Plate A1.19 Photograph of soil profile TP10

For inspection purposes only.
Consent of copyright owner required for any other use.

Plate A1.20 Photograph of stockpile of material in TP10

EPA Export 03-06-2021:02:38:33

Plate A1.21 Photograph of soil profile TP11

For inspection purposes only.
Consent of copyright owner required for any other use.

Plate A1.22 Photograph of stockpile of material in TP11

EPA Export 03-06-2021:02:38:33

Plate A1.23 Photograph of soil profile TP12

For inspection purposes only.
Consent of copyright owner required for any other use.

Plate A1.24 Photograph of stockpile of material in TP12

EPA Export 03-06-2021:02:38:33

APPENDIX 5

EPA/TEAGASC SOIL MAPPING

EPA/TEAGASC SUBSOIL MAPPING

GSI BEDROCK MAPPING

GSI HYDROGEOLOGICAL MAPPING

EPA COASTAL WATER MAPPING

EPA SURFACE WATER MAPPING

WFD CATCHMENT MAPPING

CLIFDEN GROUNDWATER BODY REPORT

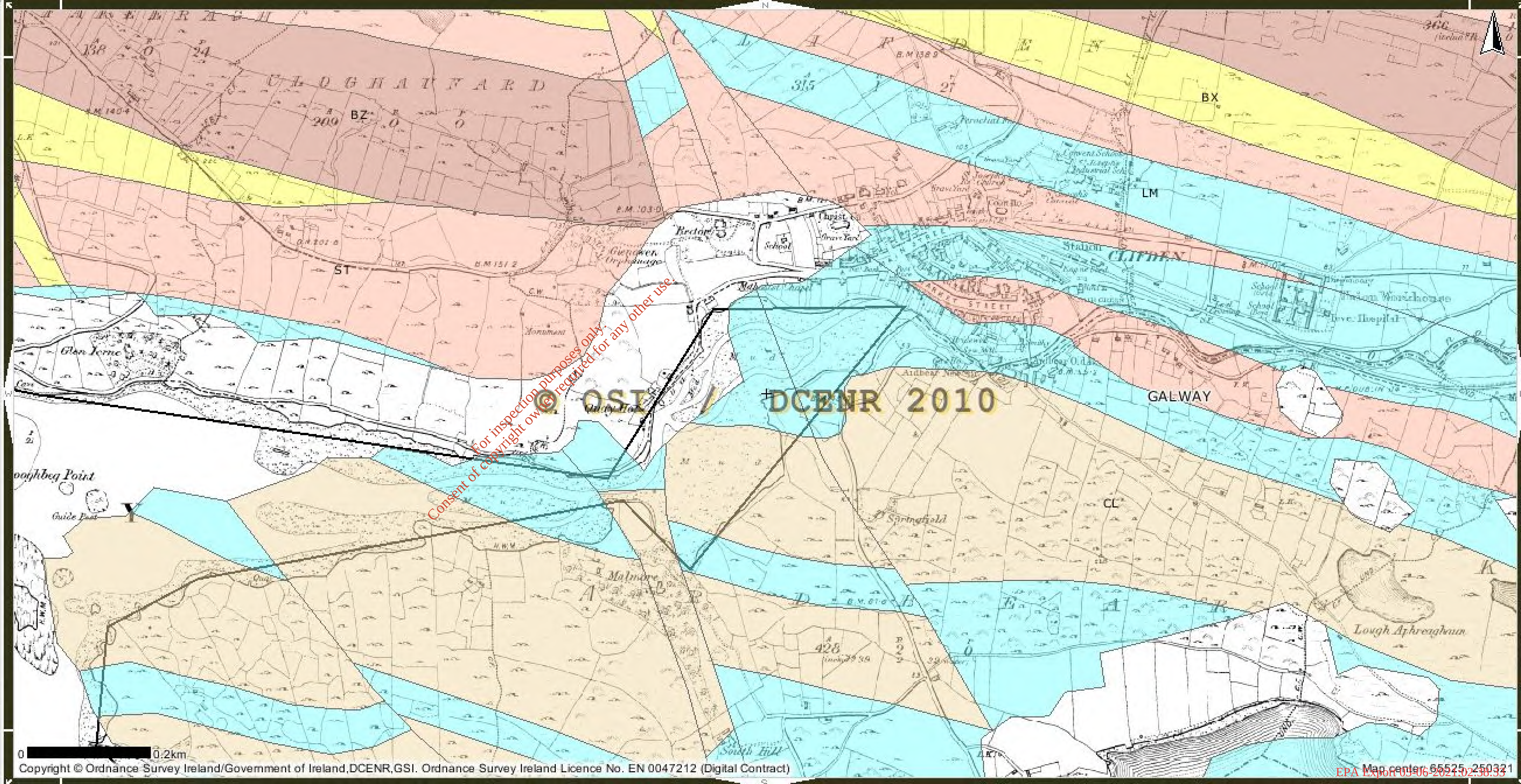
For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:33

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:33

SLfh - Fahee North Member
SLll - Lissylisheen Member
SLmk - in Slievenaglasha Formation
SLtu - Turret Volcanic Member
SM - Shanmullagh Formation
SM - Slievenamuck Conglomerate Formation
SMG - Slieve Mish Group
SN - Sheskin Formation
SP - Slievemore Psammitic Formation
SQ - Slate Quarries Formation
SR - Shrough Formation
SR - Smugglers Cave Formation
SR - Srah Formation
SR - Sraheens Lough Formation
SS - Silverspring Formation
SS - Skerries Formation
SS - Slievemore Schist Formation
SSqs - South Slope Quartzite Member
ST - Seamount Formation
ST - Slieve Tooey Quartzite Formation
ST - Streamstown Schist Formation
SU - Suir Limestone Formation
SV - Skerdagh River Volcanic Formation
SV - Slevoir Formation
SV - Subulter Volcanic Formation
SVma - Glenlara Marble Member
SW - Snowtown Formation
SWB - Slishwood Division, Semi-pelitic biotite schists
SWBbas - Slishwood Division, Semi-pelitic biotite schists
SWC - Slishwood Division, Metalimestones
SWG - Smerwick Group
SWK - Slishwood Division, Pelitic & semi-pelitic paragneiss
SWKbas - Slishwood Division, Pelitic & semi-pelitic paragneiss
SWQ - Slishwood Division, Psammitic Paragneiss
SWQbas - Slishwood Division, Psammitic Paragneiss
SY - Srahlaghy Quartzite Formation
St - Saltees Granite
Sy - Syenite
T - Trachyte
TA - Tawnyshane Tillite Formation



For inspection purposes only.
Consent of copyright owner required for any other use.
EPA Export 03-06-2021:02:30:32

CG - Cloonygowan Formation
CG - Coosglass Slate Formation
CG - Cregg Limestone Formation
CH - Caha Mountain Formation
CH - Caher Hill Formation
CH - Cahore House Formation
CH - Clogher Head Formation
CH - Cooldaragh Formation
CH - Corn Hill Formation
CH - Craggagh Shale Formation
CH - Croaghubbrid Pelite Formation
CHls - Lower Sandstone Member
CHss - in Caha Mountain Formation
CHus - Upper Sandstone Member
CI - Carrigmaclea Formation
CI - Clontrain Formation
CI - Cloonierin Formation
CJ - Clonlusk Formation
CJ - Connemara Marble Formation
CK - Carrickatee Formation
CK - Carricktriss Formation
CK - Cork Red Marble Formation
CL - Cashel Schist Formation
CL - Clogrenan Formation
CL - Clontail Formation
CL - Cloonagh Limestone Formation
CL - Croghan Limestone Formation
CL - Cross Lake Formation
CLcr - Cracoean Reef Member
CLmk - in Clogrenan Formation
CM - Collon Formation
CM - Coumshingaun Conglomerate Formation
CM - Croaghmarhin Formation
CM - Croaghmoyle Formation
CM - Culmore Formation
CMcf - Carrigduff Volcanic Member
CMcv - Coolnahorna Volcanic Member
CN - Camillan Sandstone Formation
CN - Carraun Shale Formation
CN - Conlanstown Formation
CN - Corraun Formation

© OSI / DCENR 2010
For inspection purposes only.
Consent of copyright owner required for any other use.

0 0.2km

Copyright © Ordnance Survey Ireland/Government of Ireland,DCENR,GSI. Ordnance Survey Ireland Licence No. EN 0047212 (Digital Contract)

Map center: 65525, 250321

EPA Export 03-06-2021-02:56:33

Map Legend

Settings

Karst Features

- Borehole
- Cave
- Dry Valley
- Enclosed Depression
- Estevelle
- Spring
- Superficial Solution Features
- Swallow Hole
- Turlough

- Tracer Lines
- Tracer Output Site

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
- Ll - 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

- RBD Boundaries
- County Boundaries

For inspection purposes only.
Consent of copyright owner required for any other use.

Table Of Contents

- Hydrometric Gauges
- Rivers Group
  - Rivers
  - Streams
- Lakes
- Coastal waterbodies
- Transitional waterbodies
- Ground waterbodies
  - Gravel
  - Karstic
  - Poorly productive bedrock
  - Productive fissured bedrock
- Domestic Waste Water Risk
- WFD Risk Scores
- WFD Register of Protected Areas
- WFD Status
- Water Regions
- National Soils Database
- Land
  - Soils

Results

For inspection purposes only.
Consent of copyright owner required for any other use.
EPA Export 03-06-2021:02:38:33

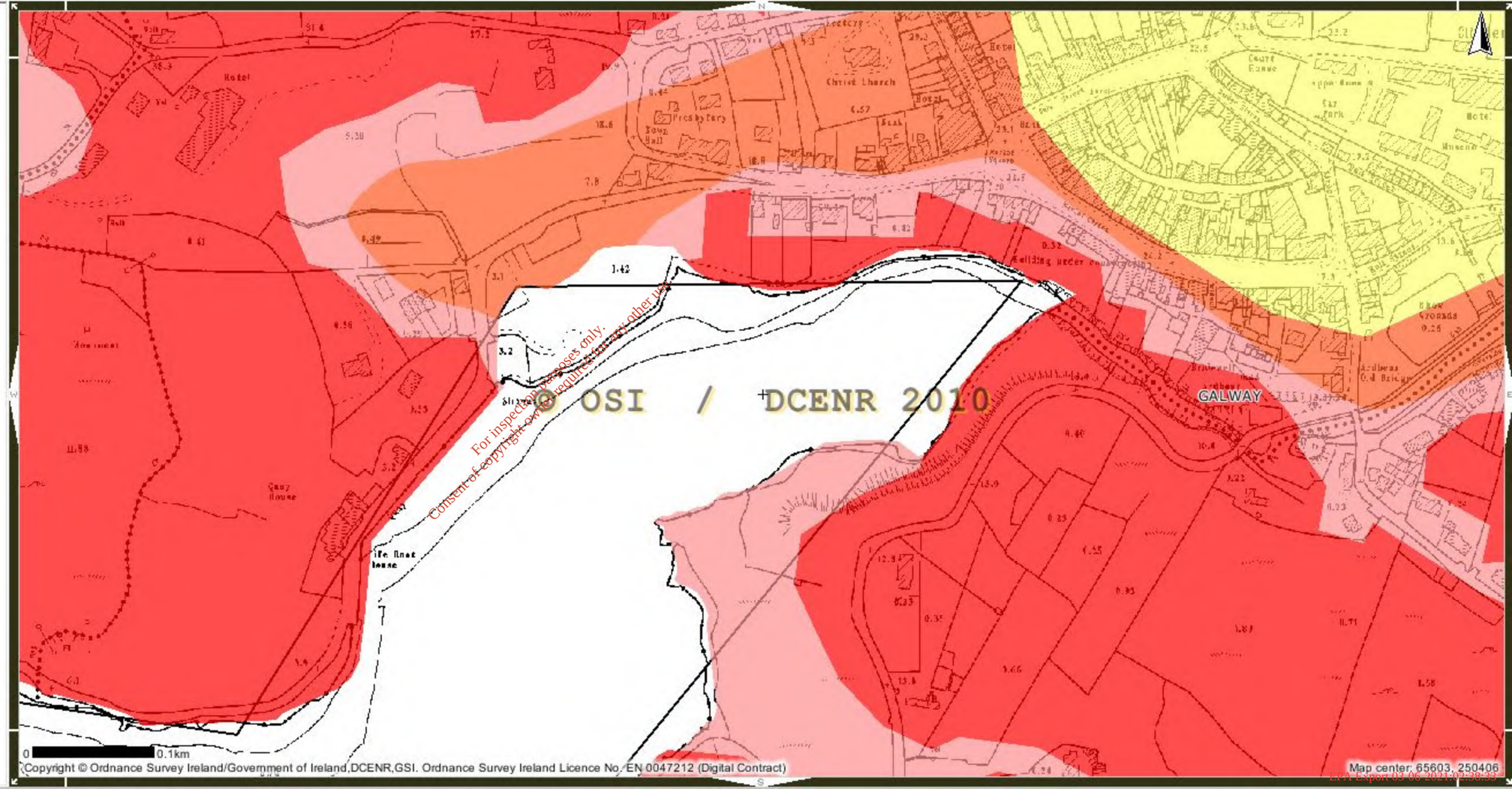
Map Legend

Settings

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
- County Boundaries

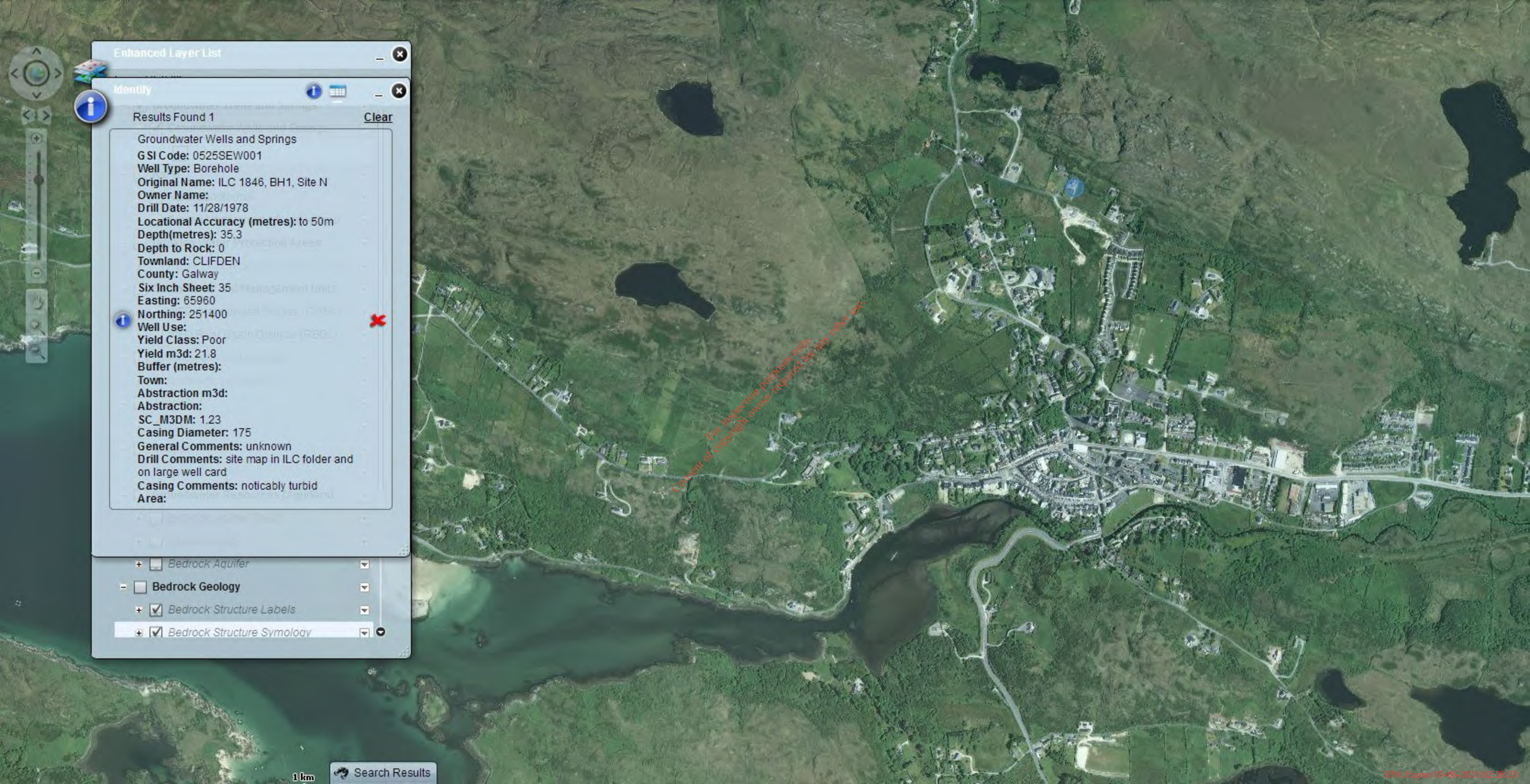
Watermark



For inspection purposes only.
Consent of copyright owner required for any other use.

