New Zealand Waste Data Framework

Implementation Report

Prepared for
Waste Management Institute New Zealand
By Eunomia Research & Consulting Ltd and
Waste Not Consulting Ltd

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Contents

1 Introduction

This document presents a plan for implementation of Stage 1 of the National Waste Data Framework (the Framework).

1.1 Background

The development of the Framework has taken a staged approach. The structure starts with the simplest and most essential data and aims to progressively develop protocols for the more complex and less important data. Keeping it simple to start with, and creating a structure that can be developed further at a later date, has enabled a framework to be created relatively quickly and cost-effectively..

The key stages in the development of the Framework are to introduce standards for:

1. Data on waste to levied disposal sites (disposal facilities, as defined by the Waste Minimisation Act 2008) and information on waste and diverted material services and facilities
    a. Development of definitions, protocols, and roles
    b. Implementation
2. Data on material to non-levied disposal sites
    a. Development of definitions, protocols, and roles
    b. Implementation
3. Data on diverted materials
    a. Development of definitions, protocols, and roles
    b. Implementation

An explanation of the division into these basic stages is provided in Appendix 1.

This report is part of the delivery of Stage 1(a) of the Framework, which has encompassed its development and engagement with key stakeholders. Once developed, the Framework needs to be implemented by key stakeholders, in particular local government, for it to become active. This involves establishing administrative structures, securing funding, developing information systems, and the launching and promotion of the Stage 1 Framework. This report sets out a plan for achieving this.

Work on Stages 2 and 3 of the Framework will depend on what structures are established to take the Framework forward. It is expected that no decisions on Stages 2 or 3, or the timing of those stages, will be taken until Stage 1 is established and there is a clear foundation for expanding the Framework.

1.2 Implementation Pathways

At the outset of the development of the Framework there were a number of possible pathways by which the Framework could be implemented. These included:

- Central government owning the Framework and having full responsibility for its implementation, funding and maintenance

- Central government taking partial responsibility for the implementation, funding or maintenance – for example through contracting a third party organisation to administer the Framework on its behalf, or through providing ongoing funding.

At the time of writing of this Implementation Plan, neither of these pathways is under active consideration. It was determined during the development of the Framework that if central government is not to play a pivotal role in its implementation, territorial authorities (TAs) are the most logical entity to assume responsibility. TAs already gather and use many of the types of data covered by the Framework, they have a statutory responsibility for waste management and minimisation including planning, reporting and forecasting, and they have the ability to require the provision of information through bylaw licensing of waste operators.

The possible pathways which have been taken into account in the development of this implementation plan are, therefore, as follows:

- TAs are primarily responsible for implementing the Framework
- A 'Waste Data Working Group' or similar is established to oversee Framework implementation and data issues on an ongoing basis
- TAs may use solid waste bylaws to introduce waste operator licensing that requires the provision of waste data as part of the license conditions
- TAs may mandate regional councils to establish regionally-consistent solid waste bylaws that introduce waste operator licensing that requires the provision of waste data as part of the license conditions
- TAs may use solid waste bylaws to introduce waste operator licensing that requires the provision of waste data as part of the license conditions, and delegate the licensing and data gathering function to an independent 'Data Collection Agent'

It should be noted that the pathways are not mutually exclusive and may each be implemented in different locations without seriously impacting the nation-wide compatibility of the Framework.

These pathways were consulted on as part of the development of the Framework and are set out in more detail in Appendix 2.

2 Implementation Plan

Action	Action Detail	Resource Implications	Timeframe	Responsibility for Action	Key Stakeholders & Roles
Publish and disseminate protocols	Final formatting and design Post electronic versions on WasteMINZ and, potentially, MfE websites Links on stakeholder websites (consultants, councils etc) E-mail to membership stakeholders Articles through selected media channels (Facebook, Revolve etc) Official launch/presentation at WasteMINZ conference	Budget required for design input WasteMINZ staff time	1 month following acceptance of Milestone 4 deliverables by Ministry for the Environment	WasteMINZ	Project Consultants to provide technical advice Steering Group and Governance Board member organisations to provide advice and participate in dissemination activities
Form Waste Data Working Group (WDWG)	**Establish scope and mandate**. It is proposed the working group have a governance-type role concerned with ensuring processes and procedures are in place and the Framework evolves to meet needs. The WDWG could	Members of the WDWG would be expected to offer their time voluntarily. WasteMINZ would allocate staff time for	Begin the process immediately	WasteMINZ	TA, regional and central govt, operators, and technical experts to form group

Action	Action Detail	Resource Implications	Timeframe	Responsibility for Action	Key Stakeholders & Roles
	also be responsible for issuing updates and addendums to the Framework and arbitrating on technical issues. **Identify key roles.** These are likely to include representation from key stakeholder groups (e.g. TA, regional and central govt, operators, and technical experts)	secretariat support.			
The following actions are potential work elements that could be undertaken by the Waste Data Working Group. This is intended as a starting point for the development of an Action Plan. The actions and their priorities, form, and timeframes may differ following adoption of an Action Plan by the WDWG.					
Support implementation	Implementation support could take a number of forms including: • Technical workshops/webinars to train, answer questions and assist in implementation • Establishing an online forum and/ or helpdesk • Telephone help • Bespoke consultancy • Sharing case studies and examples	Helpline and consultancy support would have resource implications. Consultancy could be on a user pays basis.	Online forum could be established as soon as protocols are accepted	WDWG	WasteMINZ – hosting Consultants – technical support

Action	Action Detail	Resource Implications	Timeframe	Responsibility for Action	Key Stakeholders & Roles
Standard Solid Waste Licensing Bylaw	Less than one third of TAs have provision for operator licensing. Licensing is a key tool for TAs to ensure consistent, comprehensive data provision. The opportunity exists to develop a standard model bylaw module explicitly dealing with operator licensing that could be readily adopted by TAs without need to revisit other elements of the Solid Waste Bylaw or having to adopt a full bylaw. There has been support for this idea among a number of TAs informally canvassed.	While the bylaw could be built on existing bylaws, it would still require substantial work to produce a final product. There would need to be expert consultancy and legal input, as well as stakeholder consultation. One RC has indicated they may be willing to contribute funding for such as project	Completed end 2016	WDWG	Regional councils and TAs – Funding and input Technical experts – undertaking the work and advice
Draft content and process for standard non disclosure/data sharing agreement	The Framework signposts the desirability for TAs to properly manage data including commercially-sensitive information. To facilitate this, suggested content could be developed for data provision arrangements between private operators and TAs that set out the processes that will be adhered to	Project funding would need to be secured for this. Work would be required to produce a final product. There would need to be expert consultancy and legal input, as	Completed mid 2016	WDWG	Private sector operators to provide feedback on content and confirm the draft agreements provide sufficient comfort to participate WasteMINZ, regional councils and TAs –

Action	Action Detail	Resource Implications	Timeframe	Responsibility for Action	Key Stakeholders & Roles
	and that commit to non-disclosure of sensitive information.	well as stakeholder consultation.			Funding and input Technical experts – undertaking the work and advice
Investigate and develop standard reporting indicators (e.g. kg per capita recycling)	The Framework establishes how to gather consistent data, but it does not provide any direction for its use. Consistent data will enable benchmarking and data sharing. This action would seek to establish initial measures that TAs could seek to use for benchmarking such as kg/pp/pa kerbside recycling or kg/pp/pa waste to landfill etc. Key to the work would be ensuring that the measures are clear and can be calculated in a consistent fashion	It is proposed that this work could be undertaken directly by the WDWG on a voluntary basis	Completed mid 2016	WDWG	TAs, regional councils, and central government to provide feedback and input in to standard measures
League Tables	If standard measures are developed, league tables could be established for TAs to compare their performance.	It is proposed that benchmarked data could be directly entered by TAs to a web form and	End 2016	WDWG	WasteMINZ to host and administer TAs to provide data and participate

