TOLVIK CONSULTING

The Waste and Bioenergy Experts

Client: **Indaver (NI) Ltd**

Northern Ireland Waste Market Review Update

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FINAL

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1. BACKGROUND

1. Tolvik Consulting Ltd. ("Tolvik") is a specialist provider of independent market analysis and commercial advisory services to the waste and bioenergy sectors. Further details of its work can be found at www.tolvik.com.
2. In 2020 Tolvik was engaged by Indaver (NI) Ltd, the lead party in the Becon Consortium, to prepare an independent assessment of the current and projected tonnages of Residual Waste in Northern Ireland. The analysis in the report dated 29 September 2020 ("Tolvik September 2020 report") was based on the latest available complete data which related to 2018.
3. Further data, including information released by DAERA, relating to 2019 and 2020 is now available and Tolvik has been requested to prepare an update to its report.
4. The definitions, terms and methodology used in this update are identical to those used in the original report. Note that figures in tables may not add up due to rounding.

2. RESIDUAL WASTE ASSESSMENT - 2019 AND 2020

LACMW Tonnages

5. The most recent validated annual DAERA data relates to 2019/20. DAERA has recently released quarterly data for the period October 2020 – December 2020, so providing provisional data for LACMW for calendar year 2020.
6. Using published data, the Tolvik September 2020 report estimated that 500kt of Residual LACMW was generated in 2018. Figure 1 shows the updated estimates for 2019 and 2020. As can be seen Residual LACMW tonnages fell in 2019 and then rose in 2020.

kt, Calendar Years	2018	2019	2020
Arisings	985.1	1,001.6	1,006.5
Recycled	485.1	513.9	501.4
Residual	**500.0**	**487.8**	**505.1**
Recycling Rate	49.2%	51.3%	49.8%

Figure 1: Residual LACMW in 2018-20 Source: DAERA, Tolvik analysis

The data also provides the destinations of this Residual LACMW as shown in Figure 2.

kt, Destination	2018	2019	2020
Residual to EfW	146.6	165.6	209.0
Specialist to EfW (primarily wood)	42.7	43.2	40.5
Landfill	294.2	251.8	228.2
Unclassified	16.4	27.1	27.4
Total Residual	**500.0**	**487.8**	**505.1**

Figure 2: Destinations of Residual LACMW in 2018-20 Source: DAERA, Tolvik analysis

7. The calculated Residual Waste figures includes 40-43kt of specialist wastes, mainly wood, sent to biomass and other incineration facilities. As in the September 2020 report this is not suitable for treatment in a facility designed for the treatment of Residual Waste and so the tonnage has been excluded from the tonnage of "Residual Waste for Treatment".

8. An analysis of Wastedataflow which underlies the LACMW data, continues to suggest that less than 500 tonnes of Residual LACMW landfilled was sent to either hazardous or inert waste landfills. As in the Tolvik September 2020 report, this tonnage has been excluded from this assessment and it has been assumed that all other LACMW sent to landfill was Residual Waste.

9. Figure 3 shows the updated adjusted Residual LACMW figures for Northern Ireland.

kt, Destination	2018	2019	2020
Total *(from Figure 2)*	500.0	487.8	505.1
Less Specialist to EfW (primarily wood)	42.7	43.2	40.5
Less tonnage to hazardous/inert landfills	0.5	0.5	0.5
Total Residual LACMW	**456.8**	**444.0**	**464.1**

Figure 3: Residual LACMW in 2018-20 Source: DAERA, Tolvik analysis

Total Residual Waste Generated in Northern Ireland

10. As set out in the Tolvik September 2020 report, the only way in which Residual C&I Waste tonnages can be estimated is through an assessment of the total tonnage of Residual Waste generated in Northern Ireland, less the tonnage of Residual LACMW.

11. Figure 4 details the estimated tonnage of Residual Waste generated in Northern Ireland in 2018-19 together with details as to the basis for the estimate and/or source of data. Complete data for non LACMW in 2020 is not yet available.

Destination	2018	2019	2020	*Source/Comment*
Municipal Waste to Landfill	545.5	529.9	Not yet available	*UK Statistics on Waste (4)*
Less 19 12 12 which is not Residual	(66.0)	(68.7)		*30% x 220kt as per comment above*
Residual Waste to Landfill	479.5	461.2		
Residual Waste sent to mainland UK	14.8	1.5		*EA Waste Data Interrogator*
Thermally Treated in Northern Ireland	13.9	43.5	85.4	*NIEA FoI Request for Cookstown cement kiln and Full Circle Generation facility*
Exports from Northern Ireland to EfWs in Europe including RoI	129.5	129.4	125.8	*NIEA Export Data (5)*

Mass Loss in processing	4.3	-	-	*Conservative estimate based on analysis of LACMW data*
Total Residual Waste	**642.0**	**635.6**	***N/A***	

Figure 4: Estimated Residual Waste in Northern Ireland in 2018 - 2020 Source: Tolvik analysis

12. As per Figure 4 it is estimated that there was **642kt** of Residual Waste generated in Northern Ireland in 2018 and **636kt** in 2019.