Copyright © Ordnance Survey Ireland/Government of Ireland,DCENR,GSI. Ordnance Survey Ireland Licence No. EN 0047212 (Digital Contract)

Map center: 65603, 250406


Enhanced Layer List
Identify
Results Found 1
Clear
Groundwater Wells and Springs
GSI Code: 0525SEW001
Well Type: Borehole
Original Name: ILC 1846, BH1, Site N
Owner Name:
Drill Date: 11/28/1978
Locational Accuracy (metres): to 50m
Depth(metres): 35.3
Depth to Rock: 0
Townland: CLIFDEN
County: Galway
Six Inch Sheet: 35
Easting: 65960
Northing: 251400
Well Use:
Yield Class: Poor
Yield m3d: 21.8
Buffer (metres):
Town:
Abstraction m3d:
Abstraction:
SC_M3DM: 1.23
Casing Diameter: 175
General Comments: unknown
Drill Comments: site map in ILC folder and on large well card
Casing Comments: noticably turbid
Area:
Bedrock Aquifer
Bedrock Geology
Bedrock Structure Labels
Bedrock Structure Symology
1 km
Search Results
For inspection purposes only.
Consent of copyright owner required for any other use.

Clifden-Castlebar GWB: Summary of Initial Characterisation.

Hydrometric Area Local Authority	Associated surface water features	Associated terrestrial ecosystem(s)	Area (km^2)
32 Galway, Mayo Co Co's	There are numerous rivers, unnamed streams and lakes. See Table 1 for a full listing of the surface water features.	Connemara Bog Complex / The Twelve Pins - Garraun Complex / Mweelrea-Sheffry-Errif Complex (O'Riain, 2004).	898

Topography	The land surface is characterised by steep slopes and mountainous terrain, flattening in a westerly direction toward the coastline. Elevations range from 10-810 mAOD. The Twelve Pins, Sheffry Hills, Partry Mountains and the Maamturk Mountains are present in the GWB. The GWB stretches from Clifden in the south to Castlebar in the north.	
Geology and Aquifers	**Aquifer categories**	The main aquifer category in this GWB is: **Pl:** Poor aquifer which is generally unproductive except for local zones. It composes 98% of the GWB. Between Castlebar and Newport, there is a narrow area with an aquifer category of **Ll:** Locally important aquifer which is moderately productive only in local zones. East of Louisburgh, near Aghagower, East of Leenaun, in the Partry Mountains and just north of Toormakeady there are three small areas (5 km^2, 0.5 km^2, 6 km^2) of Moy Sandstone which is: **Lm:** Locally important aquifer which is generally moderately productive. Also just north of Toormakeady is an area (0.8 km^2) occupied by Visean Limestone which is: **Rk^c:** Regionally important karstified aquifer dominated by conduit flow
	Main aquifer lithologies	This GWB is composed primarily of Precambrian Quartzites, Gneisses & Schists, Ordovician Metasediments and Silurian Metasediments and Volcanics. Table 2 presents a full list of lithologies present. Precambrian Marbles cross cut the southern half of the GWB in two areas, at Clifden and Letterfrack and are part of the Letterfrack GWB.
	Key structures	The rocks in the GWB have undergone several episodes of deformation, comprising intense folding and faulting. The main structural trend is E-W. Major E-W trending folds include the Mweelrea Syncline and the Croagh Patrick Syncline. Parallel to these synclines are several major faults such as the Lough Nafooey, Derry Bay, Errif Valley and Doon Rock Fault. The Maam Valley Fault Zone is a major NW-SW trending fault structure. (Long *et al*, 2002). Bedrock strata tend to be steeply dipping.
	Key properties	Well data are sparse in the GWB. Three boreholes located in the schists north of Clifden, at Glenbricken and Coolacloy, have reported yields of 33, 26 and 15 m^3/d with specific capacities of 15, 1.3 and 0.6 $m^3/d/m$ respectively. The data indicate low transmissivities – in the range of 0.7-20 m^2/d. Two wells near Louisburgh also have similar yields and implied transmissivities. In the vicinity of faults, transmissivity may be higher. Storativity is expected to be low (<0.5%). The data are inadequate to calculate groundwater gradients, however, these are expected to be greater than 0.01.
	Thickness	Most groundwater flux will be in the uppermost part of the aquifer; comprising a broken and weathered zone typically less than 3 m thick; a zone of interconnected fissuring 10-15 m thick; and a zone of isolated poorly connected fissuring typically less than 150 m, in which strikes are noted between 40-50 m and 50-56 m below ground level in two boreholes near Louisburgh, but yields are from these isolated depths are low.
Overlying Strata	**Lithologies**	Approximately 32% of the subsoils are dominated by Blanket Peat. A full listing is given in Table 3.
	Thickness	Subsoil thickness data are sparse. Available data indicate the thickness of the subsoils is generally less than 3 m over the GWB. Subsoils are thicker in the low lying flatter areas of the GWB. The thickness of the blanket peat ranges from 0-6 m, depending on topography (Daly, 1985).
	% area aquifer near surface	*[Further Information to be added at a later date]*
	Vulnerability	*[Further Information to be added at a later date]*
Recharge	**Main recharge mechanisms**	Diffuse recharge occurs via rainfall percolating through the subsoil and rock outcrops. Due to the low permeability of much of the subsoil (blanket peat) and the aquifers, a high proportion of the available recharge will discharge to the streams. In addition, the steep slopes in the mountainous areas promote surface runoff. The stream density is approximately 1.5 km/km^2, indicating the high proportion of surface runoff.
	Est. recharge rates	*[Information to be added to and checked]*
Discharge	**Large springs and large known abstractions (m^3/d)**	There are no known large springs or large abstractions in the GWB.
	Main discharge mechanisms	Shallow groundwater is likely to discharge to streams and lakes, but the limited bedrock transmissivity means that the baseflow component of the total streamflow will be low. Small springs and seeps are likely to issue at the stream heads and along their course. Seepages will develop on the coastal cliff faces.

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:33

	Hydrochemical Signature	Wells north of Clifden have alkalinities in the range of 67-180 mg/l $CaCO_3$ and hardness in the range of 75-178 mg/l $CaCO_3$. The signature in the GWB is predominantly Ca-Mg-HCO_3.
Groundwater Flow Paths		Groundwater flow is expected to be concentrated in fractured and weathered zones and in the vicinity of fault zones. Generally, water levels are 0-8 m below ground level. Flow paths are likely to be short (30-300 m) with groundwater discharging rapidly to nearby streams and small springs. There are observed deep water strikes, indicating that there is a component of deep groundwater flow, however shallow groundwater flow is dominant. Groundwater flow directions are expected to follow topography – overall in a westerly direction.
Groundwater & Surface water interactions		Groundwater will discharge locally to streams and rivers crossing the aquifer and also to small springs and seeps. Owing to the poor productivity of the aquifers in this body it is unlikely that any major groundwater - surface water interactions occur. Baseflow to rivers and streams is likely to be relatively low. Lakes comprise approximately 3% of the GWB.
Conceptual model	• The GWB is bounded to the west by the coast. The northern, southern and eastern boundaries are surface water catchment divides. The terrain is characterised by mountainous areas, flattening toward the coastline. • The GWB is composed primarily of low transmissivity rocks. Most of the groundwater flux is in the uppermost part of the aquifer: comprising a broken and weathered zone typically less than 3m thick; a zone of interconnected fissuring typically less than 10m; and a zone of isolated fissuring typically less than 150m. • Groundwater flow is expected to be concentrated in fractured and weathered zones and in the vicinity of fault zones. • Recharge occurs diffusely through the subsoils and via outcrops. Recharge is limited by the peat and the low permeability bedrock, thus most of the available recharge discharges rapidly to nearby streams. • Flow paths are likely to be short (30-300 m) with groundwater discharging rapidly to nearby streams and small springs and flow directions are expected to follow topography. • Groundwater discharges rapidly to nearby small streams, lakes, small springs and seeps. Overall flow direction is westwards. • The rock units in GWB are generally of low permeability and baseflow to rivers and streams is likely to be relatively low.	
Attachments	Table 1, 2, 3 and Figure 1.	
Instrumentation	**Stream gauges:** 32004*, 32005, 32008, 32010, 32011*, 32013, 32014, 32015, 32016, 32017, 32018, 32019, 32020, 32023, 32060, 32072, 32073, 32074, 32078. * Adjusted Dry River Flow data available **EPA Water Level Monitoring boreholes:** (Mayo 84) **EPA Representative Monitoring points:** None	
Information Sources	Daly, D. (1985) *Groundwater in County Galway with particular reference to its Protection from Pollution*. Geological Survey of Ireland report for Galway County Council. 98pp. Pracht, M., Lees, A., Leake, B., Feely, M., Long, B., Morris, J., McConnell, B., (2003*). A geological description to accompany the Bedrock Geology 1:100,000 Scale Map Series, Sheet 14, Galway Bay*. Unpublished Geological Survey of Ireland Map Series Report. Long, B., McConnell, B., Philcox, M.E. (2002). *A geological description to accompany the Bedrock Geology 1:100,000 Scale Map Series, Sheet 11, South Mayo*. Geological Survey of Ireland Map Series Report. Aquifer Chapters: The Granite, Ordovician, Precambrian and Ordovician Aquifers. O' Riain, G., (2004). *Water Dependent Ecosystems and Subtypes Draft Report*. WFD Support Projects. Compass Informatics in association with National Wildlife and Parks Service (DEHLG).	
Disclaimer	Note that all calculation and interpretations presented in this report represent estimations based on the information sources described above and established hydrogeological formulae.	

Consent of copyright owner required for any other use.
For inspection purposes only.

EPA Export 03-06-2021:02:38:33

Table 1 Associated surface water features

Rivers: Bellakip, Bunanakee, Bundorragh, Bunleemshough, Bunowen, Carrowbeg, Carrownisky, Cross, Culfin, Davros, Derrycraff, Erriff, Glaishwy, Glencullin, Glendavock, Glenlaur, Glenummera, Keeraun, Kylemore, Lugatoran, Moyour, Mweelin, Newport, Owenacunny, Owenadornaun, Owencloghagh, Owenduff, Owengarr, Owenglin, Owenmore, Owennabaunoge, Owennabrockagh, Owennaglogh, Owennasallagh, Owenwee, Polladirk, Shanaveagh, Traheen, Streamstown, Traheen, Erriff, Owenwee, Glenisland.
Streams: Owengarve
Lakes: Tonacrick Lough, Tawnyard Lough, Shanakeever Lough, Rusheenduff Lough, Rusheen Lough, Roonagh Lough, Prospect Lough, Moher Lough, Maw Lough, Lugaloughan, Lugaharry Lough, Lugacolliee Lake, Loughnakilky, Loughbaun, Loughauwnphaudeen, Loughaun's, Loughaunattin, Loughaunarow, Loughaunaroor, Loughaun, Loughaun, Loughaun, Loughanshee, Loughans, Loughanillaun, Loughanboy, Loughanaveeny, Loughan, Loughan, Loughan, Woongar, Usk, Tully, Touther, Tonagh, Tarriff, Tanny, Srahwee, Sillagh, Sallagher, Phreaghaun, Oughter, Nawarawaun, Natawny, Nasoodery, Namucka, Nambrackkeagh, Nambrackkeagh, Nambrackkagh, Nakilla, Nakilla, Nahoomin, Nahillion, Nahaltora, Naguroge, Nagap, Nacorrussaun, Nacorra, Nacarrigeen, Muingacurry, Muck, Maladrolaun, Lugaloughan, Louracheragh, Laraha, Laraha, Knockaunbaun, Greney, Glenawough, Gall, Fee, Fee, Fadda, Emlaghnacourty, Emilagh, Doo, Donoghmeave, Darrdun, Cunnel, Cunnel, Cashleen, Cahasy, Bunnaboghec, Breenbannia, Brawn, Benchoona, Ben, Bellawaum, Beg, Beg, Beg, Beg, Beflawaum, Awaniareen, Awaddy, Auna, Athola, Ascardaun, Apillaun, Animma, Alisheen, Agh, Adroma, Acreragh, Acrannereen, Loch an Gherarrain Bhain, Lettershask North, Lettereen Lough, Kylemore/Pollacappul Lough, Knappaghmore Lough, Knappagh Lough, Knappagh Lough, Killadangan Lough, Island Lough, Island Lough, Is_Inland, Glencullin Lough, Glenbrickeen Lough, Gibson's Lough, Fin Lough, Fiddaungil, Feenune Lough, Faul Lough, Emlaghbeg Lough, Drinagh Lough, Drimeen Lough, Drimeen Lough, Doonloughan Lough, Doonloughan Lough, Dooaghtry Lough, Doo Lough, Derrywaking Lough, Derryvraun Lough, Derrylea Lough, Derrygarvebeg, Derryaun Lough, Derryascorra Lough, Derrintin Lough, Derrarlan Lough, Cuilmore Lough, Cross Lough, Croft Lough, Creggan Lough, Cregg Lough, Creeggan Lough, CourhoorLough, Corragaun Lough, Cogaula Lough, Cashel Lough, Carrowevagh Lough, Carrickawaddy Lough, Boolagare Lough, Boheh Loughs, Boheh Loughs, Beltra Lough, Barnahallia Lough, Ballynakill Lough, Ballynacarrick Lough, Ballybwee Lough, Ballinaboy Lough, Aughrusbeg Lough, Anivan

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:33

Table 2. Rock units in Clifden GWB

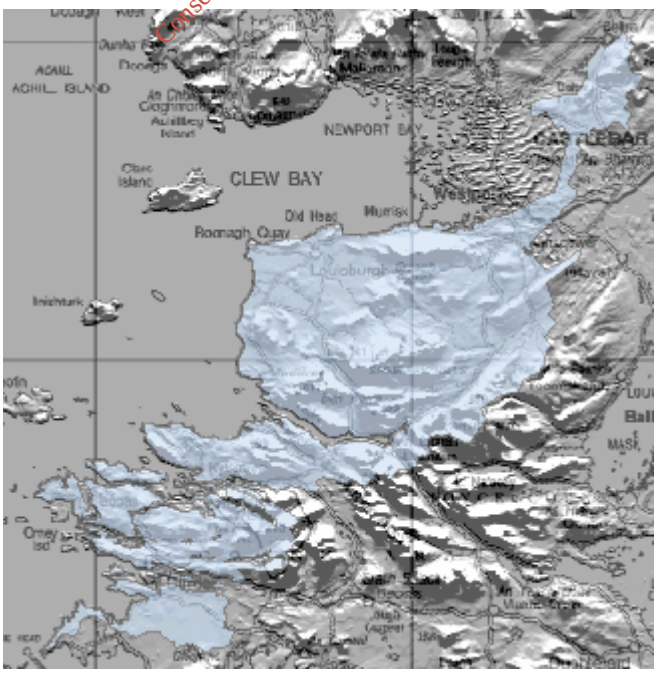
RockUnit	category	aquifer type	%AREA o	Code	Unit name
Dinantian Pure Bedded Limestones	Rkc	Pending Classification	1%	VIS	Visean Limestones (undifferentiated)
Cambrian Metasediments	Pl	Poorly Productive Bedrock Aquifer	2%	WG	Westport Grit Formation
Devonian Old Red Sandstones	Pl	Poorly Productive Bedrock Aquifer	5%	GM	Graffa More Formation
Granites & other Igneous Intrusive rocks	Pl	Poorly Productive Bedrock Aquifer	12%	S	Serpentinite
Ordovician Metasediments	Pl	Poorly Productive Bedrock Aquifer	36%	SH	Slate Members
Ordovician Volcanics	Pl	Poorly Productive Bedrock Aquifer	2%	FN	Farnacht Formation
Precambrian Quartzites, Gneisses & Schists	Pl	Poorly Productive Bedrock Aquifer	22%	ST	Streamstown Schist Formation
Silurian Metasediments and Volcanics	Pl	Poorly Productive Bedrock Aquifer	19%	SK	Strake Banded Formation
Dinantian Sandstones	Lm	Productive Fractured Bedrock Aquifer	1%	MO	Moy Sandstone Formation

Table 3. List of Subsoils in Clifden GWB.

Parent Material	Code	%area of GWB
Alluvium	A	1.07%
Alluvium clayey	Ac	0.03%
Acidic esker sand/gravel	AcEsk	0.00%
Alluvium gravelly	Ag	0.00%
Alluvium silty	Asi	0.01%
Blanket peat	BktPt	32.09%
cutover	Cut	0.70%
Sandstone sand/gravel (devonian/carb)	GDCSs	0.00%
sandstone sand/gravel (lower palaeozoic)	GLPSs	0.68%
sandstone and shale sand/gravel (lower palaeozoic)	GLPSsS	0.03%
metamorphic sand/gravel	GMp	0.18%
Lake sediments undifferentiated	L	0.00%
Lakes	Lake	2.80%
islands	Lk_isle	0.02%
Madeground	Made	0.10%
Beach Sand	Mbs	0.49%
Estuarine Sediments	Mesc	0.08%
Rock at surface	Rck	41.61%
Scree	Scree	0.90%
Till sandstone devonian carboniferous	TDCSs	0.07%
Till sandstone devonian	TDSs	3.27%
Till Granitic	TGr	0.73%
Sandstone dominated Lower Palaeozoic Till	TLPSs	4.88%
Till sandstone and shaleSandstone and shale dominated till (Devonian/Carboniferous)	TLPSsS	5.42%
Limestone till	TLs	0.06%
Metamorphic Till	TMp	4.57%
Blown sand	Ws	0.19%

Consent of copyright owner required for any other use.
For inspection purposes only.