Action	Action Detail	Resource Implications	Timeframe	Responsibility for Action	Key Stakeholders & Roles
	This would generate interest in the consistent use of data and would help promote the Framework, as well as raising the profile of recycling and waste minimisation	published by WasteMINZ on an annual basis. There may be some WasteMINZ staff time required to administer the league tables			
Work with regional groupings to put in place standard procedures	Several regional groups are already considering joint implementation of the National Waste Data Framework. There needs to be liaison and information sharing between these groups to not only help consistency of outcomes but to share lessons and ideas	The WDWG could facilitate communication between key parties to ensure cross-fertilisation of ideas. It is expected this would be on a voluntary basis, unless expert assistance is required	Ongoing as required	WDWG	Regional councils & TAs who are party to a regional approach
Work with software providers to develop appropriate service packages	There are a number of existing software solutions that could be utilised to implement the Framework. At this stage a central solution is not anticipated, but there may be potential for	Time for WDWG members to engage with service providers. If this is not overly complex it could be done on a	Negotiations could start as soon as the WDWG is convened	WDWG	Solution providers TAs and regional councils that are looking for a software solution

Action	Action Detail	Resource Implications	Timeframe	Responsibility for Action	Key Stakeholders & Roles
	TAs to group together and work on a common platform. It may be advantageous, therefore, for the WDWG to negotiate with service providers to set up terms and conditions that will facilitate wider adoption of functional common data platforms.	voluntary basis. It is not proposed at this stage that WasteMINZ or any other group takes on any risk.			
Monitoring and reporting on progress in adopting Framework	Updates and news releases could be provided on the number of TAs utilising the protocols, the number of licensing schemes in place etc. This would help generate awareness and encourage those who have not yet adopted the Framework	Staff time for WasteMINZ to collate and publish information	Ongoing periodically	WasteMINZ	TAs
Verification and audit	There is a potential need to verify and audit waste data processes that have been implemented to ensure that the correct practices are being followed and the integrity of the Framework is preserved	Potentially significant. It is not clear who should have this role. Ideally the WDWG would appoint an independent entity to undertake the work, but this would be costly (unless central government took on	To be determined	WDWG	TAs and waste operators, who provide and manage data. Potentially central govt or private sector to undertake audit functions

Action	Action Detail	Resource Implications	Timeframe	Responsibility for Action	Key Stakeholders & Roles
		this role).			
Seek and secure funding for further development	A number of actions outlined here will require funding support to enable their implementation. A key role of the WDWG will be to work to secure this support from a range of sources	Voluntary time required from WDWG members	Ongoing	WDWG	Potential funding agencies (MfE, TAs, regional councils, WasteMINZ etc)
Plan and oversee development of future stages of the Framework	Future stages are anticipated to include: • Waste to non-levied sites • Diverted materials • Liquid and hazardous wastes To ensure the Framework continues to develop and provides utility to all potential users it will be necessary to advance the future stages of the project.	While the basis of the Framework has been developed and can be built on in stages, it is expected that the resources required for development of these future stages will be of a similar order of magnitude to Stage 1, due to their greater complexity .	It is proposed that Stage 1 of the Framework be allowed to bed in before development begins of subsequent stages. Proposed further stages are targeted for 2017 or later	WDWG	Stats NZ, MfE, TAs, regional councils, WasteMINZ, consultants etc.

3 Existing Data and Reporting Systems

There are a range of systems currently in use for gathering and managing waste data in use in New Zealand. These include:

- **Online Waste Levy System (OWLS)** which records tonnages sent to landfill that are subject to the Waste Levy. OWLS is operated by FINNZ on behalf of MfE.
- **WaterOutlook.** Data management system built around managing water and waste water information, but very flexible and could be easily adapted for solid waste. WaterOutlook is a tool for TAs to pull together and manage information from operators and their own operations
- **Auckland Council, Licensed Operator Database**. Still in development, a SAP-based, in-house system developed by Auckland Council for licensed operators to input data.
- **naus**. Proprietary waste planning software still in development. Although not strictly a data management tool, a compatible data management module is reportedly in development.
- **Waste Track.** Tracking system for hazardous and liquid wastes. It was adopted on a voluntary basis by councils, but has recently lost funding support from central government. It is reportedly now being administered by New Zealand Trade and Industrial Waste Forum
- **Various** semi-formal reporting systems maintained by the Ministry for the Environment including: Waste Levy Spend Reporting, information provided by product stewardship schemes, and information from Waste Minimisation Fund projects
- **Weighbridge Software.** Both proprietary software and bespoke systems are used by landfill and transfer station weighbridge operators. Way Forward Technologies offers Landfill 3000 and Atrax Group markets its Weightrax proprietary products.
- **Fleet Management Software**. Both proprietary and bespoke systems are used by waste collectors for fleet management. Proprietary systems include Refuse Management System by TMS Solutions and WasteEdge
- **Internal systems.** Waste data is internally managed by TAs and private operators through a variety of systems, including bespoke databases and customised spreadsheets.

A summary of an evaluation of key systems that could meet the needs of the National Waste Data Framework is provided in section 4.2.

4 Information Management

An information management consultant was engaged by WasteMINZ to advise on information management system requirements and system hosting models. A full copy of the report is provided in Appendix 3. Key findings are summarised here:

4.1 Information Management System Requirements

Information management systems must be capable of maintaining data integrity, data security and confidentiality. Key controls for these could include the following:

4.1.1 Data Integrity

- Data that is entered is automatically validated by the system
- Validation checks are carried out by the Data Collector upon data loading
- Data audits and verifications are scheduled

4.1.2 Data Security

- Data is held in a secure data repository
- Access is granted only to individuals who are held responsible and accountable
- Data is backed up with an appropriate level of audit trail, and copies of the data are stored offsite

4.1.3 Data Confidentiality

- Data is contained in the system through unique user ID or identifier rather than referring to actual names (the code is only available to authorised individuals)
- Where there are potential conflicts of interest data may be managed by a 3rd party or by defined segregation of duties
- Different levels of access to data are provided
- Only aggregated data is made publically available
- An appropriate data sharing agreement is entered into between the parties

4.2 System Hosting Models

Key parameters that information management systems were evaluated against include:

- **Existing platform:** If the data solution can be provided on an existing platform this avoids development costs
- **Solution scalability**: The solution must be able to have sufficient flexibility to meet needs across user groups, and into the future
- **Data consolidation and reporting capability**: The solution must be able to consolidate information easily and accurately and enable data to be extracted in the required form
- **Ability to trigger data anomalies on load**: This is useful for data validation, and helps reduce the need for manual checking and validation
- **Value for money**. The solution must be affordable for users
- **Support model options**. This relates to how well supported the solution is
- **Data security**. Does the solution adhere to good practice principles
- **Data quality controls**. Does the solution adhere to good practice principles
- **Adherence to IM principles**. Does the solution adhere to good practice principles

- **Meet strategic objectives**. The solution should ideally facilitate the Framework being cost-effectively implemented across all TAs, and provide a pathway towards data sharing and benchmarking

The outcome of the evaluation of key technology options is shown in the matrix below:

Evaluation Results Summary (0 -10, where 10 is the highest)				
Category	Option 1 – FINNZ	Option 2- WaterOutlook	Option 3 – Auckland Council	Option 4 – NAUS
Existing platform	2	8	8	5
Solution scalability	10	10	10	8
Data consolidation and Reporting capability	5	10	7	7
Ability to trigger data anomalies on load	8	10	7	0
Value for money	4	8	9	0
Support model options	10	10	5	10
Data Security	10	10	5	8
Data Quality controls	10	10	5	8
Adherence to IM principles	10	10	5	8
Meet Strategic objectives	10	9	5	0
Overall Score	79	95	66	54

Based on the review results, the option that best fits the current requirements for the National Waste Data Framework is WaterOutlook. For the full detail of the evaluation refer to Appendix 3.

It should be noted that, as there is no entity or resource that has been identified at this stage to collate and manage information centrally, it is not expected that there will be a single IT solution for data management in implementation of the Framework.