C&I Waste Generated in Northern Ireland

13. The tonnage of Residual C&I Waste generated in Northern Ireland and collected by private companies was previously estimated to be around 185kt in 2018.

14. For 2019 it is estimated to have been 636kt (from Figure 4) less 444ktpa (from Figure 3). i.e. 192kt. Given the level of data accuracy this would suggest that the tonnage was largely unchanged – a trend consistent across the UK as a whole.

COVID-19 and 2020 Impact

15. Self evidently COVID-19 had an impact on Residual Waste tonnages generated in Northern Ireland. Without a full data set it is not possible to definitively assess the impact but with complete 2020 data for LACMW (which represents more than two thirds the total Residual Waste) and trends from elsewhere in the UK, reasonable estimates can be made.

16. Total Residual LACMW in 2020 was 4.5% higher than in 2019 and total Residual Household Waste (which excludes the impact of reduced C&I Waste tonnages) was 6.2% higher. These figures are consistent with limited data for local authorities across the UK as a whole which suggest that such tonnages were up between 4-6% in 2020 when compared with 2019. These increases reflect the impact of increased home working etc.

17. Given the broadly consistent trend for Residual LACMW it is reasonable to consider the impact of COVID-19 on Residual C&I Waste in Northern Ireland through consideration of its impact elsewhere in the UK. Here, using a range of confidential and publicly available data points and its own ongoing published analysis, Tolvik's latest estimate is that on average Residual C&I Waste tonnages were around 14.7% lower in 2020 than 2019 – suggesting a total of 163kt of C&I Waste collected by private sector companies in Northern Ireland.

kt, Destination	2018	2019	2020
Total Residual LACMW	457	444	464
Private Collected C&I Waste	185	192	163*
Total Residual Waste for Treatment	**642**	**636**	**627**
September 2020 Report	*642*	*626*	*567*
Difference	**-**	**10**	**60**

Figure 5: Residual Waste in Northern Ireland in 2018 - 2020 * Estimated
Source: Tolvik analysis

18. Notwithstanding the uncertainties with respect to 2020 data, **it seems reasonable from Figure 5 to infer that the estimated total tonnages of Residual Waste for treatment in Northern Ireland for 2019 and 2020 in Tolvik's September 2020 report were conservative**.

3. PROJECTING TONNAGES - ASSUMPTIONS

Household Waste

19. **Arisings**. The modelling in the September report assumed that COVID-19 does not have a long term impact on the tonnages of Residual Household Waste in Northern Ireland. It is

reasonable to assume that moving forward there will be a sustained increase in the number of people working (at least) a few days a week from home and that this will increase Household Waste arisings in the long term. However for the purposes of this assessment it is prudent to continue to assume, as in the Tolvik September 2020 report, that any such increase may be offset by a corresponding downward adjustment in the long term tonnages of Residual C&I Waste with no net impact on projected tonnages of Residual Waste.

20. **Recycling**. Figure 6 shows the projected development of Household Waste recycling in Northern Ireland assumed in the September 2020 report (blue dotted line) and the actual reported recycling rates (black solid line). As Figure 6 shows, there was a significant increase in Household Waste recycling pre-COVID-19 in 2019/20 when the rate increased to 52.3% but during 2020 it fell back to 50.7%.

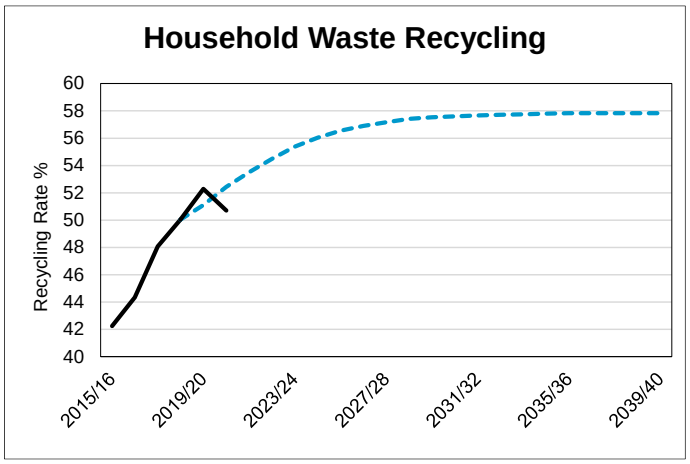


Figure 6: Household Waste Recycling in Northern Ireland Source: NIEA

21. As noted in the Tolvik September 2020 report it is noted that the full arc21 facility will have the ability to make a contribution to recycling targets through extraction of recyclables from Residual Waste in the Mechanical and Biological Treatment plant and through processing the residues from the EfW facility

22. Given this there is insufficient evidence to support any change the long term assumptions used in projecting Residual Household Waste tonnages in the Tolvik September 2020 report.