Figure 1. Clifden-Castlebar GWB [reference only]

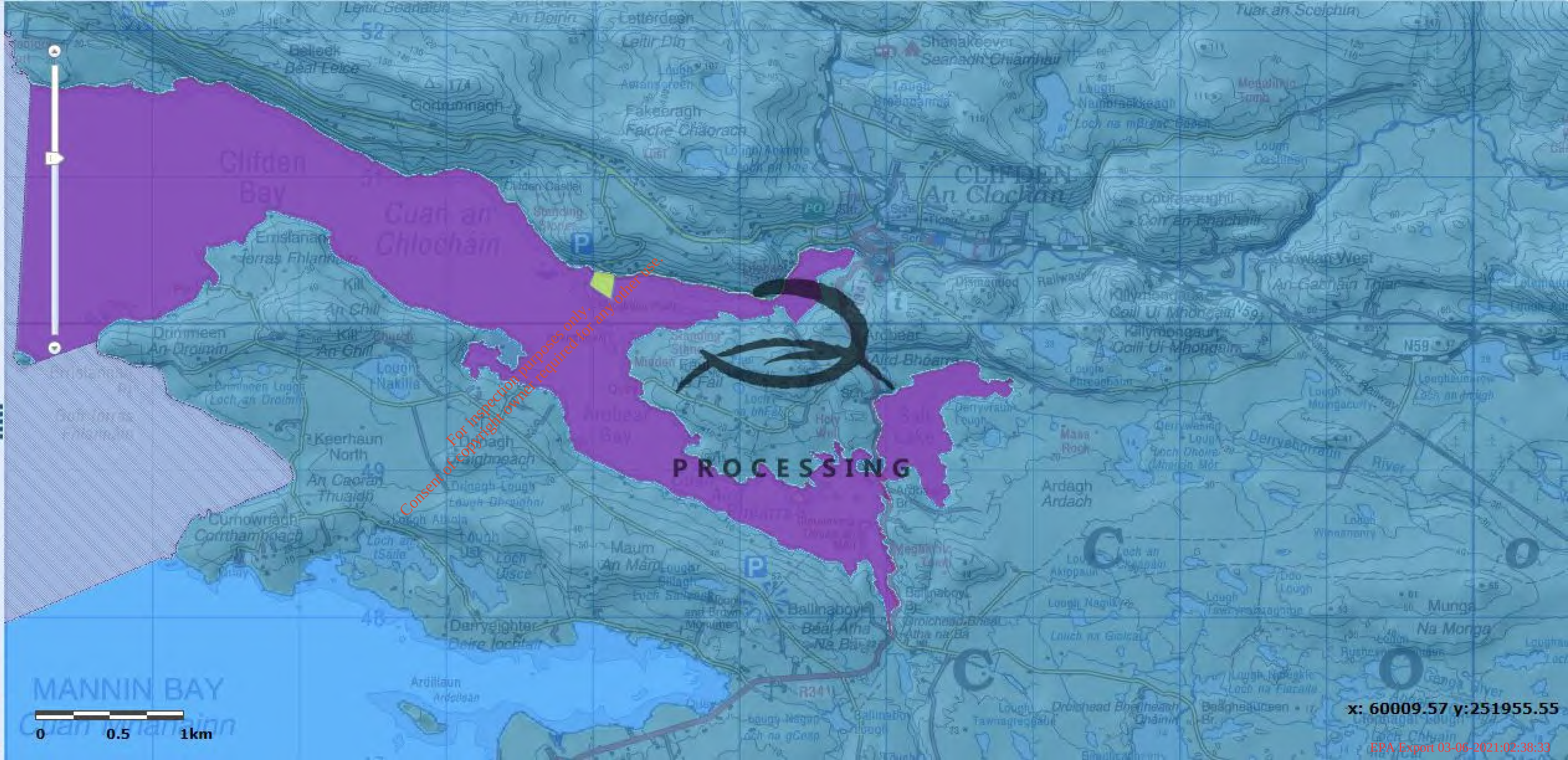


EPA Export 03-06-2021:02:38:33

Table Of Contents

- Salmonid
  - Salmonid Rivers
  - Salmonid Lakes
- Nutrient Sensitive Areas
  - Nutrient Sensitive - Rivers
  - Nutrient Sensitive - Waterbodies
- Recreational Waters
  - Bathing Water Areas
  - Bathing Locations - Waterbodies
    - Lake
    - Coastal
    - Transitional
- Drinking Water
- WFD Status
- Water Regions
- National Soils Database
- Land
- General Administrative
- Orthophoto 2005

Results



For inspection purposes only.
Consent of copyright owner required for any other use.
EPA Export 03-06-2021:02:38:33

Table Of Contents

- Operational Layers
  - General Gazetteer
  - Licences and Enforcement
  - UWWT
  - Air Quality
  - Dumping at Sea
  - Surface Water Quality
    - Bathing Water Quality
      - Good Water Quality
      - Sufficient Water Quality
      - Poor Water Quality
      - No Data
    - River Water Quality
      - Q4-5, Q5 - High Status
      - Q4 - Good Status
      - Q3-4 - Moderate Status
      - Q2-3, Q3 - Poor Status
      - Q1, Q1-2, Q2 - Bad Status
    - Lake Water Quality
    - Transitional and Coastal Water Quality

Results

For inspection purposes only.
Consent of copyright owner required for any other use.
EPA Export 03-06-2021 02:40:29

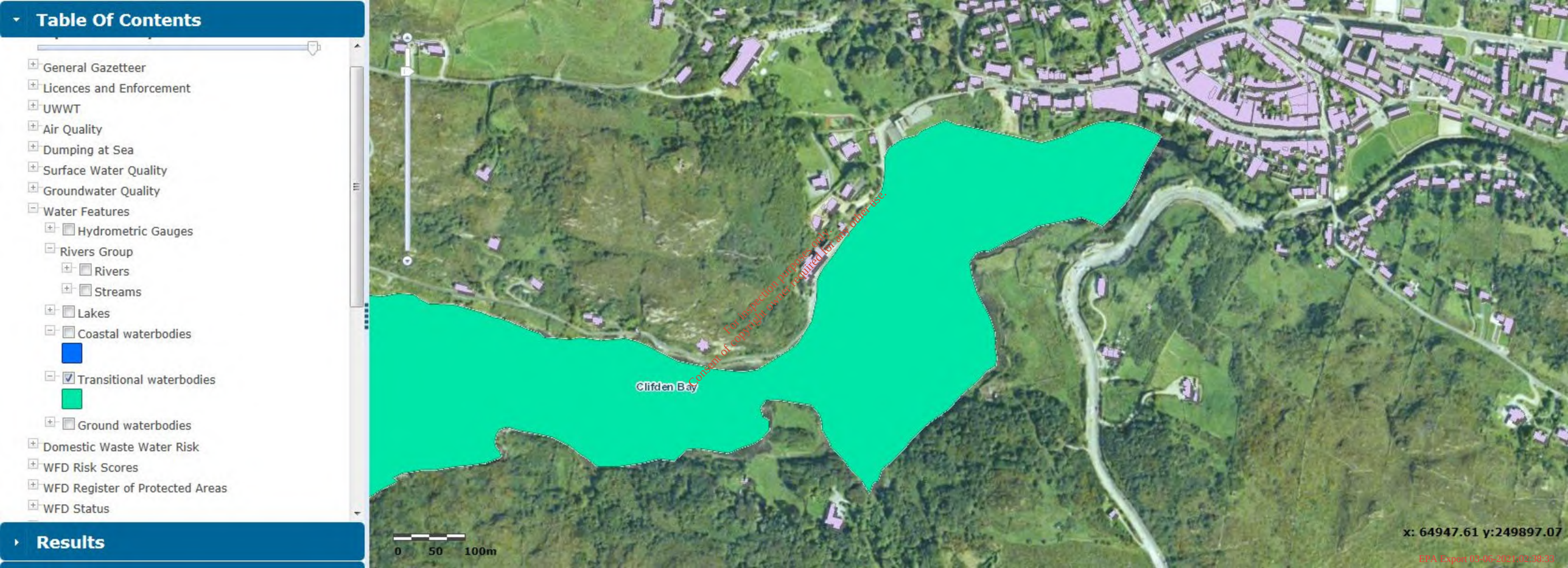


Table Of Contents
General Gazetteer
Licences and Enforcement
UWWT
Air Quality
Dumping at Sea
Surface Water Quality
Groundwater Quality
Water Features
Hydrometric Gauges
Rivers Group
Rivers
Streams
Lakes
Coastal waterbodies
Transitional waterbodies
Ground waterbodies
Domestic Waste Water Risk
WFD Risk Scores
WFD Register of Protected Areas
WFD Status
Results
Clifden Bay
0 50 100m
x: 64947.61 y:249897.07
EPA Export 03-06-2021 09:38:31

Table Of Contents

- General Gazetteer
- Licences and Enforcement
- UWWT
- Air Quality
- Dumping at Sea
- Surface Water Quality
- Groundwater Quality
- Water Features
  - [x] Hydrometric Gauges
  - Rivers Group
    - [x] Rivers
    - [x] Streams
  - [ ] Lakes
  - [ ] Coastal waterbodies
  - [ ] Transitional waterbodies
  - [ ] Ground waterbodies
- Domestic Waste Water Risk
- WFD Risk Scores
- WFD Register of Protected Areas
- WFD Status
- Water Regions
- National Soils Database
- Land

Results

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:33

Table Of Contents

8 Zone DWW Risk categories with Areas of Spec

- Zone 1A
- Zone 1B
- Zone 2A
- Zone 2B
- Zone 3A
- Zone 3B
- Zone 4A
- Zone 4B

WFD Risk Scores

River Waterbody Score

- No Score
- 1a - At risk of not achieving good status
- 1b - Possibly at risk of not achieving good status
- 2a - Expected to achieve good status
- 2b - Strongly expected to achieve good status

Lake Waterbody Score

Coastal Waterbody Score

Transitional Waterbody Score

Results


Faiche Chaorach
Loch na mBreac Gaoch
Lough Ahimma
Loch an Ime
CLIFDEN
An Clochán
PO
Fire Stn
Schs
Hosp
Sch
Lough Cashleen
Couraveoughil
Corr an Bhachaill
Gowlan West
An Gabhain Thiar
Lifeboat Station
Quay
oghbeg Point
R341
Dismantled Railway
Killymongaun
Coill Uí Mhongáin
N59
Ardbear
Aird Bhéarra
Standing Stone
Midden
Faul
Na Fáil
Faul Lough
Quay
Loch na bhFál
Holy Well
Salt Lake
Derryvraun Lough
Mass Rock
Derrywaking Lough
Loch Dhoire Mhaicín Mór
Derryehorraun
Lough Phreaghaun
Lough Mungacurry
Dismantled Railway
bear Bay
Ardagh
0
0.2
0.4km
x: 64369.39 y:248862.57

For inspection purposes only. Consent of copyright owner required for any other use.
EPA Export 03-06-2021:02:38:33

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:33

APPENDIX 6

2014 SITE INVESTIGATION TRIALPIT LOGS

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:33

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:33

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY

TRIALPIT NUMBER: TP01 — PAGE 1 OF 1

EXCAVATION DATE: 20/01/14	METHOD: TRACKED HYMAC
CONTRACTOR: Bernard Corbett	DIAMETER: N/A
LOGGED BY: DG/PM	GRID REF.: E65516 N250539
CHECKED BY: PM	ELEVATION: approx. 3.99m AOD

DESCRIPTION	COMMENTS
Soft light brown sandy SILT	Green color on wall of pit
Soft yellow/light brown sandy gravelly CLAY with boulders and cobbles indigenous soil	No evidence of contamination Indigenous Mottling
Gray/ white coarse sandy GRAVEL with cobbles	Water ingress at 1.5m bgl
Terminated at 1.55m bgl - hit weathered bedrock	

For inspection purposes only.
Consent of copyright owner required for any other use.

0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

LOCATION / NOTES:

NE corner.

Some inflow of ponded water top of pit.

Water rose to approximately 1m bgl.

LEGEND

- Disturbed Sample
- Undisturbed Sample
- * Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

TRIALPIT LOG

JOB TITLE	SHORE ROAD SITE INVESTIGATION
LOCATION	CLIFDEN, CO. GALWAY
CLIENT	GALWAY C.C.

MULROY environmental

EPA Export 03-06-2021:02:38:33

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY

TRIALPIT NUMBER: TP02 — PAGE 1 OF 1

EXCAVATION DATE: 20/01/14	METHOD: TRACKED HYMAC
CONTRACTOR: Bernard Corbett	DIAMETER: N/A
LOGGED BY: DG/PM	GRID REF.: E65489 N250534
CHECKED BY: PM	ELEVATION: approx. 3.75m AOD

DESCRIPTION	COMMENTS
Light brown sandy SILT	
Soft yellow/light brown gravelly CLAY with boulders and cobbles Indigenous soil	No evidence of contamination
Loose gray/ white coarse sandy GRAVEL with cobbles	Iron mottling Slight water ingress at 1.5m bgl
Terminated at 1.75m bgl - hit weathered bedrock	

For inspection purposes only.
Consent of copyright owner required for any other use.

LOCATION / NOTES:

Near northern boundary.

LEGEND

- Disturbed Sample
- Undisturbed Sample
- * Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

TRIALPIT LOG

JOB TITLE	SHORE ROAD SITE INVESTIGATION
LOCATION	CLIFDEN, CO. GALWAY
CLIENT	GALWAY C.C.

MULROY environmental

EPA Export 03-06-2021:02:38:33

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY

TRIALPIT NUMBER: TP03 — PAGE 1 OF 1

EXCAVATION DATE: 20/01/14	METHOD: TRACKED HYMAC
CONTRACTOR: Bernard Corbett	DIAMETER: N/A
LOGGED BY: DG/PM	GRID REF.: E65470 N250513
CHECKED BY: PM	ELEVATION: approx. 3.05m AOD

DESCRIPTION	COMMENTS
Soft dark brown sandy CLAY (MADE GROUND/LANDFILL CAP)	
Yellow/ light brown gravelly CLAY (MADE GROUND) with boulders and cobbles- rounded, sub rounded and sub-angular Some timber, occasional pods of peat	
Loose clayey gravelly COBBLES/ BOULDERS (MADE GROUND)	Possible stone drain
Terminated at 1.82m bgl - hit weathered bedrock	At 1.5m bgl very strong inflow of clean water

For inspection purposes only.
Consent of copyright owner required for any other use.

LOCATION / NOTES:

Located at the edge of the car park.

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

TRIALPIT LOG

JOB TITLE	SHORE ROAD SITE INVESTIGATION
LOCATION	CLIFDEN, CO. GALWAY
CLIENT	GALWAY C.C.

MULROY environmental

EPA Export 03-06-2021:02:38:33

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	DESCRIPTION	COMMENTS
					0		Soft light brown sandy CLAY (MADE GROUND/LANDFILL CAP)	
					0.5		Soft yellow/ light brown gravelly CLAY with boulders and cobbles (rounded)	Iron mottling, black staining
				▽	1.0		Loose angular clayey COBBLES (MADE GROUND) with boulders	Strong water inflow at 0.8m bgl
					1.5		clayey GRAVEL with cobbles	
					2.0		Terminated at 2.10m bgl - hit weathered bedrock	
					2.5			
					3.0			
					3.5			
					4.0			
					4.5			
					5.0			

For inspection purposes only.
Consent of copyright owner required for any other use.

TRIALPIT NUMBER: TP04 | PAGE 1 OF 1

EXCAVATION DATE: 20/01/14 | METHOD: TRACKED HYMAC

CONTRACTOR: Bernard Corbett | DIAMETER: N/A

LOGGED BY: DG/PM | GRID REF.: E65452 N250501

CHECKED BY: PM | ELEVATION: approx. 3.02m AOD

LOCATION / NOTES:

LEGEND

- Disturbed Sample
- Undisturbed Sample
- * Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

TRIALPIT LOG

JOB TITLE	SHORE ROAD SITE INVESTIGATION
LOCATION	CLIFDEN, CO. GALWAY
CLIENT	GALWAY C.C.