Appendix 1: Waste Data Framework Stages

- **Stage 1**

Data on waste to levied disposal sites is generally well-recorded and readily-available but there is no standardisation in terms of how it is compiled, the availability of data on commercial flows, the activity source of the waste, and the tracking of cross-border movements of waste. Data on waste and diverted materials services and facilities is required for the purposes of territorial authority (TA) waste assessments and waste management and minimisation plans but, again, there is no standardisation of how this information is categorised or the detail that is gathered.

- **Stage 2**

Data on material to non-levied disposal sites is inherently difficult to obtain, or even to measure. There are a wide variety of different rules around which operations are permitted and which must be consented and a variety of practices in terms of what information is reported and compiled as a condition of resource consents. There are, therefore, a range of issues that need to be addressed before data-gathering protocols could be sensibly applied. As a result, this waste stream is not addressed in Stage 1.

- **Stage 3**

Good data is already generated on some diverted materials. Recycling operators need good quality information as materials are bought and sold based on material type, grade, and tonnage. However, there are significant difficulties in how this information may be tracked and recorded. These include:

- **Issues of definitions**. The point at which materials are considered to be diverted can be hard to define at the margins. Similarly, issues such as whether landfill cover or land-spreading of sludges count as recovery would need to be addressed

- **Commercial sensitivity.** Recoverable materials have value. Therefore, data about these materials would have to be handled appropriately to preserve commercial confidentiality

- **What streams to include and exclude.** Second hand goods, industrial by-products, and home composting are examples of types of recovery that can be difficult to identify and record. If diverted materials are to be reported, it needs to be clear what is included and what is not.

- **Issues of sorting and bulking.** Materials can be separated, mixed, and bulked at various stages, and by different parties. Establishing accurate material balances could be problematic when aggregating information.

The complexity of adequately addressing these issues should not be underestimated. It is worth noting that, internationally, waste data systems tend to not gather information on diverted materials, largely because of the above issues. For these reasons diverted materials have been assigned to Stage 3 of the Framework.

Appendix 2: Implementation Pathways

The manner in which the Framework gets implemented may be vital in determining how effective it is in practice. The key options that are available, and their pros and cons, are set out in the table below.

Option	Description	Pros	Cons
1. **TAs are primarily responsible for implementing the Framework**	• TAs voluntarily use the Framework to gather information on services and facilities and waste to disposal. The information is used for waste assessments and voluntary sharing of data. • MfE guidance on waste assessments and WMMPs may be updated to include recommendations suggesting use of the protocols from the National Waste Data Framework.	• This is the default option. • Very little needs to happen following the delivery of this project to enable TAs to start utilising the Framework. • No additional structures and little additional cost are necessary	• There is no promotion of the Framework and so uptake may be limited • TAs may implement the Framework to varying degrees, reducing its effectiveness • There is no central collation of data, meaning data compilation and sharing is constrained • Commercial operators may not wish to share data with TAs directly due to concerns about confidentiality potentially compromising the Framework
2. **A 'Data Working Group' or similar is established to oversee Framework implementation and data issues on an ongoing basis**	This could potentially be established under the auspices of WasteMINZ, and operate in a similar manner to sector groups, with the group supported by volunteers and WasteMINZ providing	• This would help ensure that the Framework has a 'life' beyond the current project • The sector group would promote the Framework and help encourage its widespread adoption	• WasteMINZ would need to be prepared to offer secretariat support • Members would be required to be involved in the sector group and commit time voluntarily to it

Option	Description	Pros	Cons
	secretariat support. Funding support would be sought from a variety of sources for in-depth project work related to the implementation of the Framework.		
3. **TAs use solid waste bylaws to introduce waste operator licensing that require the provision of waste data as part of the license conditions**	Under this option it would be up to each TA to develop and implement a suitable bylaw and licensing regime (where this is not already in place).	• Would help ensure more consistent, regular and comprehensive data capture • Income from license fees could help offset the costs of licensing and data capture for TAs	• Private operators would have to pay license fees and supply information to each TA individually, potentially adding time and cost • TAs may implement the licensing regimes in a variable manner, reducing its effectiveness • There is no central collation of data meaning that data compilation and sharing is constrained • Commercial operators may not wish to share data with TAs directly due to concerns about confidentiality potentially compromising the Framework
4. **TAs mandate regional councils to establish regionally-consistent solid waste bylaws that introduce waste operator**	Under Section 161 of the LGA 2002 a TA may transfer its bylaw making powers to a regional council or another TA	• Would help ensure a more consistent and comprehensive approach to bylaw licensing • Would help ensure more consistent, regular and	• Regional councils would have to all actively engage in the initiative for it to be a significant advantage • For regional councils to establish

Option	Description	Pros	Cons
licensing requiring the provision of waste data as part of the license conditions		comprehensive data capture • Income from license fees could help offset the costs of licensing and data capture • Would reduce the burden on TAs • Regional licensing could reduce administrative costs • Regional licensing could reduce licensing and reporting costs and burdens for operators • Data would be collated on a regional basis, increasing the ease of benchmarking and sharing • Commercial confidentiality concerns could be addressed more easily	structures and agreement to adopt the function would be time-consuming and adoption may be variable • Regional councils may implement the licensing regimes in a variable manner, reducing its effectiveness
5. **TAs use solid waste bylaws to introduce waste operator licensing that require the provision of waste data as part of the license conditions, and delegate the licensing and data gathering function to an independent 'Data Collection Agent'**	Under Section 76 of the WMA, TAs may appoint persons with appropriate experience, technical competence, and qualifications to undertake enforcement activities. The persons appointed do not have to be employees of the TA. The most functional approach would be for all	• This type of model is in use already by some government agencies and there are service providers with existing structures and systems who are well-placed to deliver on this type of model • A central IT system for the management of data could be provided by the 'Data Collection Agent' • Could help ensure a more consistent and comprehensive	• There are likely to be set up costs and risks in establishing a national 'data collection agency'. Funding would need to be obtained to meet any such setup costs. • The level of costs and potential risks cannot be determined at this stage • A 'procurement' process would have to be undertaken to appoint a preferred 'data collection

Option	Description	Pros	Cons
	TAs to use the same independent service provider. This would provide consistency of approach and reduce costs	approach to bylaw licensing • Would potentially deliver the most consistent, regular and comprehensive data capture of the available options • Income from license fees could help offset the costs of licensing and data capture • Would reduce the burden on TAs • If a national approach is taken, this could reduce administrative costs • Nation-wide licensing could reduce licensing and reporting costs and burdens for operators • Data collated on a national basis would increase the ease of benchmarking and sharing • Commercial confidentiality concerns could be addressed more easily	agency', which would then be recommended to TAs • Not all TAs might chose to appoint the national 'data collection agency' • TAs would still have the burden of adopting appropriate bylaws (or amending existing ones)

Appendix 3: Technology Options Review

LEVERAGE GROUP
PROJECT MANAGEMENT CONSULTANTS

NATIONAL WASTE DATA FRAMEWORK

Waste Minimisation Fund Project

Technology Options Review

14 August 2015

Version 1.3 – Updated Final Report

Approval

PREPARED BY:	REVIEWED BY:	ENDORSED BY:	APPROVED BY:
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Related Documents

TITLE OF DOCUMENT	DATED	LOCATION
National Waste Data Framework - Waste Minimisation Fund Project – Stakeholder Consultation	23rd September 2014	

Template Status

REVISION NUMBER:	IMPLEMENTATION DATE:	SUMMARY OF REVISION
0.1	First Draft	First Draft
0.2	Updated draft based on teleconference review	Removal of sections not required, closer alignment to high level RFP brief
0.3	Updated draft based on first review and teleconference review	Inclusion of the first three reviews
0.4	Updated draft based on feedback and final review	General updated and inclusion of the final review
1.0	9 August 2015	Final Report
1.1	10 August 2015	Replaced missing process diagram, confirmation from FINNZ that there is no conflict of interest from the MfE, and additional clarity on scope.
1.2	13 August 2015	Final formatting and typographical updates
1.3	14 August 2015	Typographical updates

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Table of Contents

1 Executive Summary

Adoption of the Waste Data Framework across New Zealand will depend on all stakeholders being confident that the framework is cost effective, secure, auditable and accessible and has the potential to be provisioned on an easy to use technology platform. This review paper will present a list of options and their suitability to meet the requirements of the proposed phased implementation of the National Waste Data Framework.

