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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/m^3.

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.

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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 39,748.07m^3. 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

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.

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Appendix A

Void Capacity Drawings

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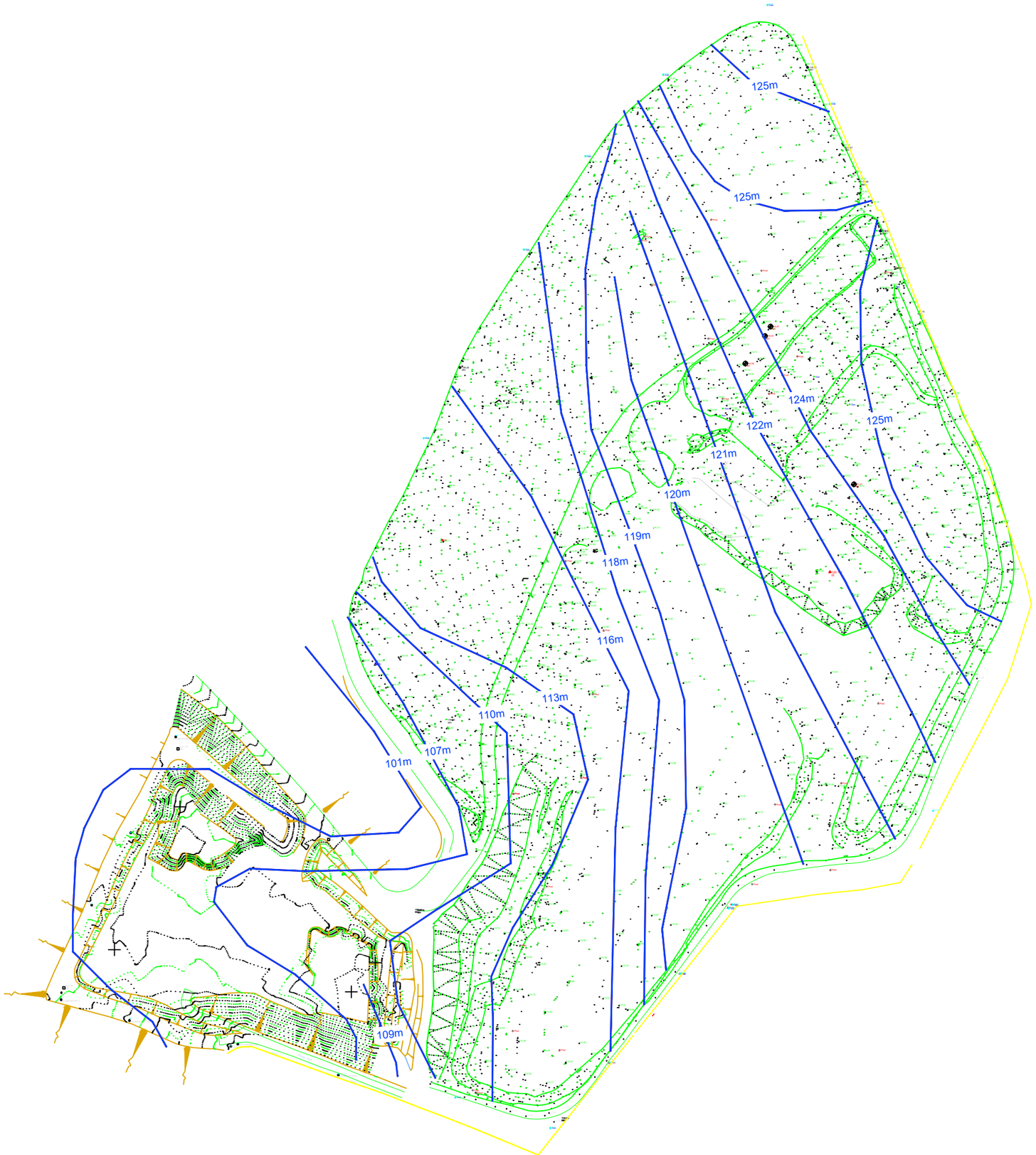

100m Pre-Settlement Contours

REV	DATE	DESCRIPTION	DRN	CKD

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CAUSEWAYCOAST AND GLENS BOROUGH COUNCIL