MULROY environmental

EPA Export 03-06-2021:02:38:33

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY

TRIALPIT NUMBER: TP05 — PAGE 1 OF 1

EXCAVATION DATE: 20/01/14	METHOD: TRACKED HYMAC
CONTRACTOR: Bernard Corbett	DIAMETER: N/A
LOGGED BY: DG/PM	GRID REF.: E65435 N250491
CHECKED BY: PM	ELEVATION: approx. 2.8m AOD

DESCRIPTION	COMMENTS
Soft light brown sandy CLAY (MADE GROUND/LANDFILL CAP)	
yellow/light brown gravelly CLAY with boulders and cobbles. Rounded, sub-rounded, sub-angular etc some builders blocks	No evidence of contamination Drainage pipe Layers become stratified over time Water ingress at 1.5m bgl
soft light gray gravelly CLAY with cobbles (rounded)	
Terminated at 2.4m bgl - hit weathered bedrock	

For inspection purposes only.
Consent of copyright owner required for any other use.

LOCATION / NOTES:

South east of handball alley

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

TRIALPIT LOG

JOB TITLE	SHORE ROAD SITE INVESTIGATION
LOCATION	CLIFDEN, CO. GALWAY
CLIENT	GALWAY C.C.

MULROY environmental

EPA Export 03-06-2021:02:38:33

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY

TRIALPIT NUMBER: TP06 | PAGE 1 OF 1

EXCAVATION DATE: 20/01/14	METHOD: TRACKED HYMAC
CONTRACTOR: Bernard Corbett	DIAMETER: N/A
LOGGED BY: DG/PM	GRID REF.: E65522 N250516
CHECKED BY: PM	ELEVATION: approx. 3.05m AOD

DEPTH (m)	DESCRIPTION	COMMENTS
0	Soft light brown sandy CLAY (MADE GROUND/LANDFILL CAP)	
0.5	Soft light gravelly CLAY (MADE GROUND) with boulders	Trapped clay pipe with water
1.0	Soft/firm yellow brown gravelly CLAY	
1.5	Soft gray gravelly CLAY with cobbles/boulders interspersed	No evidence of contamination Mottling
2.0		
2.5	Soft gray sandy gravelly SILT with rounded boulders and cobbles	Collapsing sides
3.0		
3.5	Coarse gray sandy GRAVEL with boulders and cobbles	Water ingress at 3.5m bgl
4.0		
4.5	Terminated at 3.9m bgl- hit weathered bedrock	
5.0		

For inspection purposes only.
Consent of copyright owner required for any other use.

LOCATION / NOTES:

Near shallow land drain. Noticeable drop off in depth to bedrock.

LEGEND

- Disturbed Sample
- Undisturbed Sample
- * Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

TRIALPIT LOG

JOB TITLE	SHORE ROAD SITE INVESTIGATION
LOCATION	CLIFDEN, CO. GALWAY
CLIENT	GALWAY C.C.

MULROY environmental

EPA Export 03-06-2021:02:38:33

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY

TRIALPIT NUMBER: TP07 — PAGE 1 OF 1

EXCAVATION DATE: 20/01/14	METHOD: TRACKED HYMAC
CONTRACTOR: Bernard Corbett	DIAMETER: N/A
LOGGED BY: DG/PM	GRID REF.: E65501 N250506
CHECKED BY: PM	ELEVATION: approx. 2.75m AOD

DESCRIPTION	COMMENTS
Soft light brown sandy CLAY (MADE GROUND/LANDFILL CAP)	
soft gray gravelly CLAY (MADE GROUND)	
Coarse gray sandy silty GRAVEL with boulders and cobbles	
Indigenous soil	Collapsing sides Water ingress at 3.0m bgl.
Terminated at 3.35m bgl - collapsing sides	

For inspection purposes only.
Consent of copyright owner required for any other use.

LOCATION / NOTES:

No waste observed

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

TRIALPIT LOG

JOB TITLE	SHORE ROAD SITE INVESTIGATION
LOCATION	CLIFDEN, CO. GALWAY
CLIENT	GALWAY C.C.

MULROY environmental

EPA Export 03-06-2021:02:38:33

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY

TRIALPIT NUMBER: TP08 — PAGE 1 OF 1

EXCAVATION DATE: 20/01/14	METHOD: TRACKED HYMAC
CONTRACTOR: Bernard Corbett	DIAMETER: N/A
LOGGED BY: DG/PM	GRID REF.: E65475 N250488
CHECKED BY: PM	ELEVATION: approx. 2.73m AOD

DEPTH (m)	DESCRIPTION	COMMENTS
0	Soft light brown sandy CLAY (MADE GROUND/LANDFILL CAP)	
0.5	Soft dark gray/ black gravelly CLAY (MADE GROUND) with boulders and cobbles.	
1.0		
1.5	Contains some blocks and timber	Some water inflow at 1.5m bgl. Very slight sulphide odour
2.0	Soft black/ dark gray gravelly sandy SILT with boulders. Indigenous soil	Collapsing sides
2.5		
3.0		
3.5		
4.0	Terminated at 3.75m bgl - did not hit bedrock, collapsing sides	
4.5		
5.0		

For inspection purposes only.
Consent of copyright owner required for any other use.

LOCATION / NOTES:

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

TRIALPIT LOG

JOB TITLE	SHORE ROAD SITE INVESTIGATION
LOCATION	CLIFDEN, CO. GALWAY
CLIENT	GALWAY C.C.

MULROY environmental

EPA Export 03-06-2021:02:38:33

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY

TRIALPIT NUMBER: TP09 — PAGE 1 OF 1

EXCAVATION DATE: 20/01/14	METHOD: TRACKED HYMAC
CONTRACTOR: Bernard Corbett	DIAMETER: N/A
LOGGED BY: DG/PM	GRID REF.: E65459 N250475
CHECKED BY: PM	ELEVATION: approx. 2.79m AOD

DESCRIPTION	COMMENTS
Soft light brown sandy CLAY (MADE GROUND/LANDFILL CAP)	
coarse green/gray gravelly SAND (MADE GROUND)	
soft brown/gray gravelly SILT	Strong water ingress at 1.5m bgl.
Bits of timber, masonry, sticks, occasional boulders	
High percentage of angular boulders at depth	Constant flow
	Collapsing sides
Terminated at 3.5m bgl- hit weathered bedrock	

0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

For inspection purposes only.
Consent of copyright owner required for any other use.

LOCATION / NOTES:

LEGEND

- Disturbed Sample
- Undisturbed Sample
- * Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

TRIALPIT LOG

JOB TITLE	SHORE ROAD SITE INVESTIGATION
LOCATION	CLIFDEN, CO. GALWAY
CLIENT	GALWAY C.C.

MULROY environmental

EPA Export 03-06-2021:02:38:33

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY

TRIALPIT NUMBER: TP10 — PAGE 1 OF 1

EXCAVATION DATE: 20/01/14	METHOD: TRACKED HYMAC
CONTRACTOR: Bernard Corbett	DIAMETER: N/A
LOGGED BY: DG/PM	GRID REF.: E65444 N250469
CHECKED BY: PM	ELEVATION: approx. 2.62m AOD

DESCRIPTION	COMMENTS
Soft light brown sandy CLAY (MADE GROUND/LANDFILL CAP)	
soft yellow/light brown gravelly CLAY with boulders and cobbles- rounded, sub-rounded, sub-angular etc some builders blocks	
soft black/dark gray gravelly sandy SILT with boulders	Sulphide odor/brackish smell Strong water ingress
End of hole at 3.5m bgl - hit weathered bedrock	

For inspection purposes only.
Consent of copyright owner required for any other use.

LOCATION / NOTES:

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

TRIALPIT LOG

JOB TITLE	SHORE ROAD SITE INVESTIGATION
LOCATION	CLIFDEN, CO. GALWAY
CLIENT	GALWAY C.C.

MULROY environmental

EPA Export 03-06-2021:02:38:33

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY

TRIALPIT NUMBER: TP11 — PAGE 1 OF 1

EXCAVATION DATE: 20/01/14	METHOD: TRACKED HYMAC
CONTRACTOR: Bernard Corbett	DIAMETER: N/A
LOGGED BY: DG/PM	GRID REF.: E65485 N250458
CHECKED BY: PM	ELEVATION: approx. 2.32m AOD

DESCRIPTION	COMMENTS
Soft light brown sandy CLAY (MADE GROUND/LANDFILL CAP)	
Mixed WASTE (DOMESTIC/COMMERCIAL/C&D) Black plastic bin bag waste/ plastics, skip waste, residential renovation waste, electric cables, timer shards, plastic & glass bottles, ash and cinder, rubber hosing, car parts, inflow from perched water table into overlying plastic sheeting.	Drainage pipe at 0.5m bgl Strong inflow Slight Sulphide odor
	Collapsing pit walls No sheen on water. Strong inflow
Terminated at 3.9m bgl - hit weathered bedrock or very large boulder.	

For inspection purposes only.
Consent of copyright owner required for any other use.

LOCATION / NOTES:

East of helepad

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

TRIALPIT LOG

JOB TITLE	SHORE ROAD SITE INVESTIGATION
LOCATION	CLIFDEN, CO. GALWAY
CLIENT	GALWAY C.C.

MULROY environmental

EPA Export 03-06-2021:02:38:33

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY

TRIALPIT NUMBER: TP12 — PAGE 1 OF 1

EXCAVATION DATE: 20/01/14	METHOD: TRACKED HYMAC
CONTRACTOR: Bernard Corbett	DIAMETER: N/A
LOGGED BY: DG/PM	GRID REF.: E65506 N250470
CHECKED BY: PM	ELEVATION: approx. 2.34m AOD

DESCRIPTION	COMMENTS
Soft light brown sandy CLAY (MADE GROUND/LANDFILL CAP)	
Mixed WASTE (DOMESTIC/COMMERCIAL/C&D) skip waste, residential renovation waste, electric cables, timer shards, masonry, plastic & glass bottles, ash and cinder, rubber hosing, car parts, inflow from perched water table into overlying plastic sheeting.	No evidence of Contamination
Terminated at 3.95m bgl - hit weathered bedrock.	

For inspection purposes only.
Consent of copyright owner required for any other use.

0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

LOCATION / NOTES:

East of helipad

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

TRIALPIT LOG

JOB TITLE	SHORE ROAD SITE INVESTIGATION
LOCATION	CLIFDEN, CO. GALWAY
CLIENT	GALWAY C.C.

MULROY environmental

EPA Export 03-06-2021:02:38:33

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY

TRIALPIT NUMBER: TP13 — PAGE 1 OF 1

EXCAVATION DATE: 20/01/14	METHOD: TRACKED HYMAC
CONTRACTOR: Bernard Corbett	DIAMETER: N/A
LOGGED BY: DG/PM	GRID REF.: E65519 N250487
CHECKED BY: PM	ELEVATION: approx. 2.35m AOD

DEPTH (m)	DESCRIPTION	COMMENTS
0	Soft light brown sandy CLAY (MADE GROUND/LANDFILL CAP)	Land drain
0.5 – 2.0	Soft gray/green gravelly CLAY with boulders and cobbles	
2.0 – 3.5	C & D WASTE With pods of clay and silt Tree trunks and pockets of peat	Collapsing sides
3.75	Terminated at 3.75m bgl - hit weathered bedrock	
5.0		

For inspection purposes only.
Consent of copyright owner required for any other use.

LOCATION / NOTES:

No domestic waste found within C&D waste.

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

TRIALPIT LOG

JOB TITLE	SHORE ROAD SITE INVESTIGATION
LOCATION	CLIFDEN, CO. GALWAY
CLIENT	GALWAY C.C.

MULROY environmental

EPA Export 03-06-2021:02:38:34

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	TRIALPIT NUMBER: TP14	PAGE 1 OF 1
							EXCAVATION DATE: 20/01/14	METHOD: TRACKED HYMAC
							CONTRACTOR: Bernard Corbett	DIAMETER: N/A
							LOGGED BY: DG/PM	GRID REF.: E65522 N250502
							CHECKED BY: PM	ELEVATION: approx. 2.70m AOD

DESCRIPTION	COMMENTS
Soft light brown sandy CLAY (MADE GROUND/LANDFILL CAP)	
Soft green / dark gray gravelly CLAY (MADE GROUND)	
Mixed WASTE (DOMESTIC/COMMERCIAL/C&D) Black plastic bin bag waste/ plastics, skip waste, residential renovation waste, electric cables, timer shards, plastic & glass bottles, ash and cinder, rubber hosing, car parts, inflow from perched water table into overlying plastic sheeting	Black staining on clay
Soft light brown/green gravelly CLAY Indigenous soil	
End of hole at 3.4m bgl - hit weathered bedrock	

For inspection purposes only.
Consent of copyright owner required for any other use.

LOCATION / NOTES:

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

TRIALPIT LOG

JOB TITLE	SHORE ROAD SITE INVESTIGATION
LOCATION	CLIFDEN, CO. GALWAY
CLIENT	GALWAY C.C.

MULROY environmental

EPA Export 03-06-2021:02:38:34

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY

TRIALPIT NUMBER: TP15 — PAGE 1 OF 1

EXCAVATION DATE: 20/01/14	METHOD: TRACKED HYMAC
CONTRACTOR: Bernard Corbett	DIAMETER: N/A
LOGGED BY: DG/PM	GRID REF.: E65500 N250489
CHECKED BY: PM	ELEVATION: approx. 2.48m AOD

DESCRIPTION	COMMENTS
Soft light brown sandy CLAY (MADE GROUND/LANDFILL CAP)	
C&D WASTE Large amount of boulders and rubble Some pipes Pockets of Peat, low percentage domestic waste	Inflow from pipe, possibly an old foul sewer Collapsing sides
Terminated at 3.75m bgl - hit weathered bedrock	

For inspection purposes only.
Consent of copyright owner required for any other use.

LOCATION / NOTES:

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

TRIALPIT LOG

JOB TITLE	SHORE ROAD SITE INVESTIGATION
LOCATION	CLIFDEN, CO. GALWAY
CLIENT	GALWAY C.C.

MULROY environmental

EPA Export 03-06-2021:02:38:34

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY

TRIALPIT NUMBER: TP16 — PAGE 1 OF 1

EXCAVATION DATE: 20/01/14	METHOD: TRACKED HYMAC
CONTRACTOR: Bernard Corbett	DIAMETER: N/A
LOGGED BY: DG/PM	GRID REF.: E65487 N250477
CHECKED BY: PM	ELEVATION: approx. 2.47m AOD

DESCRIPTION	COMMENTS
Soft light brown sandy CLAY (MADE GROUND/LANDFILL CAP)	
Soft green/dark gray gravelly CLAY (MADE GROUND) with cobbles and boulders	
black C&D WASTE with builders rubble	
	No evidence of Contamination
Dark red/brown sandy gravelly SILT with rounded boulders and cobbles	
End of hole at 3.5m bgl - hit weathered bedrock	

For inspection purposes only.
Consent of copyright owner required for any other use.

0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

LOCATION / NOTES:

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

TRIALPIT LOG

JOB TITLE	SHORE ROAD SITE INVESTIGATION
LOCATION	CLIFDEN, CO. GALWAY
CLIENT	GALWAY C.C.

MULROY environmental

EPA Export 03-06-2021:02:38:34

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY

TRIALPIT NUMBER: TP17 — PAGE 1 OF 1

EXCAVATION DATE: 20/01/14	METHOD: TRACKED HYMAC
CONTRACTOR: Bernard Corbett	DIAMETER: N/A
LOGGED BY: DG/PM	GRID REF.: E65470 N250647
CHECKED BY: PM	ELEVATION: approx. 2.60m AOD

DEPTH (m)	DESCRIPTION	COMMENTS
0	Soft light brown sandy CLAY (MADE GROUND/LANDFILL CAP)	Land Drain
0.5	Soft light brown/green gravelly CLAY	
1.0	C&D WASTE (MADE GROUND) Boulders, bricks, blocks, ash, timber, some glass, metal, some plastics Mottling around waste	No odor Strong inflow from N face and S face
3.5	soft brown gravelly CLAY with cobbles	Indigenous
3.85	Terminated at 3.85m bgl - hit weathered bedrock	
5.0		

Consent of copyright owner required for any other use.
For inspection purposes only.

LOCATION / NOTES:

Located beside helipad.

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

TRIALPIT LOG

JOB TITLE	SHORE ROAD SITE INVESTIGATION
LOCATION	CLIFDEN, CO. GALWAY
CLIENT	GALWAY C.C.

