

Title of Report:	Craigahulliar Landfill Site – Void Capacity Study
Committee Report Submitted To:	Environmental Services Committee
Date of Meeting:	10th October 2023
For Decision or For Information	For Decision
To be discussed In Committee YES/NO	No

Linkage to Council Strategy (2021-25)	
Strategic Theme	Climate Change and our Environment
Outcome	
Lead Officer	Head of Operations

Budgetary Considerations	
Cost of Proposal	N/A
Included in Current Year Estimates	
Capital/Revenue	
Code	N/A
Staffing Costs	N/A

Legal Considerations	
Input of Legal Services Required	No
Legal Opinion Obtained	No

Screening Requirements	Required for new or revised Policies, Plans, Strategies or Service Delivery Proposals.		
Section 75 Screening	Screening Completed:	Yes/No	Date:
	EQIA Required and Completed:	Yes/No	Date:
Rural Needs Assessment (RNA)	Screening Completed	Yes/No	Date:
	RNA Required and Completed:	Yes/No	Date:
Data Protection Impact Assessment (DPIA)	Screening Completed:	Yes/No	Date:
	DPIA Required and Completed:	Yes/No	Date:

1.0 **Purpose of Report**

- 1.1 The purpose of this report is to seek approval from members on how to utilise the remaining void space available at Craigahulliar Landfill Site.

2.0 **Background (to include any previous decisions of Council)**

- 2.1 Craigahulliar Landfill Site occupies a quarry, which operated until 1989, and is located on Ballymacrea Road, approximately 2.75km to southeast of Portrush, Co. Antrim.

The site operates as a non-hazardous landfill and is permitted to accept up to 90,000 tonnes of waste per year. The site covers an area of approximately 176,000 square metres.

- 2.2 Craigahulliar Landfill Site consists of six different phases/cells. Plan attached in appendix 1. Cells 1, 2 and 3 have been filled and capped, while cells 4 and 5 are currently active. Cell 6 has not yet been developed.
- 2.3 An external study was commissioned to ascertain the potential space available within cells 4, 5 and 6 and the options for utilising same. See appendix 2.

3.0 **Findings**

- 3.1 Based on four modelling options (see appendix 1) for cells 4,5 and 6, an annual waste input of c.39,748m³ and a waste compaction rate of 0.8 tonnes/m³ the predicted remaining number of years capacity for each void model is as follows.

Model Scenario	Predicted Lifespan (Years)
Cells 4 and 5 only to restoration contours	0.48
Cells 4 and 5 only to restoration contours plus 20%	3.02
Cells 4, 5 and 6 to restoration contours	2.24
Cells 4, 5 and 6 to restoration contours plus 20%	5.28