CONTRACT
CRAIGAHULLIAR LANDFILL

DRAWING
PRE-SETTLEMENT CONTOURS

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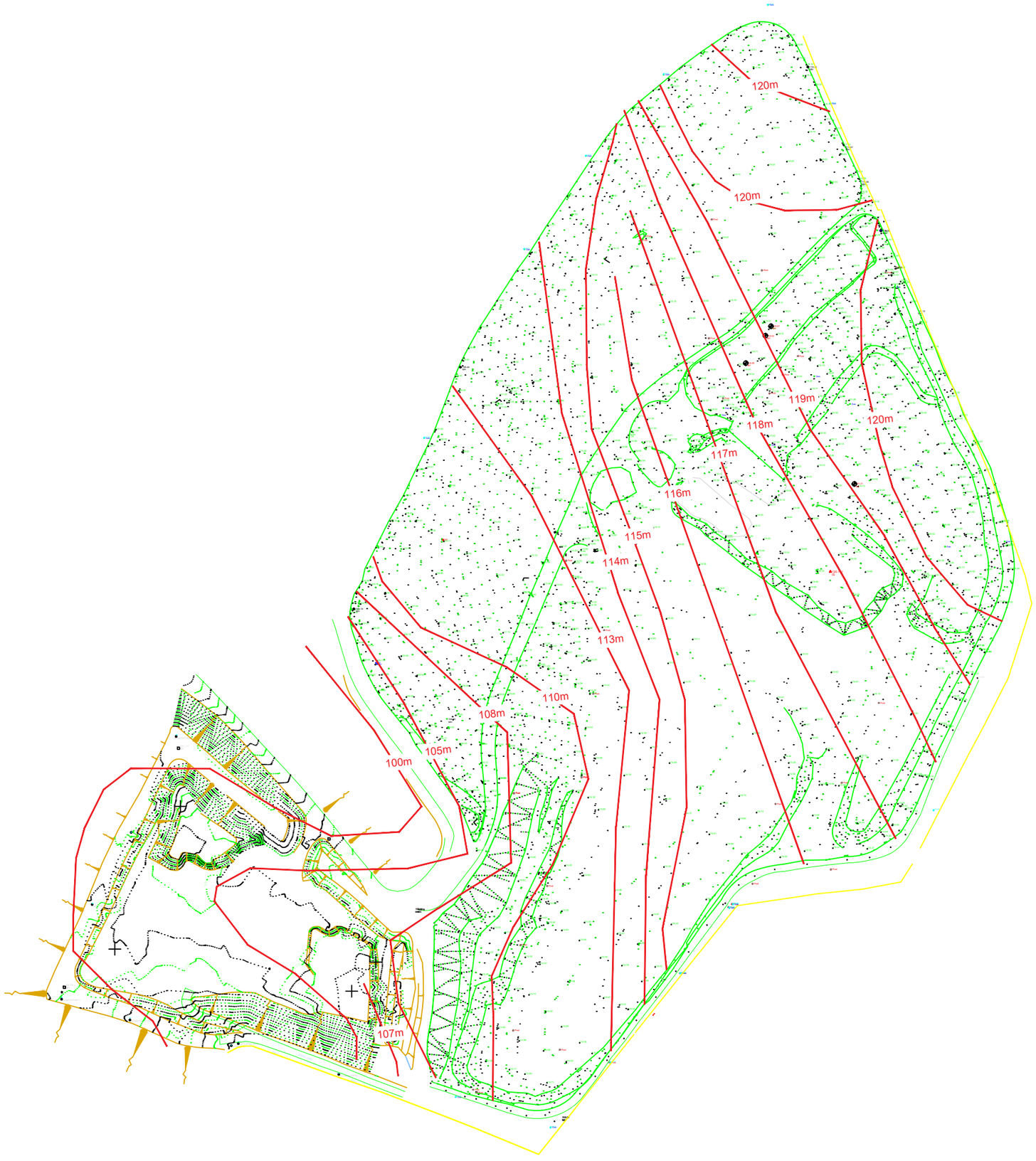