MULROY environmental

EPA Export 03-06-2021:02:38:34

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:34

APPENDIX 7

- TABLE A7.1. VOLATILE ORGANIC COMPOUND (VOC) LABORATORY RESULTS ON 10:1 LEACHATE FROM SOIL SAMPLES AND TOC/LOI LAB. ANALYSIS ON SOIL SAMPLES TAKEN FROM C+D WASTE AREA, SHORE RD. HISTORIC LANDFILL, CLIFDEN, CO. GALWAY; AND

- TABLE A7.2 SEMI-VOLATILE ORGANIC COMPOUND (SVOC) LABORATORY RESULTS FOR SOIL SAMPLES TAKEN FROM C+D WASTE AREA, SHORE RD. HISTORIC LANDFILL, CLIFDEN, CO. GALWAY

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:34

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:34

Table A7.1. Volatile Organic Compound (VOC) Laboratory Results on 10:1 Leachate from Soil Samples and TOC/LOI Lab. Analysis on Soil Samples taken from C+D Waste Area, Shore Rd. Historic Landfill, Clifden, Co. Galway

Volatile Organic Compounds	Dutch Criteria		C4SL (1% SOM)	S4UL (1% SOM)	SO-TP2-01	SO-TP5-01	SO-TP6-01	SO-TP7-01	SO-TP10-01	SO-TP11-01
	TV	IV	Public Open Space 1 (Residential)	Public Open Space 1 (Residential)						
Depth (m BGL)					0-0.3m bgl	0-0.3m bgl	0-0.3m bgl	0-0.3m bgl	0-0.3m bgl	0-0.3m bgl
Units			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Dichlorodifluoromethane	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chloromethane	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Vinyl Chloride	***0.01***	***0.1***	-	***3.5***	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromomethane	-	-	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Chloroethane	-	-	-	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Trichlorofluoromethane	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-Dichloroethene	***0.1***	***0.3***	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Trans 1,2-Dichloroethene	***0.2***	***1***	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-Dichloroethane	***0.02***	***15***	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
cis 1,2-Dichloroethene	***0.02***	***4***	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromochloromethane	-	-	-	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Trichloromethane	-	-	-	***2500***	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,1-Trichloroethane	***0.07***	***15***	-	***140000***	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Tetrachloromethane	***0.4***	***1***	-	***890***	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-Dichloropropene	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Benzene	***0.01***	***1***	***72***	***72***	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dichloroethane	-	-	-	***29***	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Trichloroethene	-	-	-	***120***	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dichloropropane	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dibromomethane	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromodichloromethane	-	-	-	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
cis-1,3-Dichloropropene	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Toluene	***0.01***	***130***	-	***56000***	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Trans-1,3-Dichloropropene	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2-Trichloroethane	***0.4***	***10***	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Tetrachloroethene	***0.002***	***4***	-	***1400***	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,3-Dichloropropane	-	-	-	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Dibromochloromethane	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dibromoethane	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chlorobenzene	***0.3***	***30***	-	***11000***	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,1,2-Tetrachloroethane	-	-	-	***1400***	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Ethylbenzene	***0.03***	***50***	-	***24000***	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
m & p-Xylene	***0.01***	***25***	-	***41000***	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
o-Xylene	***0.01***	***25***	-	***41000***	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Styrene	***0.3***	***100***	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Tribromomethane	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Isopropylbenzene	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromobenzene	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,3-Trichloropropane	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
N-Propylbenzene	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2-Chlorotoluene	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,3,5-Trimethylbenzene	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
4-Chlorotoluene	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Tert-Butylbenzene	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,4-Trimethylbenzene	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sec-Butylbenzene	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,3-Dichlorobenzene	-	-	-	***300***	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
4-Isopropyltoluene	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,4-Dichlorobenzene	-	-	-	***12000***	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
N-Butylbenzene	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dichlorobenzene	-	-	-	***90000***	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dibromo-3-Chloropropane	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2,4-Trichlorobenzene	-	-	-	***15000***	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Hexachlorobutadiene	-	-	-	***25***	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,3-Trichlorobenzene	-	-	-	***1800***	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Methyl Tert-Butyl Ether	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

For inspection purposes only.
Consent of copyright owner required for any other use.

Notes:

553	Values are underlined wherever Dutch-TV is exceeded
553	Values are shaded yellow and in Red **bold** wherever Dutch-IV, LIEH/LQM S4UL or C4SL is exceeded
~	'~' signifies laboratory analysis not carried out.
-	'-' signifies no Dutch-IV, LIEH/LQM S4UL or C4SL are available.

EPA Export 03-06-2021:02:38:34

Table A7.2 Semi-Volatile Organic Compound (sVOC) Laboratory Results for Soil Samples taken from C+D Waste Area, Shore Rd. Historic Landfill, Clifden, Co. Galway

Semi-Volatile Organic Compounds	Dutch Criteria TV IV		C4SL (1% SOM)	S4UL (1% SOM)	SO-TP2-01	SO-TP5-01	SO-TP6-01	SO-TP7-01	SO-TP10-01	SO-TP11-01
			Publin Open Space 1 (Residential)	Publin Open Space 1 (Residential)						
Depth (m BGL)					0-0.3m bgl	0-0.3m bgl	0-0.3m bgl	0-0.3m bgl	0-0.3m bgl	0-0.3m bgl
Units			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
PHENOLS										
2-Chlorophenol	***0.05***	***40***	**-**	***620***	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	-	-	-	***620***	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-methylphenol	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	-	-	**-**	**-**	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	-	-	**-**	***60***	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	-	-	**-**	***440 [10000]***	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	-	-	**-**	**-**	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	-	-	**-**	**-**	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	-	-	**-**	***300***	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	-	-	**-**	***17000***	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	-	-	-	***90000***	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	-	-	-	***15000***	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethyl phthalate	-	-	**-**	**-**	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl phthalate	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-n-butylphthalate	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-n-octylphthalate	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-ethylhexyl)phthalate	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzylphthalate	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
TOTAL PHTHALATE (sum of 6)	***0.1***	***60***	**-**	**-**	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
OTHER SVOCs										
2-Nitroaniline	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenylether	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-chloroethoxy)methane	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-chloroethyl)ether	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	-	-	-	***16***	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-nitrosodi-n-propylamine	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodimethylamine	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	-	-	-	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

For inspection purposes only.
Consent of copyright owner required for any other use.

Notes:

553	Values are underlined wherever Dutch-TV is exceeded
553	Values are shaded yellow and in Red **bold** wherever Dutch-IV, LIEH/LQM S4UL or C4SL is exceeded
~	'~' signifies laboratory analysis not carried out.
-	'-' signifies no Dutch-IV, LIEH/LQM S4UL or C4SL are available.

APPENDIX 8

RAW VALIDATED LABORATORY RESULTS
CHEMTEST UK

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:34

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:34

eurofins | Chemtest
Eurofins Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070

Amended Report

Report No.:	20-17026-2		
Initial Date of Issue:	10-Jul-2020	**Date of Re-Issue:**	21-Jul-2020
Client	MULROY ENVIRONMENTAL		
Client Address:	30 Lisroland View Knockbridge Dundalk County Louth Ireland		
Contact(s):	Andrena Meegan Padriac Mulroy		
Project	Clifden		
Quotation No.:		**Date Received:**	03-Jul-2020
Order No.:		**Date Instructed:**	03-Jul-2020
No. of Samples:	6		
Turnaround (Wkdays):	13	**Results Due:**	21-Jul-2020
Date Approved:	21-Jul-2020		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:34

Results - Soil

Project: Clifden

Client: MULROY ENVIRONMENTAL		Chemtest Job No.:			20-17026	20-17026	20-17026	20-17026	20-17026	20-17026
Quotation No.:		Chemtest Sample ID.:			1026482	1026483	1026484	1026485	1026486	1026487
		Client Sample ID.:			SO-TP2-01	SO-TP5-01	SO-TP6-01	SO-TP7-01	SO-TP10-01	SO-TP11-01
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Date Sampled:			29-Jun-2020	29-Jun-2020	29-Jun-2020	29-Jun-2020	29-Jun-2020	29-Jun-2020
		Asbestos Lab:			COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
ACM Type	U	2192		N/A	Bitumen	-	-	-	-	Bitumen
Asbestos Identification	U	2192	%	0.001	Chrysotile	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	Chrysotile
ACM Detection Stage	U	2192		N/A	Stereo Microscopy	-	-	-	-	Stereo Microscopy
Asbestos by Gravimetry	U	2192	%	0.001	0.083					0.16
Total Asbestos	N	2192	%	0.001	0.083					0.16
Moisture	N	2030	%	0.020	14	12	16	14	18	12
Dry Matter	N		%	N/A	86	88	84	86	82	88
Sulphate (Total)	M	2430	mg/kg	100	2200	1600	1000	810	1800	3500
Arsenic	M	2450	mg/kg	1.0	12	10	12	15	15	14
Barium	M	2450	mg/kg	10	64	59	52	67	54	59
Cadmium	M	2450	mg/kg	0.10	0.14	0.15	0.11	0.11	0.15	0.40
Chromium	M	2450	mg/kg	1.0	29	30	28	32	34	31
Molybdenum	M	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Antimony	N	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	2.2
Copper	M	2450	mg/kg	0.50	18	22	18	26	26	21
Mercury	M	2450	mg/kg	0.10	0.17	< 0.10	< 0.10	< 0.10	0.19	0.26
Nickel	M	2450	mg/kg	0.50	30	37	26	31	30	27
Lead	M	2450	mg/kg	0.50	18	24	32	33	41	30
Selenium	M	2450	mg/kg	0.20	< 0.20	0.35	< 0.20	0.34	0.21	< 0.20
Zinc	M	2450	mg/kg	0.50	160	100	67	79	120	130
Chromium (Trivalent)	N	2490	mg/kg	1.0	29	30	28	32	34	31
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon	M	2625	%	0.20	1.2	0.75	1.1	0.68	1.4	1.3
Mineral Oil	N	2670	mg/kg	10	< 10	< 10	75	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	75	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	75	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:34

Results - Soil

Project: Clifden

Client: MULROY ENVIRONMENTAL		Chemtest Job No.:			20-17026	20-17026	20-17026	20-17026	20-17026	20-17026
Quotation No.:		Chemtest Sample ID.:			1026482	1026483	1026484	1026485	1026486	1026487
		Client Sample ID.:			SO-TP2-01	SO-TP5-01	SO-TP6-01	SO-TP7-01	SO-TP10-01	SO-TP11-01
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Date Sampled:			29-Jun-2020	29-Jun-2020	29-Jun-2020	29-Jun-2020	29-Jun-2020	29-Jun-2020
		Asbestos Lab:			COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	140	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	140	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	210	< 10	< 10	< 10
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.14	< 0.10	0.35	< 0.10
Anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.12	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	< 0.10	0.10	0.42	< 0.10	0.54	0.10
Pyrene	M	2800	mg/kg	0.10	< 0.10	0.10	0.38	< 0.10	0.55	0.11
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.18	< 0.10	0.22	< 0.10
Chrysene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.19	< 0.10	0.19	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.29	< 0.10	0.27	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.10	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.29	< 0.10	0.22	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.27	< 0.10	0.11	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.26	< 0.10	0.13	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	2.4	< 2.0	2.8	< 2.0

Consent of copyright owner required for any other use.
For inspection purposes only.

EPA Export 03-06-2021:02:38:34

Results - Single Stage WAC

Project: Clifden

Chemtest Job No:	20-17026				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1026482						
Sample Ref:							
Sample ID:	SO-TP2-01				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample Location:							
Top Depth(m):							
Bottom Depth(m):							
Sampling Date:	29-Jun-2020						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	1.2	3	5	6
Loss On Ignition	2610	M	%	4.3	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.064	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	0.0033	< 0.050	0.5	2	25
Barium	1450	U	0.0042	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	0.0027	< 0.050	0.5	10	70
Copper	1450	U	0.0043	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0036	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	0.0087	0.087	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.0029	< 0.50	4	50	200
Chloride	1220	U	2.3	23	800	15000	25000
Fluoride	1220	U	0.20	2.0	10	150	500
Sulphate	1220	U	34	340	1000	20000	50000
Total Dissolved Solids	1020	N	140	1400	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	28	280	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

For inspection purposes only.
Consent of copyright owner required for any other use.

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

EPA Export 03-06-2021:02:38:34

Results - Single Stage WAC

Project: Clifden

Chemtest Job No:	20-17026				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1026483						
Sample Ref:							
Sample ID:	SO-TP5-01				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample Location:							
Top Depth(m):							
Bottom Depth(m):							
Sampling Date:	29-Jun-2020						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	0.75	3	5	6
Loss On Ignition	2610	M	%	3.2	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.030	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.010	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	0.0020	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0015	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	1.2	12	800	15000	25000
Fluoride	1220	U	0.13	1.3	10	150	500
Sulphate	1220	U	12	120	1000	20000	50000
Total Dissolved Solids	1020	N	780	7800	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	27	270	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	12

For inspection purposes only.
Consent of copyright owner required for any other use.

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

EPA Export 03-06-2021:02:38:34

Results - Single Stage WAC

Project: Clifden

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-17026						
Chemtest Sample ID:	1026484						
Sample Ref:							
Sample ID:	SO-TP6-01						
Sample Location:							
Top Depth(m):							
Bottom Depth(m):							
Sampling Date:	29-Jun-2020						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	1.1	3	5	6
Loss On Ignition	2610	M	%	4.2	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	210	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	2.4	100	--	--
pH	2010	M		8.0	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.029	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	0.0013	< 0.050	0.5	2	25
Barium	1450	U	0.011	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	0.0020	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0027	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.20	2.0	10	150	500
Sulphate	1220	U	6.9	69	1000	20000	50000
Total Dissolved Solids	1020	N	120	1200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	21	210	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	16

For inspection purposes only.
Consent of copyright owner required for any other use.

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

EPA Export 03-06-2021:02:38:34

Results - Single Stage WAC

Project: Clifden

Chemtest Job No:	20-17026				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1026485						
Sample Ref:							
Sample ID:	SO-TP7-01				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample Location:							
Top Depth(m):							
Bottom Depth(m):							
Sampling Date:	29-Jun-2020						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	0.68	3	5	6
Loss On Ignition	2610	M	%	3.6	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		7.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.018	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0027	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0011	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	2.7	27	800	15000	25000
Fluoride	1220	U	0.23	2.3	10	150	500
Sulphate	1220	U	7.2	72	1000	20000	50000
Total Dissolved Solids	1020	N	56	560	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	27	270	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

For inspection purposes only. Consent of copyright owner required for any other use.

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

EPA Export 03-06-2021:02:38:34

Results - Single Stage WAC

Project: Clifden

Chemtest Job No:	20-17026				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1026486						
Sample Ref:							
Sample ID:	SO-TP10-01				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample Location:							
Top Depth(m):							
Bottom Depth(m):							
Sampling Date:	29-Jun-2020						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	1.4	3	5	6
Loss On Ignition	2610	M	%	5.3	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	2.8	100	--	--
pH	2010	M		9.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.052	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	0.0014	< 0.050	0.5	2	25
Barium	1450	U	0.018	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	0.0028	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.0014	< 0.50	4	50	200
Chloride	1220	U	2.0	20	800	15000	25000
Fluoride	1220	U	0.15	1.5	10	150	500
Sulphate	1220	U	12	120	1000	20000	50000
Total Dissolved Solids	1020	N	130	1300	4000	60000	100000
Phenol Index	1920	U	0.068	0.68	1	-	-
Dissolved Organic Carbon	1610	U	30	300	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	18

For inspection purposes only.
Consent of copyright owner required for any other use.

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

EPA Export 03-06-2021:02:38:34

Results - Single Stage WAC

Project: Clifden

Chemtest Job No:	20-17026				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1026487						
Sample Ref:							
Sample ID:	SO-TP11-01				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample Location:							
Top Depth(m):							
Bottom Depth(m):							
Sampling Date:	29-Jun-2020						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	1.3	3	5	6
Loss On Ignition	2610	M	%	4.1	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.026	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	0.0023	< 0.050	0.5	2	25
Barium	1450	U	0.0083	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	0.0017	< 0.050	0.5	10	70
Copper	1450	U	0.0033	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0017	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	0.0027	0.027	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.0021	< 0.50	4	50	200
Chloride	1220	U	1.6	16	800	15000	25000
Fluoride	1220	U	0.21	2.1	10	150	500
Sulphate	1220	U	21	210	1000	20000	50000
Total Dissolved Solids	1020	N	150	1500	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	17	170	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	12

For inspection purposes only.
Consent of copyright owner required for any other use.

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

EPA Export 03-06-2021:02:38:34

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.

Consent of copyright owner required for any other use.
For inspection purposes only.

EPA Export 03-06-2021:02:38:34

Test Methods

SOP	Title	Parameters included	Method summary
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:34

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

For inspection purposes only.
Consent of copyright owner required for any other use.

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

EPA Export 03-06-2021:02:38:34

APPENDIX 9

HAZWASTETOOL ONLINE REPORT

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:34

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:34

Waste Classification Report

UQSZU-4PBGC-L54LL

Job name

Shore Road Historic Landfill

Description/Comments

Samples taken from soil mixed with waste buried a number of years previously

Project

Shore Road Historic Landfill

Site

Shore Road

Related Documents

#	Name	Description
None		

For inspection purposes only.
Consent of copyright owner required for any other use.

Waste Stream Template

Shore Road

Classified by

Name:
Andrena Meegan
Date:
20 Aug 2020 16:32 GMT
Telephone:
+353 (0)42-9384750

Company:
Mulroy Environmental
30 Lisroland View Knockbridge
Knockbridge
Dundalk
A91 X289

HazWasteOnline™ Training Record:

Course	Date
Hazardous Waste Classification	09 Apr 2019
Advanced Hazardous Waste Classification	10 Apr 2019

Report

Created by: Andrena Meegan
Created date: 20 Aug 2020 16:32 GMT

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	SO-TP2-01		Non Hazardous		2
2	SO-TP5-01		Non Hazardous		5
3	SO-TP6-01		Non Hazardous		8
4	SO-TP7-01		Non Hazardous		11
5	SO-TP10-01		Non Hazardous		14
6	SO-TP11-01		Non Hazardous		17

EPA Export 03-06-2021:02:38:34

Classification of sample: SO-TP2-01

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
SO-TP2-01

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

For inspection purposes only.
Consent of copyright owner required for any other use.