Managing waste data effectively and efficiently has great potential for improving waste management across New Zealand but only if there is adoption of a sustainable solution that protects confidentiality and has the appropriate level of data integrity.

There is currently no agreed standard around the classification of waste data information within New Zealand. While the Waste Minimisation Act 2008 (WMA) has a reporting component (Part 6) it is more focused on calculation of the associated levy rather than a consistent classification and reporting of the associated waste data.

The approach proposed for the National Waste Data Framework implementation is to implement a set of protocols via a phased implementation process. The intent is to build confidence in the approach with key stakeholders with minimal overhead for both waste operators and Territorial Authorities. Once confidence and adoption is gained further data would potentially be requested/collected as part of the proposed phased delivery.

The table below shows a summary of the evaluation results of the available options including anticipated benefits and potential issues against a likely qualitative cost profile.

Based on the assessment, the following conclusions have been made:

Evaluation Results Summary (0 -10, where 10 is the highest)				
Category	**Option 1 – FINNZ**	**Option 2- WaterOutlook**	**Option 3 – Auckland Council**	**Option 4 – NAUS**
Existing platform	2	8	8	5
Solution scalability	10	10	10	8
Data consolidation and Reporting capability	5	10	7	7
Ability to trigger data	8	10	7	0

anomalies on load				
Value for money	4	8	9	0
Support model options	10	10	5	10
Data Security	10	10	5	8
Data Quality controls	10	10	5	8
Adherence to IM principles	10	10	5	8
Meet Strategic objectives	10	9	5	0
Overall Score	79	95	66	54

Based on the review results the option that best fits the current requirements for the National Waste Data Framework is WaterOutlook. At the time of writing this report the NAUS product could not confirm the scope and timeline for inclusion of a data collection module, if this information was available, it could significantly change the results for NAUS which are included as reference only.

2 Scope of the Review

The work undertaken in this report covers the following as set out in the brief provided:

1. Review the data framework and protocols and provide expert comment and advice on
   - Potential data quality issues (including data gaps, double counting, accuracy etc), and how these could be managed (including potential audit processes)
   - Data handling processes to ensure data integrity
   - Data security processes including processes to ensure commercial confidentiality

2. Review a number of potential options for information systems that could be utilised to implement the framework and provide expert advice and comment on the degree to which each of the options is likely to meet the objectives of the Waste Data Framework, including:
   - Ease of use
   - Implementation requirements/Constraints on adoption
   - Data security/integrity
   - Scalability

- Support options
- The potential for expansion of the framework into phases 2 and 3
- Qualitative costs
- Risks and possible mitigations

3. Offer any other advice relevant to the information requirements of the Waste Data Framework which the consultant feels are relevant but which may not have been specifically identified by WasteMINZ.

The Information management principles and options that have been considered in this report relate specifically to the scenario of possible adoption or use of IT systems by Territorial Authorities or other agencies for the purpose of managing waste data within New Zealand. The systems evaluated were those that are considered most likely to meet the needs of the Waste Data Framework at the time of writing, including those directed for consideration by WasteMINZ. The review was not intended to cover all possible processes or technologies and it is acknowledged that TAs, waste operators, and other agencies may operate different systems and processes for which not all of the recommended controls will be applicable.

3 Information Management Principles

The key to maximising the use of data collected through the National Waste Data Framework will be a consistent and defined application of information management principles. As there are likely to be multiple systems and capabilities engaged with collection, distribution and use of the data within New Zealand, an independent body will be crucial to both maintaining the data integrity and security for Phase 1 and as a platform for the proposed future phases of the framework. A useful ruler to apply with regards to the collection of data is to consider the 'Collect once and use numerous times' mantra. This is especially pertinent for the National Waste Data Framework.

3.1 Key Information Risks with regards to implementation of the proposed National Waste Data Framework

Given the nature of the proposed National Waste Data Framework there are a number of inherent risks. Success of the framework will depend on the level of adoption which will be linked to confidence from waste operators that their data is both easily provided and that the confidentiality of their data will not be compromised. From a Territorial Authority viewpoint there will need to be quantifiable benefits of the data (confidence in the data quality and easy access), minimal management effort, and an appropriate level of governance with known costs.

Key identified risks:

1. Low adoption as waste operators do not have sufficient confidence that data is secure
2. Potential of multiple data sources and inconsistent validation rules on entry
3. Difficulty achieving consistent governance
4. Systems and processes do not accommodate a phased implementation

3.2 Recommended IM processes and procedures for the proposed Waste Management protocols

This section will provide a proposed IM Framework to ensure the proposed Waste Data Management protocols are appropriately managed.

For the framework to be effective and have an acceptable level of adoption appropriate information management principles will need to be applied. This will ensure that both the integrity of the data is maintained, and the commercial confidentiality of the data is preserved. There can often be a lack of confidence from waste collectors that their data will be correctly managed, especially if a TA is also engaged in waste collection activities themselves.

The following three sample processes demonstrate how this could be achieved. These processes assume that the TA provides an appropriate mechanism for Waste Collectors to enter their monthly data with confidence. Other options could include an independent 3rd party being responsible for collection, maintenance and distribution of the data.

A key principle that needs to be kept in mind is that maintaining data quality and integrity requires continual effort. Critical to the effectiveness of these procedures is periodic independent assessments to ensure data quality, integrity and commercial confidentiality has been maintained. An on-going process ensures any issues are identified. When deficiencies are discovered, immediate steps must be taken to understand the problems that led to the deficiencies, to correct the data and/or process, and to resolve the problem.

It is recommended that the following controls are in-place:

1. Access to Waste Collectors is secured by an appropriate level of authorisation control, typically a unique user-id or perhaps a unique licence number supplied by the TA and password that requires resetting on a regular basis.

2. Access is granted to individuals who are held responsible and accountable (if practicable). Generic or shared user access is not optimal.

3. Data entered by the Waste Collectors is only available for reporting at an aggregated level. If this is not possible, access to the raw data must be restricted to non-operational resources.

4. Data is held in a secure data repository that is not available to operational staff.

5. An appropriate non-disclosure agreement is created, signed and maintained. As with user access this is best done at an individual level, however in some situations it may be more practical for the Non-Disclosure Agreement (NDA) to be at the organisation level with individual employment contracts to bind employees to awareness and compliance to the organisational NDA.

6. Data is backed up with an appropriate level of audit trail, and copies of the data are stored offsite. An audit trail is typically split into two distinct areas:

a. System – to ensure database integrity, for example; and

b. Application – key functions, such as when data is changed by a supervisor.

7. Where possible, data that is entered by Waste Collectors is automatically validated by the system against either an estimated set of figures, such as a baseline set, the previous month's data or perhaps a running average for the waste collector. This will reduce the need for raw data to be made available/visible.