100m Post-Settlement Contours

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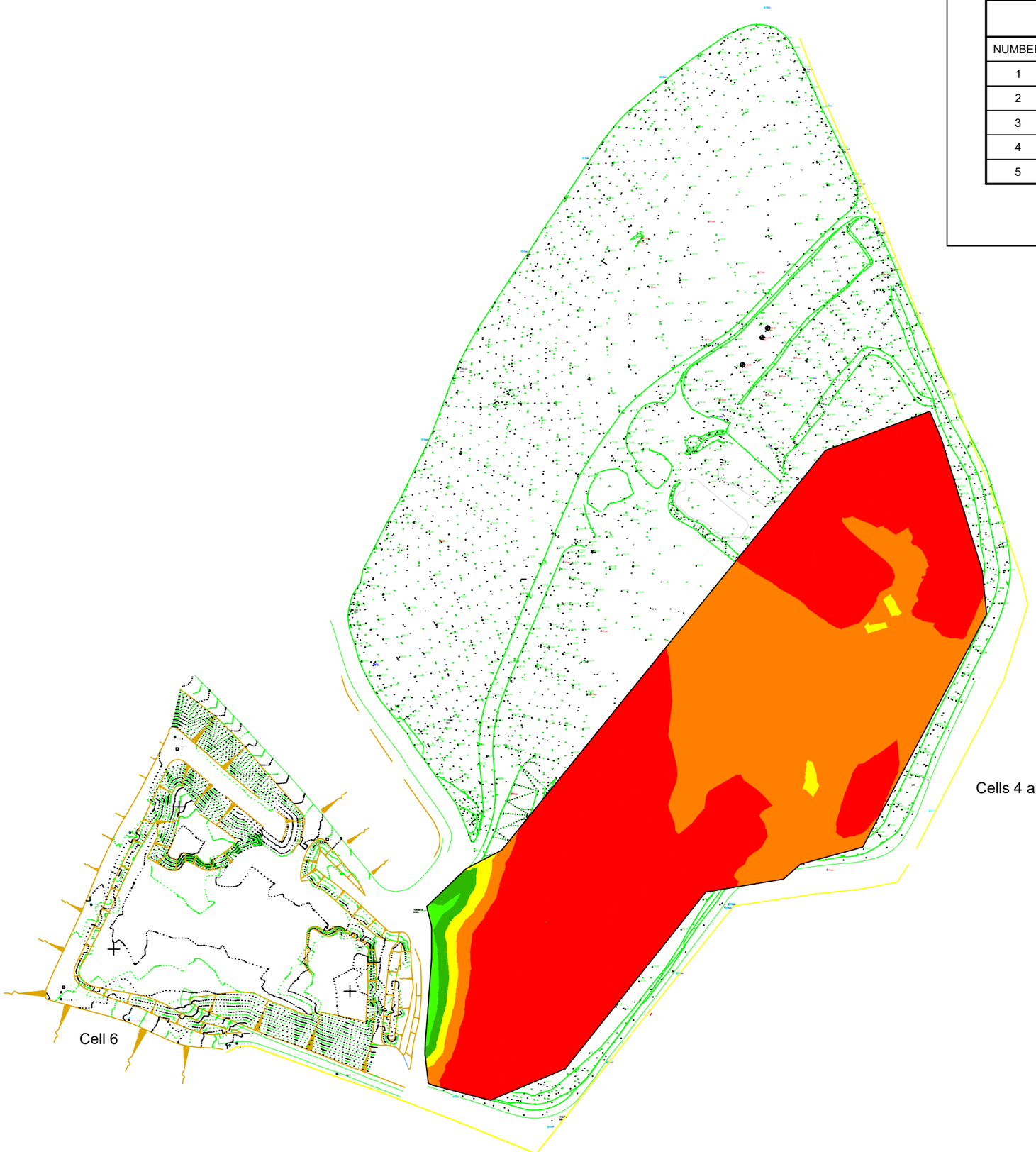

Cell 4 and 5

SURFACE LEVEL DATA

NUMBER	MINIMUM LEVEL	MAXIMUM LEVEL	COLOUR	AREA	VOLUME
1	-4.50	0.00		20893.479m2	36046.550m3
2	0.00	2.00		12936.080m2	13764.431m3
3	2.00	4.00		614.652m2	1951.716m3
4	4.00	6.00		493.119m2	973.594m3
5	6.00	8.00		239.462m2	136.267m3

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Cell 4 and 5 (+20%)

SURFACE LEVEL DATA					
NUMBER	MINIMUM LEVEL	MAXIMUM LEVEL	COLOUR	AREA	VOLUME
1	-1.50	0.00		4365.831m2	2423.307m3
2	0.00	3.00		8067.969m2	82313.434m3
3	3.00	6.00		20762.941m2	36420.707m3
4	6.00	9.00		1417.094m2	2930.670m3
5	9.00	11.50		562.957m2	741.887m3