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12	mg/kg	1.32	15.844	mg/kg	0.00158 %		
3	barium { barium sulfate }		231-784-4	7727-43-7		64	mg/kg	1.7	108.769	mg/kg	0.0109 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.14	mg/kg	1.142	0.16	mg/kg	0.000016 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		29	mg/kg	1.462	42.385	mg/kg	0.00424 %		
6	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		18	mg/kg	1.126	20.266	mg/kg	0.00203 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	18	mg/kg	1.56	28.077	mg/kg	0.0018 %		
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		30	mg/kg	2.976	89.288	mg/kg	0.00893 %		
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		<LOD
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.17	mg/kg	1.353	0.23	mg/kg	0.000023 %		
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<0.2	mg/kg	2.554	<0.511	mg/kg	<0.0000511 %		<LOD
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		160	mg/kg	2.774	443.863	mg/kg	0.0444 %		
14	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15	benzene	601-020-00-8	200-753-7	71-43-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD

EPA Export 03-06-2021:02:38:34

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
16		toluene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
17		ethylbenzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
18		xylene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
19		pH				8.9	pH		8.9	pH	8.9 pH		
				PH									
20		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
36		coronene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-881-7	191-07-1									
37		polychlorobiphenyls; PCB				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		602-039-00-4	215-648-1	1336-36-3									
38		asbestos				0.083	mg/kg		0.083	mg/kg	0.0000083 %		
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
										Total:	0.0762 %		

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:34

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:34

Classification of sample: SO-TP5-01

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
SO-TP5-01

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

For inspection purposes only.
Consent of copyright owner required for any other use.

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		10	mg/kg	1.32	13.203	mg/kg	0.00132 %		
3	barium { barium sulfate }		231-784-4	7727-43-7		59	mg/kg	1.7	100.272	mg/kg	0.01 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.15	mg/kg	1.142	0.171	mg/kg	0.0000171 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		30	mg/kg	1.462	43.847	mg/kg	0.00438 %		
6	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		22	mg/kg	1.126	24.77	mg/kg	0.00248 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	24	mg/kg	1.56	37.436	mg/kg	0.0024 %		
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		27	mg/kg	2.976	80.359	mg/kg	0.00804 %		
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		<LOD
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.35	mg/kg	2.554	0.894	mg/kg	0.0000894 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		100	mg/kg	2.774	277.415	mg/kg	0.0277 %		
14	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15	benzene	601-020-00-8	200-753-7	71-43-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD

EPA Export 03-06-2021:02:38:34

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
16		toluene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
17		ethylbenzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
18		xylene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
19		pH				8.2	pH		8.2	pH	8.2 pH		
				PH									
20		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			205-912-4	206-44-0									
27		pyrene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
36		coronene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-881-7	191-07-1									
37		polychlorobiphenyls; PCB				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		602-039-00-4	215-648-1	1336-36-3									
38		asbestos				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
										Total:	0.0587 %		

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:34

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:34

Classification of sample: SO-TP6-01

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
SO-TP6-01

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

For inspection purposes only.
Consent of copyright owner required for any other use.

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12 mg/kg	1.32	15.844 mg/kg	0.00158 %		
3	barium { barium sulfate }		231-784-4	7727-43-7		52 mg/kg	1.7	88.375 mg/kg	0.00884 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.11 mg/kg	1.142	0.126 mg/kg	0.0000126 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		28 mg/kg	1.462	40.924 mg/kg	0.00409 %		
6	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		18 mg/kg	1.126	20.266 mg/kg	0.00203 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	32 mg/kg	1.56	49.914 mg/kg	0.0032 %		
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		26 mg/kg	2.976	77.383 mg/kg	0.00774 %		
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2 mg/kg	1.5	<3 mg/kg	<0.0003 %		<LOD
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<0.2 mg/kg	2.554	<0.511 mg/kg	<0.0000511 %		<LOD
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		67 mg/kg	2.774	185.868 mg/kg	0.0186 %		
14	TPH (C6 to C40) petroleum group			TPH		210 mg/kg		210 mg/kg	0.021 %		
15	benzene	601-020-00-8	200-753-7	71-43-2		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD

EPA Export 03-06-2021:02:38:34

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
16		toluene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
17		ethylbenzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
18		xylene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
19		pH				8	pH		8	pH	8pH		
				PH									
20		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				0.14	mg/kg		0.14	mg/kg	0.000014 %		
			201-581-5	85-01-8									
25		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				0.42	mg/kg		0.42	mg/kg	0.000042 %		
			205-912-4	206-44-0									
27		pyrene				0.38	mg/kg		0.38	mg/kg	0.000038 %		
			204-927-3	129-00-0									
28		benzo[a]anthracene				0.18	mg/kg		0.18	mg/kg	0.000018 %		
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				0.19	mg/kg		0.19	mg/kg	0.000019 %		
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				0.29	mg/kg		0.29	mg/kg	0.000029 %		
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				0.29	mg/kg		0.29	mg/kg	0.000029 %		
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				0.27	mg/kg		0.27	mg/kg	0.000027 %		
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				0.26	mg/kg		0.26	mg/kg	0.000026 %		
			205-883-8	191-24-2									
36		coronene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-881-7	191-07-1									
37		polychlorobiphenyls; PCB				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		602-039-00-4	215-648-1	1336-36-3									
38		asbestos				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
										Total:	0.0685 %		

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:34

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Material is in solid form and not liquid, therefore is not considered flammable

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.021%)

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:34

Classification of sample: SO-TP7-01

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
SO-TP7-01

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

For inspection purposes only.
Consent of copyright owner required for any other use.

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		15 mg/kg	1.32	19.805 mg/kg	0.00198 %		
3	barium { barium sulfate }		231-784-4	7727-43-7		67 mg/kg	1.7	113.868 mg/kg	0.0114 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.11 mg/kg	1.142	0.126 mg/kg	0.0000126 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		32 mg/kg	1.462	46.77 mg/kg	0.00468 %		
6	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		26 mg/kg	1.126	29.273 mg/kg	0.00293 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	33 mg/kg	1.56	51.474 mg/kg	0.0033 %		
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		31 mg/kg	2.976	92.264 mg/kg	0.00923 %		
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2 mg/kg	1.5	<3 mg/kg	<0.0003 %		<LOD
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.34 mg/kg	2.554	0.868 mg/kg	0.0000868 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		79 mg/kg	2.774	219.158 mg/kg	0.0219 %		
14	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
15	benzene	601-020-00-8	200-753-7	71-43-2		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD

EPA Export 03-06-2021:02:38:34

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
16		toluene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
17		ethylbenzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
18		xylene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
19		pH				7.9	pH		7.9	pH	7.9 pH		
				PH									
20		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
36		coronene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-881-7	191-07-1									
37		polychlorobiphenyls; PCB				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		602-039-00-4	215-648-1	1336-36-3									
38		asbestos				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
										Total:	0.0577 %		

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:34

Key	
	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:34

Classification of sample: SO-TP10-01

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
SO-TP10-01

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

For inspection purposes only.
Consent of copyright owner required for any other use.

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		15 mg/kg	1.32	19.805 mg/kg	0.00198 %		
3	barium { barium sulfate }		231-784-4	7727-43-7		54 mg/kg	1.7	91.774 mg/kg	0.00918 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.15 mg/kg	1.142	0.171 mg/kg	0.0000171 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		34 mg/kg	1.462	49.693 mg/kg	0.00497 %		
6	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		26 mg/kg	1.126	29.273 mg/kg	0.00293 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	41 mg/kg	1.56	63.952 mg/kg	0.0041 %		
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		30 mg/kg	2.976	89.288 mg/kg	0.00893 %		
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2 mg/kg	1.5	<3 mg/kg	<0.0003 %		<LOD
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.19 mg/kg	1.353	0.257 mg/kg	0.0000257 %		
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.21 mg/kg	2.554	0.536 mg/kg	0.0000536 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		120 mg/kg	2.774	332.898 mg/kg	0.0333 %		
14	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
15	benzene	601-020-00-8	200-753-7	71-43-2		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD

EPA Export 03-06-2021:02:38:34

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
16		toluene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
17		ethylbenzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
18		xylene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
19		pH				9.3	pH		9.3	pH	9.3 pH		
				PH									
20		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
22		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
23		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
24		phenanthrene				0.35	mg/kg		0.35	mg/kg	0.000035 %		
			201-581-5	85-01-8									
25		anthracene				0.12	mg/kg		0.12	mg/kg	0.000012 %		
			204-371-1	120-12-7									
26		fluoranthene				0.54	mg/kg		0.54	mg/kg	0.000054 %		
			205-912-4	206-44-0									
27		pyrene				0.55	mg/kg		0.55	mg/kg	0.000055 %		
			204-927-3	129-00-0									
28		benzo[a]anthracene				0.22	mg/kg		0.22	mg/kg	0.000022 %		
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				0.19	mg/kg		0.19	mg/kg	0.000019 %		
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				0.27	mg/kg		0.27	mg/kg	0.000027 %		
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				0.22	mg/kg		0.22	mg/kg	0.000022 %		
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				0.11	mg/kg		0.11	mg/kg	0.000011 %		
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				0.13	mg/kg		0.13	mg/kg	0.000013 %		
			205-883-8	191-24-2									
36		coronene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-881-7	191-07-1									
37		polychlorobiphenyls; PCB				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		602-039-00-4	215-648-1	1336-36-3									
38		asbestos				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
										Total:	0.0679 %		

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:34

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:34

Classification of sample: SO-TP11-01

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
SO-TP11-01

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

For inspection purposes only.
Consent of copyright owner required for any other use.

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		2.2 mg/kg	1.197	2.634 mg/kg	0.000263 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14 mg/kg	1.32	18.485 mg/kg	0.00185 %		
3	barium { barium sulfate }		231-784-4	7727-43-7		59 mg/kg	1.7	100.272 mg/kg	0.01 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.4 mg/kg	1.142	0.457 mg/kg	0.0000457 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		31 mg/kg	1.462	45.308 mg/kg	0.00453 %		
6	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		21 mg/kg	1.126	23.644 mg/kg	0.00236 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	30 mg/kg	1.56	46.794 mg/kg	0.003 %		
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		27 mg/kg	2.976	80.359 mg/kg	0.00804 %		
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2 mg/kg	1.5	<3 mg/kg	<0.0003 %		<LOD
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.26 mg/kg	1.353	0.352 mg/kg	0.0000352 %		
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<0.2 mg/kg	2.554	<0.511 mg/kg	<0.0000511 %		<LOD
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		130 mg/kg	2.774	360.639 mg/kg	0.0361 %		
14	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
15	benzene	601-020-00-8	200-753-7	71-43-2		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD

EPA Export 03-06-2021:02:38:34

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
16		toluene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
17		ethylbenzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
18		xylene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
19		pH				8.9	pH		8.9	pH	8.9 pH		
				PH									
20		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			205-912-4	206-44-0									
27		pyrene				0.11	mg/kg		0.11	mg/kg	0.000011 %		
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
36		coronene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-881-7	191-07-1									
37		polychlorobiphenyls; PCB				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		602-039-00-4	215-648-1	1336-36-3									
38		asbestos				0.16	mg/kg		0.16	mg/kg	0.000016 %		
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
										Total:	0.0683 %		

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:34

Key	
	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:34

Appendix A: Classifier defined and non CLP determinands

barium sulfate (EC Number: 231-784-4, CAS Number: 7727-43-7)

Conversion factor: 1.7
Description/Comments: No hazard statements
Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/89983 Sigma Aldrich SDS dated 15/4/19
Data source date: 02 Apr 2020
Hazard Statements: None.

chromium(III) oxide (worst case) (EC Number: 215-160-9, CAS Number: 1308-38-9)

Conversion factor: 1.462
Description/Comments: Data from C&L Inventory Database
Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Repr. 1B H360FD , Skin Sens. 1 H317 , Resp. Sens. 1 H334 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302 , Acute Tox. 4 H332

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Aquatic Chronic 2 H411 , Repr. 2 H361d , Carc. 1B H350 , Muta. 1B H340 , STOT RE 2 H373 , Asp. Tox. 1 H304 , Flam. Liq. 3 H226

ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

CLP index number: 601-023-00-4
Description/Comments:
Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)
Additional Hazard Statement(s): Carc. 2 H351
Reason for additional Hazards Statement(s):
03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

For inspection purposes only.
Consent of copyright owner required for any other use.

pH (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 1 H310 , Acute Tox. 1 H330 , Acute Tox. 4 H302

acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 2 H411 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Skin Irrit. 2 H315 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Carc. 2 H351 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302

EPA Export 03-06-2021:02:38:34

anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Acute Tox. 4 H302

pyrene (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Skin Irrit. 2 H315

indeno[123-cd]pyrene (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2 H351

benzo[ghi]perylene (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

coronene (EC Number: 205-881-7, CAS Number: 191-07-1)

Description/Comments: Data from C&L Inventory Database; no entries in Registered Substances or Pesticides Properties databases; SDS: Sigma Aldrich, 1907/2006 compliant, dated 2012 - no entries; IARC – Group 3, not carcinogenic.
Data source:
http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=17010&HarmOnly=no?fc=true&lang=en
Data source date: 16 Jun 2014
Hazard Statements: STOT SE 2 H371

For inspection purposes only.
Consent of copyright owner required for any other use.

polychlorobiphenyls; PCB (EC Number: 215-648-1, CAS Number: 1336-36-3)

CLP index number: 602-039-00-4
Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans; POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Additional Hazard Statement(s): Carc. 1A H350
Reason for additional Hazards Statement(s):
29 Sep 2015 - Carc. 1A H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

Appendix B: Rationale for selection of metal species

antimony {antimony trioxide}

Worst case CLP species based on hazard statements/molecular weight and low solubility. Industrial sources include: flame retardants in electrical apparatus, textiles and coatings

arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds

barium {barium sulfate}

Reasonable case based on sulphate concentration in soil samples

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history

EPA Export 03-06-2021:02:38:34

chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass

chromium in chromium(VI) compounds {chromium(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight. Industrial sources include: production stainless steel, electroplating, wood preservation, anti-corrosion agents or coatings, pigments

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. (edit as required) Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected.

lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight

molybdenum {molybdenum(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case. Pigment cadmium sulphoselenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil.

zinc {zinc chromate}

Worst case CLP species based on hazard statements/molecular weight

For inspection purposes only.
Consent of copyright owner required for any other use.

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018
HazWasteOnline Classification Engine Version: 2020.224.4427.8663 (11 Aug 2020)
HazWasteOnline Database: 2020.224.4427.8663 (11 Aug 2020)

This classification utilises the following guidance and legislation:
WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
14th ATP - Regulation (EU) 2020/217 of 4 October 2019
POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010
2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

EPA Export 03-06-2021:02:38:34

APPENDIX 10

TIER 2 SITE INVESTIGATION & RISK ASSESSMENT OF FORMER SHORE ROAD LANDFILL - APPROPRIATE ASSESSMENT SCREENING REPORT, 2014

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:34

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:35

TIER 2 SITE INVESTIGATION & RISK ASSESSMENT

OF

FORMER SHORE ROAD LANDFILL

For inspection purposes only.
Consent of copyright owner required for any other use.

AA SCREENING REPORT

16TH May 2014

DOCUMENT ISSUE STATUS

REPORT ISSUE	REFERENCE NO.	DATE	
FINAL	199-01	16/05/14	
TITLE	**NAME**	**SIGNATURE**	**DATE**
AUTHOR	David Gilfedder	David Gilfedder	06/05/14
PROJECT MANAGER	Padraic Mulroy	Padraic Mulroy	16/05/14
CLIENT	Tom Dunworth, Galway C.C.		

EPA Export 03-06-2021:02:38:35

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:35

TABLE OF CONTENTS

LIST OF FIGURES
(PLEASE SEE MAIN REPORT FOR FIGURES 1-6)

FIGURE NO.	FIGURE DESCRIPTION	SIZE	SCALE
1	Site Location & Proximity of SACs, pNHAs & SPAs	A3	1:20,000
2	Site Location & Proximity of SAC No. 002031, The Twelve Bens/Garaun Complex	A3	1:5,000
3	Site Location & Surrounding Property	A3	1:1,250
4	Site Layout & Topographical Survey	A3	1:500
5	Site Investigation Trialpit Locations	A3	1:500
6	Conceptual Site Model	A3	1:1,250

For inspection purposes only.
Consent of copyright owner required for any other use.