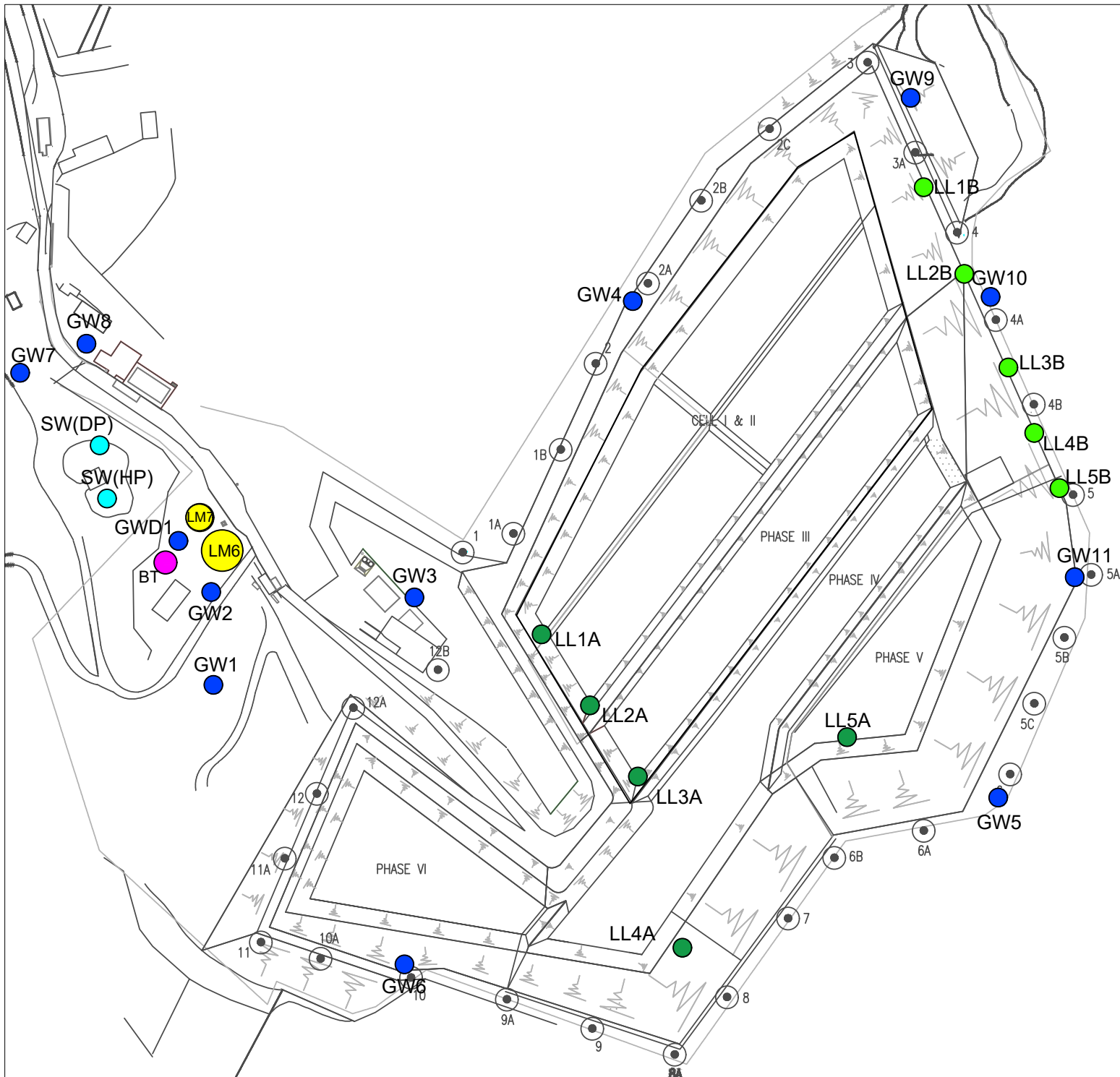
4.0 **Options (if appropriate)**

Regarding the future development and usage of the site there are a number of options highlighted by the study for consideration.

- 4.1 Option 1 - Development costs associated with construction of cell 6 should this cell be utilised. This would include full Landfill Directive lining system, leachate extraction system, gas well and gas extraction infrastructure and a Landfill Directive capping system.
- 4.2 Option 2 – Evaluating ongoing operational costs versus the cost of sending waste to a materials recovery facility.
- 4.3 Option 3 – Further to consultation with NIEA, mothballing the site after the completion of infilling cells 4 and 5.

5.0 Recommendation(s)

It is recommended that the Environmental Services Committee recommends to Council the mothballing of Craigahulliar Landfill Site after the completion of infilling cells 4 and 5.



- KEY:**
- LANDFILL GAS BOREHOLES 1-12A (TAGGARTS)
 - GROUNDWATER BOREHOLES GW1-GW11 & GWD1 (CC&GBC)
 - SURFACEWATER HOLDING POND & DISCHARGE PIPE (CC&GBC)
 - LEACHATE DISCHARGE TANK (CC&GBC)
 - SBR TANK - SEQUENCING BIOLOGICAL REACTOR (CC&GBC)
 - SIDE SLOPE RISERS LL1A-LL5A (CC&GBC)
 - SIDE SLOPE RISERS LL1B-LL5B (CC&GBC)
 - BALANCE TANK (CC&GBC)

REV/DATE	DESCRIPTION	DRN	CKD
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FOR INFORMATION



CLIENT CAUSEWAY COAST & GLENS BOROUGH COUNCIL

CONTRACT CRAIGHULLIAR LANDFILL SITE

DRAWING MONITORING LOCATIONS

SCALE	NTS	DATE	22.08.2023
DRAWN	BR	CHECKED	AT
DRG No.	23023-A-100	REVISION	A

Architects
 Civil Engineers
 Waste & Energy
 Project Managers

23 Bedford Street
 Belfast
 BT2 7EJ
 t: 028 9098 2121
 e: info@taggarts.uk
 f: www.taggarts.uk

Craigahulliar Landfill Site – Void Report

1. Current and Final Levels

Craigahulliar Landfill consists of 6 different phases/cells. Cells 1,2 and 3 have been filled and capped, while Cells 4 and 5 are currently active, cell 6 has not yet been developed. This report will focus on the potential space available within Cells 4, 5 and 6.