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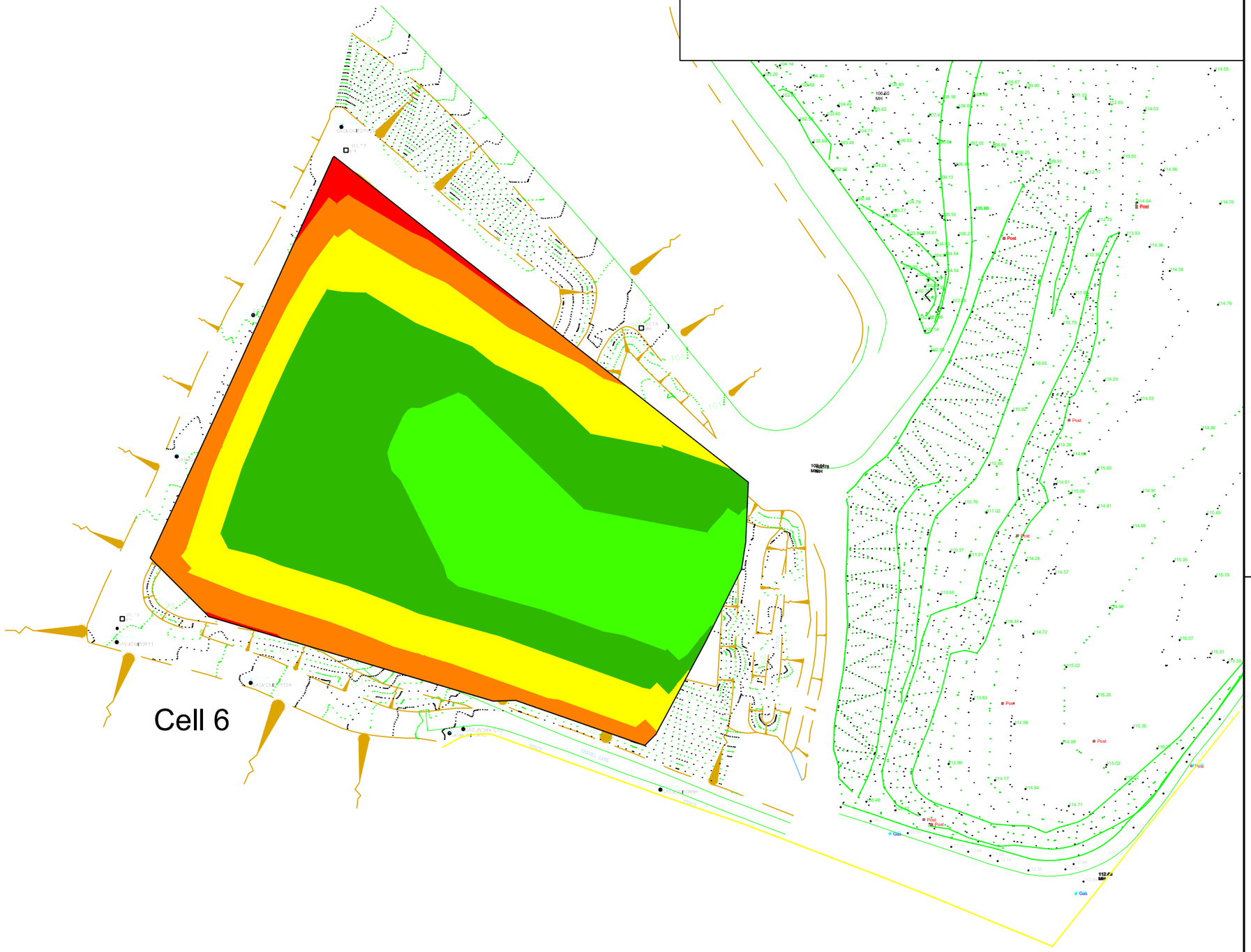
Cell 6

SURFACE LEVEL DATA					
NUMBER	MINIMUM LEVEL	MAXIMUM LEVEL	COLOUR	AREA	VOLUME
1	-2.00	0.00		203.638m2	163.813m3
2	0.00	3.00		1535.270m2	30320.270m3
3	3.00	6.00		2534.194m2	24401.347m3
4	6.00	9.00		4211.749m2	13888.494m3
5	9.00	12.50		2484.555m2	2203.316m3