LIST OF ANNEXES

ANNEX NO.	ANNEX DESCRIPTION
1	• Site Synopsis SAC No. 002031 • Qualifying Interests for Twelve Bens/ Garaun Complex

EPA Export 03-06-2021:02:38:35

1 INTRODUCTION

As part of the Tier 2 Site Investigation and Risk Assessment (GQRA) an Appropriate Assessment Screen is required for the former Shore Road Landfill (see Figures 1, 2 & 3). This is required as part of the application to the EPA for the Certificate of Registration. The purpose of this assessment is to ascertain whether the development complies with the Department of Environment, Heritage and Local Government 2009 publication, *'Appropriate Assessment of Plans and Projects in Ireland, Guidance for Planning Authorities.'*

This report has been carried out in accordance with the Department of Environment, Heritage and Local Government 2009 publication, *'Appropriate Assessment of Plans and Projects in Ireland, Guidance for Planning Authorities'* and European Commission Guidance Document *'Assessment of Plans and Projects Significantly affecting Natura 2000 sites – Methodological Guidance on the Provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission, 2001).*

2 LEGISLATIVE BACKGROUND

For inspection purposes only.
Consent of copyright owner required for any other use.

The Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora) provides legal protection for habitats and species of European importance. The main aim of this Directive is to *'contribute towards ensuring biodiversity through the conservation of natural habitats and of wild fauna and flora in the European territory of the Member States to which the Treaty applies'*. In order to meet the aims of the Directive, actions must be designed *to maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest* (Habitats Directive).

Under the Habitats Directive, Special Areas of Conservation (SAC) or candidate Special Areas of Conservation (cSAC) have been selected as important examples of habitat types listed in Annex I, and the habitats of certain species listed in Annex II of the Habitats Directive. SACs (including cSACs) together with Special Protection Areas (SPAs) (including proposed SPAs) make up a network of European sites called the Natura 2000 network. SPAs are designated under the Council Directive on the Conservation of Wild Birds (79/409/EEC), otherwise known as the *'Birds Directive'*.

Appropriate Assessment is required under the Habitats Directive for any plan or project likely to have a significant effect on a Natura 2000 site. Article 6, paragraphs 3 and 4 of the Directive state:

'6(3) - Any plan or project not directly connected with or necessary to the management of the site (Natura 2000 site) but likely to have significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national

EPA Export 03-06-2021:02:38:35

authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.

6(4)- If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.

Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.'

3 SCREENING

Screening involves the following:

1. Description of the plan/project including details of the local site or plan area characteristics;
2. Identification of relevant Natura 2000 sites, and compilation of information on their qualifying interests and conservation objectives;
3. Assessment of likely effects (direct, indirect and cumulative) through the completion of a desk study or field survey; and
4. Screening statement including conclusions.

For inspection purposes only.
Consent of copyright owner required for any other use.

2.1 Description of Existing Site

The former Shore Road landfill site is located on the southern side of the Shore Road adjacent to the shore of Cliften Bay and is approximately 0.99 hectares (i.e. 9,900m^2) in area (see Figures 2 & 3). A council owned helipad has been built on the south western periphery of the the site. The site was wet under foot during the site investigation with rushes the predominant vegetation on site. A public handball alley is located on the north-western corner of the site. A public basketball court and adjacent playground is located on the western boundary of the site. A sailing club boat storage yard and slipway is located on the south-western corner of the site. A helicopter landing pad is located immediately adjacent to the south-western corner of the site. This is accessed by an access road. A pumping station is located besides this access road

According to Galway C.C., the former municipal landfill at Shore Road, Clifden, County Galway, was in operation between the years of 1920s and the late 1960s. It is understood that the site was capped and a football field was constructed in the 1970s. However, the football pitch became disused due to water logging. The site is currently disused and has been left fallow since that time. During this 40-50

EPA Export 03-06-2021:02:38:35

year period, as there are no records, it is not clear how many tonnes of mixed waste including domestic, commercial and construction & demolition (i.e. C & D) were deposited on site by the people of Clifden and/or the local authority. The total site area is 0.98 hectares (ha). However, the results of the site investigation indicate that an area of just 2,325m^2 was used for the deposition of waste i.e. domestic, commercial and construction & demolition (i.e. C & D). Taking an average waste depth of 4.5m, a total volume of waste is calculated at 10,500m^3 (see Figures 4 & 5). A review of historical 25-inch mapping indicates that the southern 2/3 of the site is located on land that was formerly a part of the estuary i.e it is reclaimed land.

2.2 Surrounding Property

The site is located in a residential area with 4 residences located within 50m of the site's boundary (see Figure 3). Two of these residences are located approximately 10m to the north of the site's northern boundary, across the Shore Road. Another residence is located to the northwest of the site. This house is approximately 35m from the site boundary. Another residence is located further along the Shore road 50m to the east of the site. Further housing exists just outside the 50 meter boundary, with a cluster of properties to the northeast, and a row of houses along the quay to the southwest of the site. The Cliften town hall, a public building, is located 36 meters northeast of the sites northern boundary. As stated previously, a number of public amenities are located along the sites western boundary, including a handball alley, basketball court and public playground. A boat storage yard owned by the local sailing club is located on the southwestern boundary of the site, adjacent to the shore (see Figure 3).

For inspection purposes only.
Consent of copyright owner required for any other use.

2.3 Natura 2000 Sites

The Shore Road site is located in the vicinity of a number of Natura 2000 designated protected sites, including Special Areas of Conservation (SAC), Special Protected Areas (SPA) and proposed Natural Heritage Areas (pNHA). These are the West Connact coast, Slyn Head peninsula, the Conemarra Bog complex and The Twelve Bens/ Garaun complex.

The Twelve Bens/ Garaun Complex is the closest protected site to Shore Road landfill site, located approximately 266m to the southeast of the site's eastern boundary (see Figures 1 & 2). This is protected as:

- A Special Area of Conservation (SAC) No. 002031; and
- A proposed Natural Heritage Area (pNHA) No. 002031.

The Site Synopsis and the Qualifying Interests for The Twelve Bens/ Garaun Complex are located in Annex 1. The overarching Conservation Objective for The Twelve Bens/ Garaun Complex Special Protection Area is to ensure the maintenance of the habitats and species for which the SAC has been selected at favourable conservation status.

The Conservation Objectives for The Twelve Bens/ Garaun Complex can be summarised as follows:

EPA Export 03-06-2021:02:38:35

Objective 1: To maintain the Annex I habitats for which the SAC has been selected at favourable conservation status.

To be favourable the following habitat must remain intact and at their current percentage:

- Blanket bogs (active) (26% area of the site);
- Oligotrophic waters containing very few minerals of sandy plains(*Littorelletalia uniflorae*) (6% area of the site);
- Siliceous rocky slopeswith chasmophytic vegetation (5% area of the site);
- Calcareous rockyslopes with chasmophytic vegetation (3% area of the site);
- Siliceous screeof the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) (1% area of the site);
- Alpine and Boreal heaths(2% area of the site);
- Old Oak Woods with *Ilex* and *Blechnum* in the British Isles (1% area of the site);
- Depressions on peat substrates of the *Rhynchosporion* (1% area of the site).

Objective 2: To maintain the Annex II species for which the SAC has been selected at favourable conservation status.

To be favourable the following habitat must remain intact:

- Slender Naiad;
- Otter;
- Freshwater Pearlmussel;
- Salmon.

For inspection purposes only.
Consent of copyright owner required for any other use.

Objective 3: To maintain the extent, species richness and biodiversity of the entire site.

Objective 4: To establish effective liaison and co-operation with landowners, legal users and relevant authorities.

EPA Export 03-06-2021:02:38:35

4 ASSESSMENT OF LIKELY EFFECTS

A review of the proposed development indicates that there will not be:

- Any impact on an Annex I habitat;
- Any reduction in the area of a Natura 2000 site;
- Direct or indirect damage to the physical quality of the environment in the Natura 2000 site;
- Serious or ongoing disturbance to species or habitats for which Natura 2000 is selected;
- Direct or indirect damage to the size, characteristics or reproductive ability of populations on the Natura 2000 site; and
- Interference with mitigation measures put in place for other plans/projects.

5 SCREENING CONCLUSION AND STATEMENT

The findings and conclusions of the screening process are as follows:

1. *No potential for significant effects/AA is not required*
   Screening established that there is **no potential for significant effects** and the project/plan can proceed as proposed. However, no changes may be made after this as this will invalidate the findings of the screening.

For inspection purposes only.
Consent of copyright owner required for any other use.

Yours sincerely,

Padraic Mulroy

BSc., MSc., MIPSS, MIEI, C.Sci., SiLC, GSAS-CGP
Managing Director
Mulroy Environmental

EPA Export 03-06-2021:02:38:35

MULROY ENVIRONMENTAL
SERVICE CONSTRAINTS

1. This report and the Environmental Site Assessment carried out in connection with the report (together the "Services") were compiled and carried out for Galway County Council (the "client") in accordance with the terms of a contract, Proposal PRP214.05.04.2013, between Mulroy Environmental and the "client" dated 6th April 2013. The Services were performed by Mulroy Environmental with the skill and care ordinarily exercised by a reasonable Environmental consultant at the time the Services were performed. Further, and in particular, the Services were performed by Mulroy Environmental taking into account the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between Mulroy Environmental and the client.

2. Other than that expressly contained in paragraph 1 above, Mulroy Environmental provides no other representation or warranty whether express or implied, in relation to the Services.

3. Unless otherwise agreed the Services were performed by Mulroy Environmental exclusively for the purposes of the client. Mulroy Environmental is not aware of any interest of or reliance by any party other than the client in or on the Services. Unless expressly provided in writing, Mulroy Environmental does not authorise, consent or condone any party other than the client relying upon the Services. Should this report or any part of this report, or otherwise details of the Services or any part of the Services be made known to any such party, and such party relies thereon that party does so wholly at its own and sole risk and Mulroy Environmental disclaims any liability to such parties. Any such party would be well advised to seek independent advice from a competent environmental consultant and/or lawyer.

Consent of copyright owner required for any other use.
For inspection purposes only.

4. It is Mulroy Environmental understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances by the client without Mulroy Environmental be requested to review the report after the date hereof, Mulroy Environmental shall be entitled to additional payment at the then existing rates or such other terms as agreed between Mulroy Environmental and the client.

5. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of Mulroy Environmental. In the absence of such written advice of Mulroy Environmental, reliance on the report in the future shall be at the client's own and sole risk. Should Mulroy Environmental be requested to review the report in the future, Mulroy Environmental shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between Mulroy Environmental and the client.

6. The observations and conclusions described in this report are based solely upon the Services which were provided pursuant to the agreement between the client and Mulroy Environmental. Mulroy Environmental has not performed any observations, investigations, studies or testing not specifically set out or required by the contract between the client and Mulroy Environmental. Mulroy Environmental is

EPA Export 03-06-2021:02:38:35

not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this report, Mulroy Environmental did not seek to evaluate the presence on or off the site of asbestos, electromagnetic fields, lead paint, heavy metals, radon gas or other radioactive or hazardous materials.

7. The Services are based upon Mulroy Environmental's observations of existing physical conditions at the Site gained from a walk-over survey of the site together with Mulroy Environmental's interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The Services are also based on information and/or analysis provided by independent testing and information services or laboratories upon which Mulroy Environmental was reasonably entitled to rely. The Services clearly are limited by the accuracy of the information, including documentation, reviewed by Mulroy Environmental and the observations possible at the time of the walk-over survey. Further Mulroy Environmental was not authorised and did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services. Mulroy Environmental is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to Mulroy Environmental and including the doing of any independent investigation of the information provided to Mulroy Environmental save as otherwise provided in the terms of the contract between the client and Mulroy Environmental.

Consent of copyright owner required for any other use.
For inspection purposes only.

8. The environmental monitoring aspects of the Services is a limited sampling of the site at pre-determined borehole and soil vapour locations based on the operational configuration of the site. The conclusions given in this report are based on information gathered at the specific test locations and can only be extrapolated to an undefined limited area around those locations. The extent of the limited area depends on the soil and groundwater conditions, together with the position of any current structures and underground facilities and natural and other activities on site. In addition chemical analysis was carried out for a limited number of parameters [as stipulated in the contract between the client and Mulroy Environmental] [based on an understanding of the available operational and historical information,] and it should not be inferred that other chemical species are not present.

9. Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan, but is (are) used to present the general relative locations of features

EPA Export 03-06-2021:02:38:35

ANNEX 1

- SITE SYNOPSIS SAC NO. 002031

- QUALIFYING INTERESTS FOR TWELVE BENS/ GARAUN COMPLEX

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:35

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:35

SITE SYNOPSIS

SITE NAME: THE TWELVE BENS/GARRAUN COMPLEX

SITE CODE: 002031

This is an extensive site situated in the north-west of Connemara, dominated by mountaineous terrain. The site is bounded to the south by the Connemara Bog Complex, to the east by the Maumturk Mountains and to the north by Killary Harbour. Included within the site are the Twelve Bens mountain range, the mountains to the north of Kylemore (Doughruagh, Garraun and Benchoona), rivers including the Ballynahinch and Owenglin systems and an area of coastal heath and machair near Glassilaun. The site also includes some extensive tracts of lowland blanket bog which are continuous with the mountains. Most of the mountain summits reach a height in excess of 500 m, the highest being Ben Baun in the Twelve Bens which reaches 730 m. The site includes a large portion of the Connemara National Park and a Statutory Nature Reserve at Derryclare Wood.

Geologically, the site can be divided into two distinct parts. The Twelve Bens are composed of resistant quartzite with schists in the valleys while the mountains north of Kylemore are composed of gneiss and various types of sandstones and mudstones. There are also areas of gabbro (Doughruagh and Currywongaun), mica schist (Muckanaght) and marble outcrops (south of Kylemore Lough). The main soil type within the site is peat.

Consent of copyright owner required for any other use.
For inspection purposes only.

The site is a candidate SAC selected for active blanket bog a priority habitat on Annex I of the E.U. Habitats Directive. The site is also selected as a candidate SAC for, alpine heath, calcareous rocky, siliceous rocky and siliceous scree vegetation, lowland oligotrophic lakes, Rhynchosporion and old Oak woodlands all habitats listed on Annex I of the E.U. Habitats Directive. The site is also selected for the following species listed on Annex II of the same directive - Freshwater Pearl Mussel, Atlantic Salmon, Otter and the plant Slender Naiad.

The predominant vegetation type on the site is upland blanket bog/heath dominated by Heather (*Calluna vulgaris*), Deergrass (*Scirpus cespitosus*), Cross-leaved Heath (*Erica cinerea*) and the mosses *Racomitrium lanuginosum* and *Sphagnum capillifolium*). In places this vegetation can be rich in liverwort speces such as *Adelanthus lindenbergianus* and *Bazzania pearsonii*. This unusual type of species-rich dwarf shrub heath is almost confined to the mountains of the west of Ireland and Scotland and is particularly well developed in the Twelve Bens. Close to the mountain summits this blanket bog/heath is often very thin with a high proportion of outcropping bedrock.

Another important and widespread habitat is lowland blanket bog dominated by Purple Moor-grass (*Molinia caerulea*), Black Bog-rush (*Schoenus nigricans*), Cross-leaved Heath and the liverwort *Pleurozia purpurea*. These areas of lowland blanket bog usually occur in the valleys between the mountains, e.g. the Gleninagh Valley.

EPA Export 03-06-2021:02:38:35

Rhynchosporion vegetation is well represented around pools, in wet hollows and in quaking and flush areas associated with the lowland blanket bog. White Beak-sedge (*Rhynchospora alba)* occurs in association with such species as Bog Cotton (*Eriophorum angustifolium),* Bogbean *(*M*enyanthes trifoliata),* Black Bog-rush *(Schoenus nigricans),* and a range of bog mosses, including *Sphagnum auriculatum* and *S. cuspidatum*.

The site contains a large range of others habitats, including upland grassland dominated by Sheep's Fescue (*Festuca ovina*) and Mat-grass (*Nardus stricta*), Sessile Oak (*Quercus petraea*) woodland, scree, oligotrophic (nutrient-poor) lakes, rivers, reedbeds, freshwater marshes, coastal heath, machair, sand dune and salt marsh.

A number of rare, Red Data Book plant species are found within the site: Alpine Saw-wort (*Saussurea alpina*), Holly Fern (*Polystichum lonchitis*), Purple Saxifrage (*Saxifraga oppositifolia*), and the legally protected (Flora Protection Order, 1999) Parsley Fern (*Cryptogramma crispa*). These are generally confined to mountains cliffs above 400 m, where a number of other scarce plant species, for example, Alpine Meadow-rue (*Thalictrum alpinum*), are also found. Other Red Data Book species have also been recorded from the site: Marsh Clubmoss (*Lycopodiella inundata*), Corncockle (*Agrostemma githago*) and the legally protected Heath Cudweed (*Omalotheca sylvatica*). The latter two species have not been recorded from the site in recent years. St. Dabeoc's Heath (*Daboecia cantabrica*), a species which in Ireland is restricted to Connemara and south Mayo, occurs commonly within the site.

Consent of copyright owner required for any other use.
For inspection purposes only.

The suite of lowland lakes that encircle the mountains represent some of the finest oligotrophic lakes in the country and two rare, Red Data Book plant species, Slender Naiad (*Najas flexilis*) and Pillwort (*Pilularia globulifera*) occur. Slender Naiad is rare in Europe and is listed on Annex II of the EU Habitats Directive.