8. Where there are limited data collectors or where TAs own and/or operate waste services or facilities, additional controls are applied to ensure the commercial confidentiality of the data is not compromised. This may be achieved through engaging an independent 3rd party to provide the service or defined segregation of duties within the TA. An example of this could be:

    a. Waste Collector data entry – can enter and update the data for the current month's load

    b. Waste Collector supervisor – can review and submit raw data

    c. TA data administrator – can review raw data and accept or reject, they would be non-operational

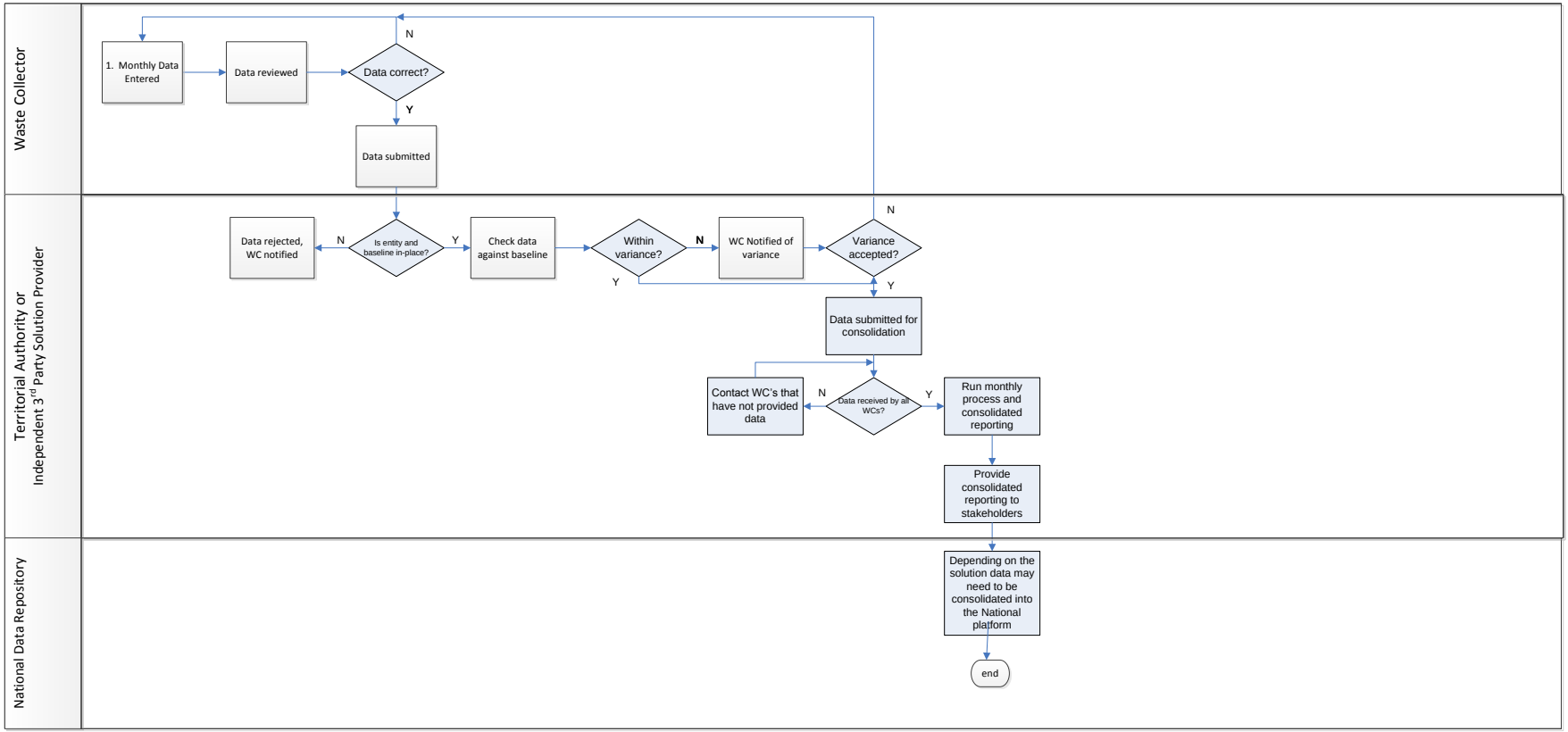
    d. TA data analyst – can see all raw and consolidated data for the creation and maintenance of consolidated/aggregated reporting

    e. TA operational waste staff – can access aggregated reporting

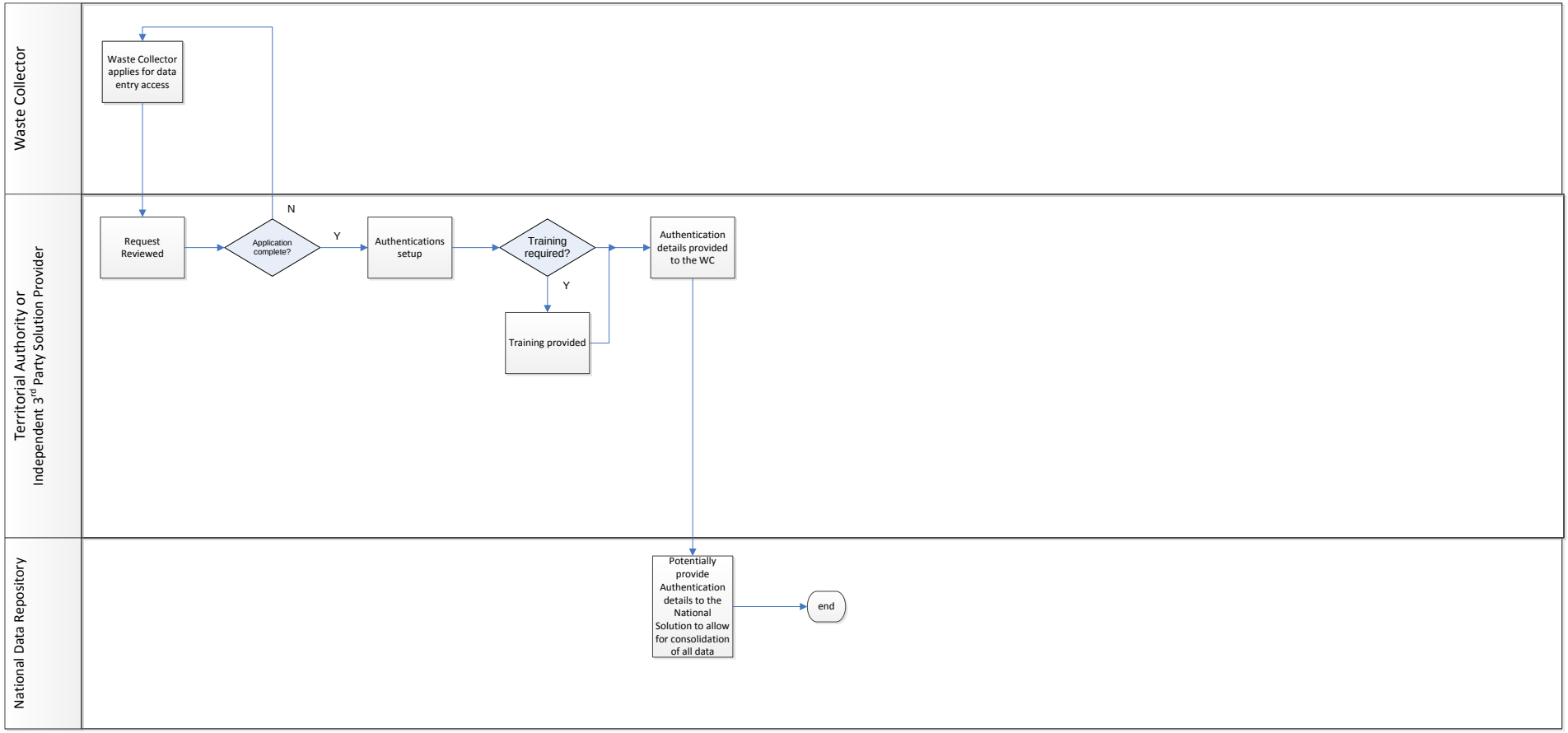
    Given the possibility that data will be collected through multiple systems, an appropriate national standard will be required to ensure elements such as data definitions (as defined by the National Waste Data Framework protocols), and data frequency (e.g. all data provided for the previous month on or before the 10th day of the following month) are adhered to. Ideally a governance body would be appointed that would be able to request compliance audits at set durations and after any changes to the standard are implemented. This body initially may have limited powers but would be able to provide audit data back to TAs for resolution of any non-compliance.

The following diagram describes a possible process for the monthly data collection of waste data from waste collectors. Other processes for engaging with a new waste collector, discontinuing a waste collector, audit/compliance would also be required.