Residual LACMW for Treatment

23. There is no material basis for changing the projections with respect to Other LACMW.

24. As a result it is recommended that **the projections for the tonnages of Residual LACMW for Treatment remain unchanged from those in the September 2020 report.**

(Private Collected) C&I Waste

25. The September 2020 report suggested that in 2020 Residual C&I Waste tonnages would be around 22% lower than in 2019. As highlighted in Paragraph 17, Tolvik's revised estimate for 2020 is that they were 14.7% lower. The lower impact of COVID-19 reflects that businesses have adapted better than expected to the changed market circumstances (e.g. home deliveries, "click and collect" etc) than previously expected.

26. With the ongoing rollout of vaccines, from a solely COVID-19 perspective, the projections for Residual C&I Waste in the Tolvik September 2020 report are therefore conservative when compared to the recent data.

27. Brexit is also another potential factor with the potential to impact on the economy of Northern Ireland and hence the generation of C&I Waste. Four months in, and uncertainty with respect to the long term impact of Brexit on the Northern Ireland economy remains high.

28. However, it is noted that a recently produced Spring 2021 report by E&Y *("Recovery but at what price")* considers the impact of Brexit and COVID-19 on the economy of Northern Ireland, recognising that the two factors cannot be readily separated.

29. Figure 7 points to a recovery in the Northern Ireland economy which is somewhat slower than for the UK as a whole. However, applying the annual GDP changes in compound, the EY projections suggest that the Northern Ireland economy will be 1% larger by the end of 2023 than it was in 2020. By way of contrast, the assumptions in the September 2020 report assumed C&I Waste tonnages 6.3% lower than in 2019. Even after allowing for any Brexit effects, **it seems reasonable to assume that the September 2020 projections with respect to C&I Waste arisings were sufficiently prudent for there to be no need for a change in modelling assumptions.**

Kt	2020	2021	2022	2023
Northern Ireland	(10.1)%	5.9%	4.1%	2.0%
UK	(9.8)%	6.8%	5.0%	2.1%
Republic of Ireland	3.4%	5.0%	4.6%	3.1%

Figure 7: Projected GDP Source: EY

30. Tolvik is not aware of any new information which would change the assumptions in the September 2020 report with respect to future C&I Waste recycling rates.

4. CONCLUSIONS

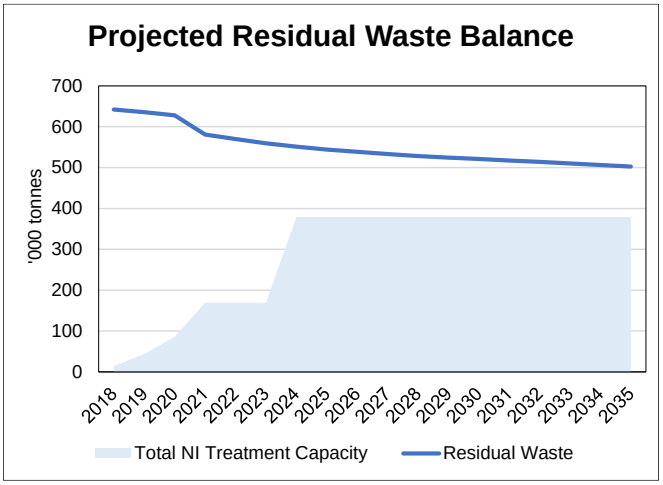
31. The Tolvik September 2020 report contained a number of long term projections. With the passage of time there will inevitably be differences between projections and actual outcomes. It is appropriate to undertake regular reviews of the available data to assess whether or not these differences are just par of the inevitable year-on-year variations are a systemic change in factors which require a comprehensive refresh of the projections.

32. The analysis in the previous paragraphs with respect to the future supply of Residual Waste for treatment in Northern Ireland demonstrates that, even in light of the uncertainties arising as a result of the Covid-19 pandemic and Brexit, the short term projections in the September 2020 report were conservative and the long term projections continue to remain valid.

33. There have been no material reported changes in the available capacity in Northern Ireland for the treatment of Residual Waste since the September 2020 report was prepared. It remains as:

a. Full Circle Generation Limited, Belfast, BT3 9ED. This has a permitted capacity of 180ktpa. In 2019 it processed 34kt and in 2020 76kt.

b. Lafarge Cement UK Limited, Cookstown, BT80 9AR. Over the last four years it has accepted around 30-35,000MWh of SRF each year – which is conservatively estimated to be no more than 9-10ktpa.



kt	2025	2030	2035
Residual Waste for Treatment	543.9	521.0	502.6
Treatment Capacity	379.0	379.0	379.0
Residual Waste “Capacity Gap”	164.9	142.0	123.6

Figure 8: Residual Waste Capacity Gap in Northern Ireland, Updated with 2019/20 data

34. **The updated analysis therefore continues to suggest that, together with existing thermal treatment facilities, the arc21 EfW facility will be required if Residual Waste generated in Northern Ireland is to be recovered in Northern Ireland.**