The site contains several small areas of Sessile Oak woodland, a habitat which is particularly rare in Connemara. The best examples on the site of this habitat are found at Kylemore and on the north shore of Derryclare Lough. Derryclare Wood, a Statutory Nature Reserve, has been particularly well studied. It is composed mostly of Sessile Oak, with some Rowan (*Sorbus aucuparia*), Downy Birch (*Betula pubescens*) and occasional Ash (*Fraxinus excelsior*) forming the canopy layer. There is a well-developed lichen and fungus flora present. The fungal parasite, *Hemigrapha astericus*, a native of Australia and South America, was first recorded in the northern hemisphere from this wood. The Kylemore woods, though heavily infested by Rhododendron (*Rhododendron ponticum*), still retain a diverse flora and support interesting communities of mosses and liverworts, including such species as *Radula voluta, Lejeunea holtii, L. hibernica, L. flava* subsp. *moorei, Cephalozia hibernica, Teleranea nematodes, Campylopus setifolius, Oxystegus hibernicus, Grimmia hartmanii* and *G. funalis*.

Irish Hare, Otter, Freshwater Pearl-mussel and Common Frog have been recorded from the site. These species are protected under the 1976 Wildlife Act. The Owenglin River and Ballynahinch system supports an important population of Salmon and salmon nursery grounds. Arctic Charr, a species listed in the Irish Red

EPA Export 03-06-2021:02:38:35

Data Book as threatened in Ireland, has been recorded from Lough Inagh, Kylemore Lough, Lough Muck and Lough Fee.

Birdlife reported from the site includes Raven, Wheatear, Stonechat, Meadow Pipit, Red Grouse, a declining species of Heather moorland, Snipe, Curlew, Woodcock, Hooded Crow, Twite, Ring Ouzel (the latter two both Irish Red Data Book species) and the EU Birds Directive Annex I species, Peregrine, Merlin, Golden Plover and Chough. The site provides excellent habitat for Peregrine and this species has traditionally bred at several locations within it.

The upland vegetation of the site is most threatened by overstocking with sheep and by afforestation with coniferous species.

The Twelve Bens/Garraun Complex includes a wide variety of habitat types, eight of which are listed on Annex I of the EU Habitats Directive, and populations of many rare or scarce plant and animal species. It is one of the largest and most varied sites of conservation interest in Ireland.

6.10.2006

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:35

NATURA 2000

STANDARD DATA FORM

FOR SPECIAL PROTECTION AREAS (SPA)

FOR SITES ELIGIBLE FOR IDENTIFICATION AS SITES OF COMMUNITY IMPORTANCE (SCI)

AND

FOR SPECIAL AREAS OF CONSERVATION (SAC)

Consent of copyright owner required for any other use.
For inspection purposes only.

EPA Export 03-06-2021:02:38:35

1. SITE IDENTIFICATION

1.1. TYPE	*1.2. SITE CODE*	*1.3. COMPILATION DATE*	*1.4. UPDATE*
B	IE0002031	199511	

1.5. RELATION WITH OTHER NATURA 2000 SITES:

1.6. RESPONDENT(S):

National Parks & Wildlife Service of the Department of the Environment, Heritage and Local Government. 7 Ely Place, Dublin 2, Ireland.

1.7. SITE NAME:

The Twelve Bens/Garraun Complex

1.8. SITE INDICATION AND DESIGNATION/CLASSIFICATION DATES:

DATE SITE PROPOSED AS ELIGIBLE AS SCI:	*DATE CONFIRMED AS SCI:*
199805	
DATE SITE CLASSIFIED AS SPA:	*DATE SITE DESIGNATED AS SAC:*

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:35

2. SITE LOCATION

2.1. SITE CENTRE LOCATION

LONGITUDE	LATITUDE
W 9 52 45	53 32 18

W/E (Greenwich)

2.2. AREA (HA):

16170.08

2.3. SITE LENGTH (KM):

2.4. ALTITUDE (M):

MINIMUM	MAXIMUM	MEAN
0	730	350

2.5. ADMINISTRATIVE REGION:

NUTS CODE	REGION NAME	% COVER
IE013	West	99

Marine area not covered by a NUTS-region

2.6. BIOGEOGRAPHIC REGION:

Alpine	Atlantic	Boreal	Continental	Macaronesian	Mediterranean
☐	☑	☐	☐	☐	☐

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:35

3. ECOLOGICAL INFORMATION

3.1. HABITAT types present on the site and assessment for them:

ANNEX I HABITAT TYPES:

CODE	%COVER	REPRESENTATIVITY	RELATIVE SURFACE	CONSERVATION STATUS	GLOBAL ASSESSMENT
7130	44	**B**	**B**	**C**	**C**
3110	6	**A**	**B**	**A**	**A**
8220	2	**A**	**B**	**A**	**A**
7150	1	**A**	**C**	**B**	**A**
91A0	1	**A**	**B**	**B**	**A**
4060	1	**B**	**B**	**B**	**B**
8110	1	**A**	**B**	**A**	**A**
8210	1	**A**	**B**	**A**	**A**

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:35

3.2. SPECIES

covered by Article 4 of Directive 79/409/EEC

and

listed in Annex II of Directive 92/43/EEC

and

site assessment for them

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:35

3.2.a. BIRDS listed on Annex I of Council directive 79/409/EEC

CODE	NAME	POPULATION			SITE ASSESSMENT		
		Resident	Migratory		Population	Conservation	Isolation
			Breed	Winter Stage			
A103	Falco peregrinus	3 p			C	A	C

3.2.b. Regularly occuring Migratory Birds not listed on Annex I of Council directive 79/409/EEC

3.2.c. MAMMALS listed on Annex II of Council directive 92/43/EEC

CODE	NAME	POPULATION			SITE ASSESSMENT			
		Resident	Migratory		Population	Conservation	Isolation	
			Breed	Winter Stage				
1355	Lutra lutra	p			C	A	C	A

For inspection purposes only.
Consent of copyright owner required for any other use.

3.2.d. AMPHIBIANS and REPTILES listed on Annex II of Council directive 92/43/EEC

CODE	NAME	POPULATION	SITE ASSESSMENT			
			Population	Conservation	Isolation	C
1833	Najas flexilis	P	B	A	C	A

3.2.e. FISHES listed on Annex II of Council directive 92/43/EEC

CODE	NAME	POPULATION			SITE ASSESSMENT		
		Resident	Migratory		Population	Conservation	Isolation
			Breed	Winter Stage			
1106	Salmo salar	C			C	B	C

EPA Export 03-06-2021:02:38:35

3.2.f. INVERTEBRATES listed on Annex II of Council directive 92/43/EEC

CODE	NAME	POPULATION				SITE ASSESSMENT		
		Resident	Migratory			Population	Conservation	Isolation
			Breed	Winter	Stage			
1029	Margaritifera margaritifera	P				**B**	**B**	**B**

3.2.g. PLANTS listed on Annex II of Council directive 92/43/EEC

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:35

3.3. Other Important Species of Flora and Fauna

GROUP							SCIENTIFIC NAME	POPULATION	MOTIVATION			
B	M	A	R	F	I	P						
						P	Pilularia globulifera	P	**A**			
						P	Saussurea alpina	P	**A**			
						P	Omalotheca sylvatica	P	**A**			
						P	Cryptogramma crispa	R	**A**			
						P	Agrostemma githago	P	**A**			
						P	Lycopodiella inundata	P	**A**			
						P	Polystichum lonchitis	P	**A**			
					I		Stethophyma grossum	P				**D**
					I		Conops vesicularis	P				**D**
					I		Epistrophe nitidicollis	P				**D**
					I		Ctenophora atrata	P				**D**
				F			Salvelinus alpinus	P	**A**			
		A					Rana temporaria	P	**A**			
	M						Lepus timidus hibernicus	P	**A**			
		A					Rana temporaria	P			**C**	
	M						Lepus timidus hibernicus	P		**B**		
	M						Lepus timidus hibernicus	P			**C**	

(B = Birds, M = Mammals, A = Amphibians, R = Reptiles, F = Fish, I = Invertebrates, P = Plants)

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:35

4. SITE DESCRIPTION

4.1. GENERAL SITE CHARACTER:

Habitat classes	% cover
Marine areas, Sea inlets	1
Coastal sand dunes, Sand beaches, Machair	1
Inland water bodies (Standing water, Running water)	7
Bogs, Marshes, Water fringed vegetation, Fens	46
Heath, Scrub, Maquis and Garrigue, Phygrana	34
Humid grassland, Mesophile grassland	1
Broad-leaved deciduous woodland	1
Inland rocks, Screes, Sands, Permanent Snow and ice	9
Total habitat cover	**100 %**

Other site characteristics

An extensive area incorporating the predominantly quartzite mountains of the Twelve Bens and encompassing a range of habitat types,including blanket bog, oligotrophic lakes, heath, exposed rock and scree, acid grassland and remnants of oak woodland. The northern part of the site is bounded by coastline and includes rocky shore and small areas of sandy beach, machair, tidal river, mud flats and saltmarsh. Several river headstreams are also within the site.

Contents of copyright owner required for any other use.
For inspection purposes only.

4.2. OUALITY AND IMPORTANCE:

One of the largest and most varied sites of conservation interest in Ireland, including the scenically renowned Twelve Bens mountain range, which support extensive areas of blanket bog, heath and exposed rock and a range of arctic-alpine plants. Rhynchosporion vegetation is well represented in the wet areas of blanket bog. The suite of lowland lakes that encircle the mountains represent some of the finest oligotrophic lakes in the country and support several rare species such as Pilularia globulifera and populations of Salvelinus alpinus. The site also has a significant population of Lutra lutra, and an important population of Salmo salar. The site includes a large portion of the Connemara National Park and a National Nature Reserve at Derryclare Wood. Additional areas are included in the site under EU LIFE funded restoration projects.

4.3. VULNERABILITY

Large tracts of blanket bog are currently overgrazed by sheep and are vulnerable to erosion, a problem that could be accentuated by the striping of commonage which is taking place in some areas. Other threats are the further expansion of commercial afforestation on blanket bog, and the development of fish-farming in the oligotrophic lakes.

4.4. SITE DESIGNATION:

4.5. OWNERSHIP

National Parks and Wildlife Service (14%)
Department of the Environment (9%)
Privat : Multiple (77%)

4.6. DOCUMENTATION

EPA Export 03-06-2021:02:38:35

Central Fisheries Board (2001). Irish Salmon Catches 2000. http://www.cfb.ie/: February 2001.

Doris, Y., McGarrigle, M.L., Clabby, K.J., Lucey, J., Neill, M., Flanagan, M., Quinn, M.B. & Lehane, M., (eds.) (1999). Water Quality in Ireland 1995-1997. Statistical compendium of River Quality Data, Environmental Protection Agency.

Douglas, C., Garvey, L., Kelly, L. and O'Sullivan, A. (1989). A Survey to Locate Blanket Bogs of Scientific Interest in County Galway, Part 2. Unpublished report to the Wildlife Service, Dublin.

Douglas, C. and Grogan, (1987). A Survey to Locate Lowland Blanket Bogs of Scientific Interest in Connemara, County Galway. Unpublished report to the Wildlife Service, Dublin.

Ferguson, D.K. and Westhoff, V. (1987). An Account of the Flora of Derryclare Wood, Connemara, (Co. Galway), Western Ireland. Proceedings of The Konniklijke Nederlandse Akademie van Wetenschaffen, C90 (2) : 139-172.

Folan, A.C.M. and Mitchell, M.E. (1970). The Lichens and Lichen Parasites of Derryclare Wood, Connemara. Proceedings Of The Royal Irish Academy, Section B, 70 (7) : 163-170.

Heuff, H. (1984). The Vegetation of Irish Lakes. Unpublished report to the Wildlife Service, Dublin.

McGarrigle, M.L., Bowman, J.J., Clabby, K.J., Lucey, J., Cunningham, P., MacCarthaigh, M., Keegan, M., Cantrell, B., Lehane, M., Clenaghan, C. and Toner, P.F. (2002). Water Quality in Ireland 1998-2000. Environmental Protection Agency, Wexford.

Neff, M. (1972). Conservation Report. Derryclare Wood, Ballinahinch Forest, Co Galway. Internal Report to Forest & Wildlife Service.

O'Reilly, P. (1991). Trout and Salmon Rivers of Ireland: an angler's guide. Merlin Unwin Books, London.

Quinn, A.C.M. (1971). Areas of Scientific Interest in County Galway. Unpublished preliminary report prepared for Galway County Council. An Foras Forbartha, Dublin.

Roden, C.M. (1986). A Survey of the Flora of some Mountain Ranges in the West of Ireland. Irish Naturalists' Journal 22 (2) : 52-59.

Scannell, M.J.P. and White, J. (1975). Cryptogramma crispa In West Galway. Irish Naturalists' Journal, 18 : 336.

Tangney, D.E. & Fairley, J.S. (1994). Otter signs and diet in Connemara National Park and its environs. Irish Naturalists' Journal 24: 434 -440.

Webb, D.A. and Scannell, M.J.P. (1983). Flora of Connemara and the Burren. Royal Dublin Society and Cambridge University Press, Cambridge.

Consent of copyright owner required for any other use. For inspection purposes only.

EPA Export 03-06-2021:02:38:35

5. SITE PROTECTION STATUS AND RELATION WITH CORINE BIOTOPES

5.1. DESIGNATION TYPES at National and Regional level:

CODE	% COVER
IE01	1
IE03	13

5.2. RELATION OF THE DESCRIBED SITE WITH OTHER SITES:

designated at National or Regional level:

TYPE CODE	SITE NAME	OVERLAP TYPE	% COVER
IE01	Derryclare Nature Reserve	+	1
IE03	Connemara National Park	*	13

designated at International level:

For inspection purposes only.
Consent of copyright owner required for any other use.

5.3. RELATION OF THE DESCRIBED SITE WITH CORINE BIOTOPE SITES:

CORINE SITE CODE	OVERLAP TYPE	% COVER
800000208		
800000182		
800000243		

EPA Export 03-06-2021:02:38:35

6. IMPACTS AND ACTIVITIES IN AND AROUND THE SITE

6.1. GENERAL IMPACTS AND ACTIVITIES AND PROPORTION OF THE SURFACE OF THE SITE AFFECTED

IMPACTS AND ACTIVITIES WITHIN the site

CODE	INTENSITY	% OF SITE	INFLUENCE
140	**A** B C	90	+ 0 -
200	A B **C**	1	+ 0 -
220	A **B** C	5	+ 0 -
230	A B **C**	10	+ 0 -
301	A B **C**	1	+ **0** -
311	A B **C**	1	+ 0 -
312	A **B** C	1	+ 0 -
501	A **B** C	1	+ 0 -
502	A B **C**	1	+ **0** -
622	A **B** C	5	+ 0 -
900	**A** B C	30	+ 0 -
954	A **B** C	1	+ 0 -

IMPACTS AND ACTIVITIES AROUND the site

CODE	INTENSITY	INFLUENCE
140	**A** B C	+ **0** -
161	A **B** C	+ 0 -
311	A B **C**	+ **0** -
312	A **B** C	+ **0** -
403	A **B** C	+ **0** -
502	A **B** C	+ **0** -
610	A **B** C	+ **0** -
622	A **B** C	+ **0** -

For inspection purposes only.
Consent of copyright owner required for any other use.

6.2. SITE MANAGEMENT AND PLANS

BODY RESPONSIBLE FOR THE SITE MANAGEMENT

National Parks and Wildlife Service (c. 14%)
Private ownership (77%)
Department of Environment (9%)

SITE MANAGEMENT AND PLANS

A management plan is being prepared.

EPA Export 03-06-2021:02:38:35

7. MAPS OF THE SITE

- Physical map

- Aerial photograph(s) included:

8. SLIDES

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:35

Conservation Objectives for The Twelve Bens/Garraun Complex SAC [002031]

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network.

European and national legislation places a collective obligation on Ireland and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation condition. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

Favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

For inspection purposes only.
Consent of copyright owner required for any other use.

Objective: To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected:

- [1029] *Margaritifera margaritifera*
- [1106] *Salmo salar* (only in fresh water)
- [1355] *Lutra lutra*
- [1833] *Najas flexilis*
- [3110] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)
- [4060] Alpine and Boreal heaths
- [7130] Blanket bogs (* if active only)
- [7150] Depressions on peat substrates of the *Rhynchosporion*
- [8110] Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*)
- [8210] Calcareous rocky slopes with chasmophytic vegetation
- [8220] Siliceous rocky slopes with chasmophytic vegetation
- [91A0] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles

Citation:

NPWS (2011) Conservation objectives for The Twelve Bens/Garraun Complex SAC [002031]. Generic Version 3.0. Department of Arts, Heritage & the Gaeltacht.

For more information please go to: www.npws.ie/protectedsites/conservationmanagementplanning

EPA Export 03-06-2021:02:38:35

For inspection purposes only.
Consent of copyright owner required for any other use.

EPA Export 03-06-2021:02:38:35