Based on the most recent topographical survey of the site current fill levels within Cells 4 and 5 range from approximately 110mAOD to 122mAOD. Final levels for the site range from 100mAOD at the northwestern edge of Cell 6 up to 120mAOD along the northeastern boundary of the site. The restoration contours form a gradual northeastern to southwestern slope from 120mAOD to 110mAOD across Cells 4 and 5.

Formation levels for Cell 6 are from 95mAOD to 96mAOD.

2. Current and Potential Capacity

Taggarts have completed a void capacity study for the site. This void capacity study has been developed looking at 4 model options. These model options are:

- Only fill Cells 4 and 5 to the restoration contours.
- Only fill Cells 4 and 5 to the restoration contours, plus an additional 20% of the overall depth of the site. Due to the biodegradable content of the non-hazardous waste, it is our experience that non-hazardous landfill site can have settlement in the region of 20%. This will mean that the site will achieve the final restoration contours after the settlement phase. This is a principle accepted by NIEA.
- Fill all Cells, 4, 5 and 6 to the restoration contours.
- Fill all Cells 4, 5 and 6 to the restoration contours plus the allowance for 20% settlement as detailed above.

It is considered that the above modelling options will provide the Council a view on the remaining void capacity and therefore the tonnage of material that can be infilled in the years to come. To complete this assessment, we have used a conservative density factor that the waste is being compacted to of 0.8 tonnes/m³.

Based on final contour levels and cell formation levels submitted within the Closure Plan for the site, void capacity for the options detailed above are presented in the table below.

Cells	Void (m ³)	Void (m ³) (+20% Levels)*
4 and 5	19,000	120,000
6	70,000	90,000

*An additional 20% (1-4m depending on location) has been added to final restoration levels based on cell formation and final contours, to account for settlement of the waste mass over time.

The annual waste input during 2022 was 39,748.07m³. Using this infill rate as a predictor of future was inputs, we have predicted the remaining number of years capacity each void model will provide the Council.

Model Scenario	Predicted Lifespan (Years)
Cells 4 and 5 only to restoration contours	0.48
Cells 4 and 5 only to restoration contours plus 20%	3.02
Cells 4, 5 and 6 to restoration contours	2.24
Cells 4, 5 and 6 to restoration contours plus 20%	5.28

From a review of the above development options the infilling of Cells 4 and 5 with an additional 20% allowance for settlement would provide the Council with approximately 3 years capacity at current infill rates. Drawings depicting the restoration contours, pre-settlement restoration contours and void analysis are presented in Appendix A to this report.

3. Potential Options

In considering the future development of the site there are a number of considerations the Council should take into account. These include:

- The development costs associated with construction Cell 6. This will need to include full Landfill Directive lining system including artificial clay liner and a 2mm HDPE liner. A leachate extraction system including 500mm deep stone drainage layer and associated pipework and extraction pumps. Gas well and gas extraction infrastructure and a Landfill Directive Capping system upon completion of infilling. Compliance with the waste hierarchy which places landfill disposal as the least preferred option.
- Ongoing operational costs versus the cost of sending waste to a materials recovery facility for fuel production.
- An alternative option to consider would be mothballing the site after the completion of infilling in Cells 4 and 5. This is a successful approach that Taggarts delivered for Mid Ulster District Council in relation to Tullyvar Landfill site. The mothballing approach included seeking agreement from NIEA

23 Bedford Street +44 (0) 28 9066 2121
 BELFAST info@taggarts.uk
 BT2 7EJ taggarts.uk

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to close Tullyvar Landfill Site, leaving Phase 4 undeveloped. The permit for the site was modified to a closure permit with written agreement from NIEA that the permit could be varied again to develop Phase 4 if landfill costs or lack of capacity presented a need to re-open. Taggarts believe that this option could be delivered for Causeway Coast and Glens Borough Council in relation to Cell 6 of Craigahulliar. This option could be explored with NIEA to assist in the Council's future strategic planning for the site.

23 Bedford Street +44 (0) 28 9066 2121
BELFAST info@taggarts.uk
BT2 7EJ taggarts.uk



Appendix A

Void Capacity Drawings

23 Bedford Street +44 (0) 28 9066 2121
BELFAST info@taggarts.uk
BT2 7EJ taggarts.uk