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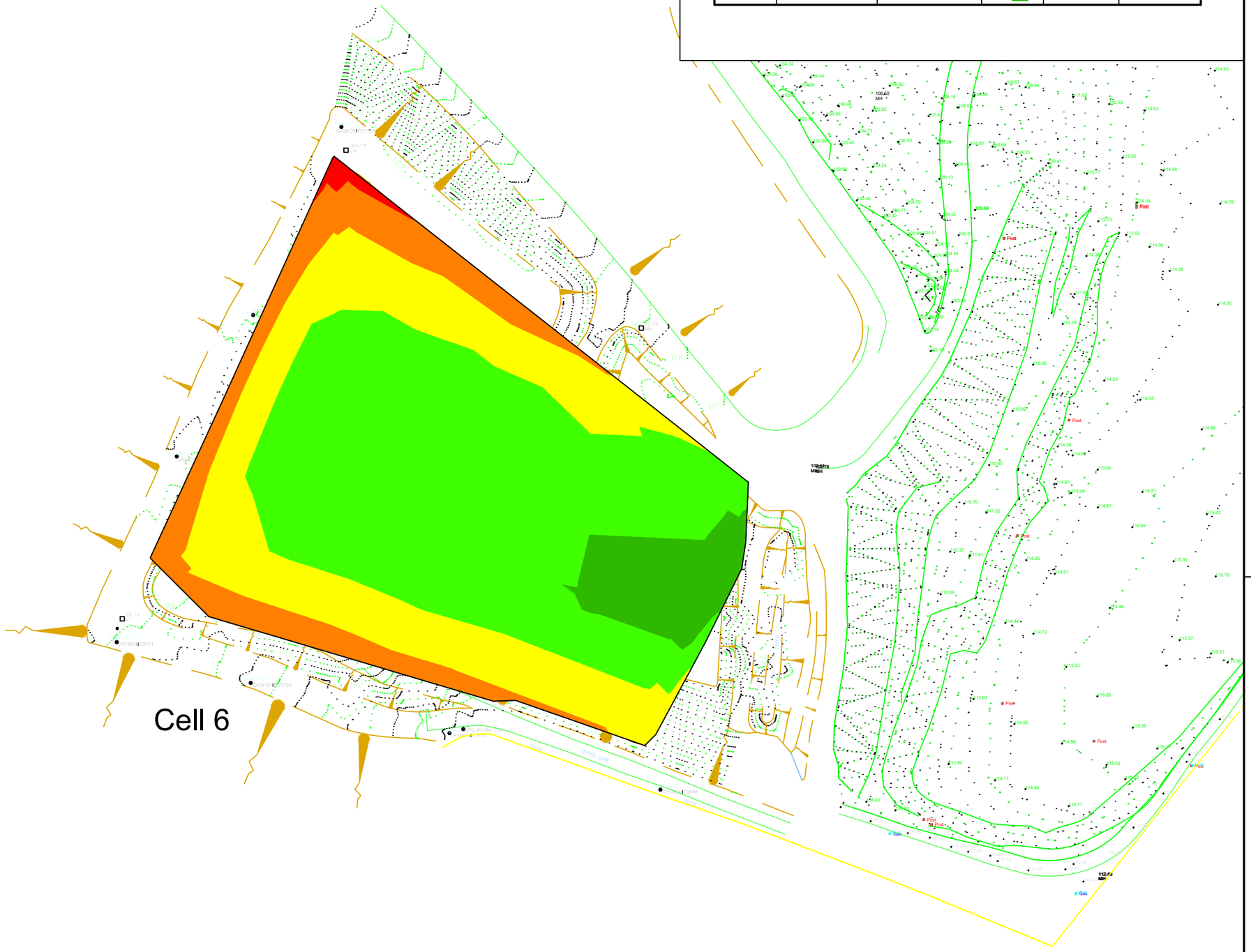
Cell 6 (+20%)

SURFACE LEVEL DATA					
NUMBER	MINIMUM LEVEL	MAXIMUM LEVEL	COLOUR	AREA	VOLUME
1	-1.00	0.00		68.165m2	36.079m3
2	0.00	4.00		1403.191m2	41592.197m3
3	4.00	8.00		3105.903m2	32549.755m3
4	8.00	12.00		5603.415m2	14799.346m3
5	12.00	15.50		788.749m2	740.787m3



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