Process Name: National Waste Data Framework Monthly Data load	Process Owner:	Approved by:
Process Description: How the data collected monthly for Phase 1 of the National Waste Data Framework will meet quality guidelines for Integrity and Commercial confidentiality	Process Reference: Status: Draft	Date: July 2015 Version 01.0



Process Name: National Waste Data Framework New Waste Collector	Process Owner:	Approved by:
Process Description: How a new Waste Collector is added for Phase 1 of the National Waste Data Framework based on the solution being provided by the TA.	Process Reference: Status: Draft	Date: July 2015 Version 01.0



Process Name: National Waste Data Framework Remove a Waste Collector	Process Owner:	Approved by:
Process Description: How to remove a Waste Collector for Phase 1 of the National Waste Data Framework based on the solution being provided by the TA.	Process Reference: Status: Draft	Date: July 2015 Version 01.0

3.3 Governance and Custody of the proposed Waste Management Data Framework

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3.3.1 Governance

Data governance refers to the overall management of the availability, usability, integrity, and security of data. A sound data governance program includes a governing body, a defined set of procedures, and a plan to execute those procedures. Data governance has more of a business focus and less of an IT focus. For the proposed National Waste Data Framework the proposed Data Working Group would be an appropriate vehicle to ensure data governance is both set up and maintained in addition to working with stakeholders to keep focus on the future implementation phases. This would be more easily achieved with effective governance in place.

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3.3.2 Custody

Data custody is defined as the responsibility for the management and oversight of an organisation's data assets. The intent is to help provide business users with high-quality data that is easily accessible in a consistent and secure manner.

While data governance generally focuses on high-level policies and procedures, data custody and stewardship focus on tactical coordination and implementation. A data steward is responsible for carrying out data usage and security policies as determined through agreed data governance initiatives, acting as a liaison between the solution provider and the business side of an organisation or entity. Data custody has more of an IT focus and less of a business focus.

For effective custody, those responsible must be close to the technology that creates the data, the storage mechanism and the dissemination of the information.

With regards to 'who owns' the data, that would need to be determined. This will likely depend on how the data is collected. For example if Auckland Council retain their current solution but they collect no other TA data, they would continue to own their own data. From a national perspective it would be logical that the consolidated data be owned by all TAs. A data governance group would likely be a group of representatives that would have ownership of the National Data asset with all TAs as stakeholders. Access to national data would be one of the drivers for both maintenance, support and implementation of further phases of the framework.

3.4 The Challenge

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3.4.1 How best to support a phased implementation approach

To support the proposed phased implementation of the National Waste Data Framework there are two main options from a technology perspective:

1. Anticipate the final state – this will determine the proposed final state in terms of data collection and reporting requirements and provide a platform that would support that state. Obviously there is a risk that by the time the final state platform is required there may be a shift in requirements. Each of the phased implementations would likely require changes (with the associated costs) to the solution. Some solutions may provide more flexibility with regards to adding additional business rules and data elements (collection and reporting).

2. Implement for Phase 1 only – this would reduce the scope for the provision of a suitable software solution. Obviously it would be prudent to consider the proposed next phases and ensure the design was flexible enough to accommodate the final state. While not planned, it is possible the final state is not required or indeed any state, past the Phase 1 implementation.

3.4.2 Merely providing a National Waste Data Framework will not necessarily derive the benefits

The benefits available to a National Waste Data Framework will only materialise if the data is actually used and acted upon. Merely providing the data in itself will not derive any benefit to key stakeholders or New Zealand as a whole.

4 Assessment of Options

There are a number of options ranging from leveraging off existing solutions in place through to specifying and provisioning a bespoke platform (potentially based on a similar platform) or component of an existing platform.

4.1 Existing platforms

4.1.1 FINNZ

FINNZ operate the Online Waste Levy System (OWLS) which records tonnages sent to landfill that are subject to the Waste Levy.

Contact: Mark Jones

Review session: Thursday 30/7/2015, plus follow-up emails.

Overview:

FINNZ is a NZ based company 'that produces innovative technology to protect and manage our environment and natural resources'. Solutions are typically focused on the waste and fisheries sectors. They don't describe themselves as a product company but rather a technology provider that create innovative solutions for their customers. With regards to waste, they were selected by the MfE to provide a technology solution for the 2008 Waste Minimisation Act. Rather than creating generic applications that are enhanced to meet new business requirements they tend to create a 'new' application platform for each new customer/requirement. While there may be some reuse, FINNZ believes that it allows them to build the next customer solution on the latest toolsets. FINNZ supplies solutions primarily within the NZ and Australian market.

Their NZ based systems are hosted at a Government approved NZ Data Centre. The solution provided for the MfE was launched in 2009 and, as such, is probably due for a technology refresh. FINNZ have indicated that they needed to confirm with the MfE that there would not be a potential conflict of interest if they provided data store capability for a non MfE funded waste data project. It was confirmed on August 10 2015 that there would be no conflict of interest.

As FINNZ would need to build a new application, the associated development cost would apply.

FINNZ believe the best system they have for the National Waste Data Framework would be the one used by the Department of Environment and Heritage Protection in Queensland. This data system has leveraged the same technology applied for the MFE's OWLS system, but includes additional functionality around data collection (integrated 3rd party survey tool – for collection of Weighbridge data) and reporting. The system is known as QWDS, Queensland Waste Data System.

From the review, it appears that there are a number of controls built as part of their base application. These include robust authorisation components that support multiple levels of access. FINNZ are very aware of the sensitivity and integrity of the data at entry (via regular independent penetration tests) and from a data storage perspective. The software platform is based on standard Microsoft development and database tools.

Support is offered for a number of different Internet browsers. Entry of data is completed by TAs and with separation between the entry of the data and the approval/submission. FINNZ provide access to the TAs' own data. FINNZ provide support for their systems from their Wellington offices.

Evaluation Matrix Results		Score
Existing platform	No, a separate platform would be provisioned, most likely based on the solution provisioned for QWD.	2
Solution scalability	Likely to not be an issue given the data volumes. Externally hosted in a Government approved Data Centre. They have not provided any of their platforms as a Cloud based offering.	10
Data consolidation and reporting capability	Likely to be a similar requirement to the OWLS/QWDS solutions, which provide reporting and data consolidation. Proven track record. Additional reporting provisioned with QWDS.	5
Ability to trigger data anomalies on load	There is some validation performed at data load time. As it would be a bespoke application, it would be included as part of the business requirements.	8
Value for money	Yet to be determined as it would be based on the business requirements and the level of reuse of their existing codebase. There would appear to be a close fit to their other waste data applications. Given the new application would be based on the QWDS application, it is expected that the development costs should be reduced.	4
Support model options	Full support provided, yet to be costed. As there is likely to be a sophisticated access and reporting model available, support requirements should be minimal.	10
Data Security	Proven with their existing platforms.	10
Data Quality controls	Proven with their existing platforms.	10
Adherence to IM principles	Proven with their existing platforms.	10
Meet Strategic objectives	Given that FINNZ solutions include integration with other systems such as weighbridges there would be support for the proposed phased implementation of the National Waste Data	10

Evaluation Matrix Results		Score
	Framework. Being a bespoke solution it would be tailored for the needs of the National Framework	

4.1.2 WaterOutlook

Data management system built around managing water and waste water information, but very flexible and could be easily adapted for solid waste.

Contact: Peter Johnson

Initial Review session: Friday 31/7/2015

Follow-up session: Friday 7/8/2015

Overview:

WaterOutlook is predominantly a product company with their product originally conceived for collection and management of water and waste water data within New Zealand. The philosophy of the company is that as additional functionality is added to the product it is made available to all their customers. WaterOutlook has a presence in approximately 30% of New Zealand's TAs. While from an initial demonstration of the product, it would seem the product is more function over form with a fairly basic user interface.

The product is constantly being added to and it appears to be 'feature rich', with a number of options available for provision of data from automated imports from third party solutions such as SCADA, web, iOS, Android and Windows mobile applications. The core solution is developed on a Microsoft centric platform.

There are many levels of authorisation control with configurable validation options.

There is also a strong reporting component that supports the application.

WaterOutlook host their application within three industrial strength datacentres within NZ.

There is no doubt that it could act as the national data repository and as a general comment the product is probably more functional than required for the National Waste Data Framework.

WaterOutlook was approached to better understand how they may provision capability for the National Framework. It is likely that some TAs (such as Auckland Council) would prefer to utilise existing software solutions for the collection of waste data. WaterOutlook envisage multiple systems with a single central system that aggregates data from a variety of sources (either one of their existing WaterOutlook customers, other TAs (such as Auckland) and Waste Collectors without WaterOutlook providing data directly into the national solution). Their standard machine to machine integration would be utilised.

Evaluation Matrix Results		Score
Existing platform	Yes, operating within multiple data centres within NZ, but specific functionality would be required	8
Solution scalability	There would be no issues scaling to a national solution.	10
Data consolidation and reporting capability	Strong validation, consolidation and reporting capability.	10
Ability to trigger data anomalies on load	There are configurable validation controls available.	10
Value for money	As mentioned the product is probably more functional than required for the National Waste Data Framework. Development of phase 1 of the National Waste Data framework would require a level of investment, although given the requirements it is not expected to be significant. TAs who already have WaterOutlook would share the development cost of the module. There are probably a couple of options for TAs that have not purchased WaterOutlook: 1. Purchase the product 2. Import data into a 'National' version of WaterOutlook (yet to determine the licencing implications and associated costs).	8
Support model options	A number of support models available including training.	10
Data Security	Strong security constructs in-place	10
Data Quality controls	High levels of entry validation, audit and reporting options.	10
Adherence to IM principles	Proven adherence through independent third party audits.	10
Meet Strategic objectives	Given access to rich functionality, a very configurable design and given the ability to source data from a number of sources there is a strong strategic fit.	9

4.1.3 Auckland Council, Licensed Operator Database

In house system developed based on their SAP platform managed and maintained by Auckland Council.

Contact: Michael Backhurst – Auckland Council

Review session: Tuesday 28/07/2015

Overview:

Auckland Council (AC) has a Solid Waste Bylaw in-place (Auckland Council Solid Waste Bylaw 2012). AC is currently operating a Web-based tool for collection of waste data for a number of their waste collectors. It is anticipated that all their waste collectors will provide monthly data (as stipulated by the bylaw) by the end of 2015.

A recently developed system has been provisioned to accept the data from waste operators. The solution has been built on the AC's SAP Enterprise platform and also utilises the Business Objects reporting platform. Waste Operator access to the system is via a unique Operator Identification number, which is provided by AC.

The interface is very basic with no other access controls, such as a maintained PIN code. Data is entered for each waste type separately with a 'one time' option to review the data entered. Once entered it cannot be retrieved, amended or reported on by the Operator. Any input errors are resolved by contacting a specific resource at AC. Due to the sensitivity of the data, administration access is granted to one AC non-operational employee. The AC employee has access to the raw data as provided by waste operators, and all other data is consolidated for other AC employees. Information provided at the review session indicates a reasonable number of issues with entry of the data initially. The ability to review the data before submitting was added after the initial implementation. It could not be ascertained at the session if there are any controls on the data input (e.g. missing entries, double entries). Currently the administrator acts as the 'data checker'.

The solution has been architected to serve the consolidated AC.

While waste operators also submit monthly invoices there is no automated validation between data entered and corresponding data submitted for payment. Payment of invoices is also managed through the AC's SAP platform.

Other systems and tools are in use within the AC Waste Management group such as Excel and Opal3. There are no current linkages between the systems. Once all waste collectors are on-board, AC will look to rationalise the data they collect and start making more use of the data entered by the waste collectors.

The option of provisioning the current solution to TAs outside Auckland was something that had been considered as a viable option by AC. Further work would be required to agree on both a suitable commercial model and the data/ access requirements to both the TAs and associated waste operators.

From an information management perspective, while entry of the data is unsophisticated the platform is sound. Data integrity is likely to be strong, being part of the AC SAP infrastructure. With regards to scalability, it is unlikely there would be any issues provisioning the solution outside Auckland. As indicated previously, there are currently no design elements that would allow data to be segregated between TAs, although it is likely not to be onerous to achieve the required level of separation given the simplicity of the solution. AC are in a strong position given they have an appropriate bylaw in-place which requires Waste Collectors to provide data on a monthly basis. Other TAs may not be in that situation which would likely add an operational overhead to ensure accurate data is provided in a timely manner each month.

There is currently no provision for TAs to get access to 'their' data through a suitable interface. While provisioning access to Waste Collectors is likely to be straight forward, giving access to the reporting for TAs would prove to be more challenging.

AC are also currently reviewing NAUS. While they appear (as with other organisations that have been canvased) to struggle to 'get it working', they do see potential with the product.

Evaluation Matrix Results		Score
Existing platform	Yes, but relatively new and not intended to be multi tenanted	8
Solution scalability	No issues for data input, and storage of data. Access to data for non Auckland TAs could prove difficult	10
Data consolidation and Reporting capability	Strong, given the Enterprise platform (SAP Business Objects) the data resides on	7
Ability to trigger data anomalies on load	Nothing automated in-place, done manually. May prove more difficult for an Auckland resource to provide that review across the country.	7
Value for money	Likely to be on a cost plus basis, as the initial development has been done it is likely to be a relatively low cost option. Costs for applying a TA filter would likely be shared (more TAs the lower the cost per TA). Most costs likely to be around provision of reporting capability to TAs. If a monthly data extract was provided instead it would be up to each TA to manage and control that data. Costs required for support for future phases would depend on the flexibility of the current solution.	9
Support model options	There may be some nervousness from non-Auckland TAs that they may not get an acceptable level of support. This could be mitigated by a very simple service level agreement as part of the support arrangement.	5
Data Security	Would depend on the design for bringing on other TAs. The infrastructure is robust and would be well catered for from a	5

Evaluation Matrix Results		Score
	data integrity and security perspective.	
Data Quality controls	Limited at the moment, could be added either at load or as part of ETL process when the data is inserted into the Data Warehouse.	5
Adherence to IM principles	From a data security viewpoint high, less so with regards to data integrity as predominately manual processes in-place.	8
Meet Strategic objectives	As the requirements for the National Waste Data Framework become more complex it may prove difficult to control the pace of development with a system owned and run by a single TA, albeit the largest one. In addition the design of the solution is predicated on a single TA. Waste Collectors that operate over multiple TAs would not be able to enter data for multiple TAs at one time. The current design requires a separate entry for each data element for Auckland, and is likely to continue with that approach if other TAs are added. There is no current capability to receive data via a formatted input document/spread sheet.	5

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4.1.4 NAUS

NAUS is proprietary software which is currently in development. Eunomia Research and Consulting (Eunomia) are part of their 'Early Access Programme'. It is waste planning software and initial use suggests inflexibility as a data management tool. However if there is sufficient uptake and it was appropriately configured, it might be able to act as a central consolidation tool. This would have some advantages, as it is then in a form that can be directly applied to planning.

Initial Review session held at Eunomia Offices with Duncan Wilson 21/7/2015

NAUS as a product is more targeted at the Waste Professional than the Waste Practitioner. While there are tools specifically targeted at importing data, there is limited focus on day to day collection which is required for the implementation of phase 1 of the proposed National Waste Data Framework. It is therefore difficult to compare with the other products reviewed as part of this Technology review. It is not within the scope of this review to determine the suitability of the functionality it provides. It is however understood that NAUS are investigating the option of adding a data collector module, this would bring NAUS back into consideration. NAUS have not provided an indicative timeline for the data collector module at the time this report was finalised. From a technology perspective, NAUS has embraced a number of current information management practices such as provisioning the service as a cloud-based platform. This requires minimal technology from the end user (access to a supported web browser) to utilise the platform. Software updates are performed seamlessly and typically will not require any intervention from the end-user.

NAUS is hosted within the Microsoft Azure cloud computing platform, which is a platform for building, deploying and managing applications and services through a global network of Microsoft-managed and Microsoft partner hosted datacentres. It provides both Platform as a service (PaaS) and Software as a Service (SaaS) options and supports many different programming languages, tools and frameworks, including both Microsoft-specific and third-party software and systems. Azure was announced in October 2008 and released on 1 February 2010 as Windows Azure, before being renamed Microsoft Azure on 25 March 2014

Evaluation Matrix Results		Score
Existing platform	The platform is new and is expected to continue development as it is adopted. It is understood that some New Zealand Territorial Authorities are considering NAUS. As a new platform, typically success is determined by the level of investment, alignment to the industry and level of adoption. There is always the risk that new product companies do not get the necessary investment to produce a viable product. It is certainly early days for NAUS.	5

Evaluation Matrix Results		Score
Solution scalability	From an infrastructure perspective there should be no issues giving the provisioning of NAUS within the Azure cloud computing platform. The initial review highlighted some potential performance issues but it is more likely to be early software release issues rather than hardware related/scalability options.	10
Data consolidation and reporting capability	Reporting appears more focused on the modelling side rather than the consolidating data elements.	7
Ability to trigger data anomalies on load	Not currently. Possible future capability (yet to be confirmed).	0
Value for money	Without a data collection model, it is not fit for purpose.	0
Support model options	There is a support model in-place including an early adopter programme for direct input into the future of the product.	5
Data Security	Sound principles demonstrated.	8
Data Quality controls	Sound principles demonstrated.	8
Adherence to IM principles	Sound principles demonstrated.	8
Meet Strategic objectives	The current solution is more suited to using the aggregated national data for modelling purposes. There is work underway to enhance the product to include a data collection module. This would likely better align the product to the requirements of the National Waste Data Framework. At this stage there is no indicative timeline for the introduction of the proposed data collection module. This is why it is scored at 0.	0

4.1.5 Other Options

The majority of NZ TAs operate one of a small number of local government EPR solutions.

TechnologyOne, who provide solutions to a number of NZ TAs and other government organisations was recently granted permission to host electronic records outside NZ for the IRD. While the TechnologyOne solution set for Local Government is comprehensive there is currently nothing specifically targeted at collection and management of waste data. Other providers include INFOR (Pathway ERP), Civica who are Australian based, and Datacom's Ozone (formerly Tauranga based Origen Software). Of all those providers Datacom and Ozone are likely to have the greatest capability to meet the requirements of the National Waste Data Framework.

5 Key Risks and Dependencies

There are a number of inherent risks associated with the proposed implementation of the National Waste Data Framework. Any National solution that is not driven centrally through legislation will face challenges with regards to adoption and consistency. Larger TAs are likely to operate at a different level than smaller TAs. Auckland is a case in point, where systems and data gathering are supported by a locally implemented bylaw. There is a balance between capturing enough quality data that allows it to be usefully consumed by the various stakeholders while not placing unrealistic overheads on either the collectors or the consumers of that data. This is tempered by an industry that can be sceptical regarding the protection of commercially sensitive data.

5.1 Technology related risks Associated with the National Waste Data Framework

Key risks for the National Waste Data Framework	
1. **Low adoption of the national framework by waste collectors** ***Likelihood: Possible to Probable*** ***Impact: High***	Possible Mitigations 1. Local bylaw that requires specific data to be provided as part of the bylaw compliance 2. Low technology footprint (cost and ease of use) required by waste collectors 3. Benefits for the waste collector (reporting of their own data provided at a minimum) 4. Training provided as part of the 'sign up' process 5. Robust information management processes in place that are clearly articulated to collectors ensuring a high level of confidence that data will be appropriately validated on entry, strong data governance and custody is in place to protect data integrity and commercial confidentiality
2. **Inability of the technology solution to accommodate the future phases of the framework** ***Likelihood: Possible*** ***Impact: Moderate***	Possible Mitigations 1. Technology solution flexibility reviewed based on future phase requirements 2. Future implementation phases for the National Waste Data framework to be well planned with a high level of early engagement with all key stakeholders
3. **Potential of multiple data sources and inconsistent validation rules on entry** ***Likelihood: Possible*** ***Impact: Moderate***	Possible Mitigations 1. Audits to ensure compliance to protocols 2. Robust automated validation of input data 3. Agreed processes for accepted data before it is submitted 4. When data is provisioned into the national repository an additional level of validation and checking is performed

Key risks for the National Waste Data Framework	
4. Difficulty achieving consistent governance ***Likelihood: Possible*** ***Impact: Moderate***	Possible Mitigations 1. Governance group established for a set period with some continuity of members 2. Regular Governance meetings that have an appropriate level of minutes distributed to all stakeholders 3. Governance to include representation from Waste Collectors and private industry

5.2 Key Dependencies for the National Waste Data Framework

Dependencies are defined as "any actions or developments required of others and outside the scope of the project or programme, if the ultimate success of the investment proposal is dependent upon them".

The key dependencies for the success of the National Waste Data Framework are summarised below.

Dependency	Summary
A suitable technology platform(s) will be identified to receive, manage and report on National Waste Data	Actions in place 1. This document reviews the suitability of a number of technology platforms to support a National Waste Data framework 2. A high level set of requirements be developed for the supply of a technology platform for the National Waste Data Framework 3. A due diligence process be undertaken on the proposed platform to confirm that requirements are accommodated, costs are provided and that the proposed Information Management principles are met 4. A suitable contractual framework is developed and agreed for the supply of the technology platform and associated services
Additional funding for the implementation of the proposed National Waste Data Framework will not be secured	Actions in place 1. Outside the scope of this review
An appropriate Governance Board be in place to provide governance over the establishment of a Nation Waste Data Framework	Actions in place 1. While outside the scope of this review a clear set of roles and responsibilities would also be required

6 Findings

The conclusion of this report is that there are viable options to support the introduction of a National Waste Data Framework as proposed via a staged implementation approach.

6.1 Summary of options reviewed.

Of the options reviewed, the two that are likely to be the most cost effective to implement are WaterOutlook and Auckland Council's in-house solution. While neither option currently has the capability to provide the proposed National solution immediately, both have the majority of the core requirements. Auckland's solution currently collects data from a pilot set of waste collectors similar to the proposed protocols for phase 1.

Given the sensitivity of the commercial confidentiality of the data it is vital that any solution is seen as independent. For that reason, and the inherent audit and data validation capability, WaterOutlook is likely to best meet the needs of the National Waste Data Framework at this time.

For the proposed National Waste Data Framework to achieve credible levels of adoption it will be vital for any proposed solution to be flexible and effective at accepting data from different sources in addition to having independence and a proven track record with regards to data quality and integrity.

Appendix A – Qualitative costing review

Background

The purpose of this document is to review a number of technology options available within the New Zealand marketplace to support the provision of a National Waste Data Framework. While there is further detailed work required to get to specific cost and suitability of the reviewed options the following table will provide an indication of those elements.

Costing elements

The following table describes the cost breakdown of the National Waste Data Framework;

#	Cost Description	Description
C1	Hosting costs	All options are hosted within approved Data centres within New Zealand with the exception of the NAUS solution (hosted outside NZ). The requirements for the hosting solution are minimal and are likely to attract a minimal charge depending on the whether it is hosted as a specific application (eg. FINNZ). There are New Zealand benchmark figures available for hosting and once the solution approach is agreed more definitive costs could be determined.
C2	User Licences	Depends on the model but typically an upfront cost plus an annual fee for maintenance and support calls.
C3	Resources	Dependent on the services provided. For example may include training of new users and a help desk function.
C4	Project Delivery	Would depend on the option chosen and would range
C5	Training	To ensure data quality is maintained prior to new Waste Collectors being engaged, a suitable level of training should be provisioned. The training would be based on the complexity of the application and level of data entry validation.
C7	Governance	The governance costs would depend on the model adopted. Given the number of organisations involved, there is likely to be a working group setup with reporting provided to all members.
C8	Audit	To maintain data integrity and provide the level of confidence necessary for waste collectors to provide the required waste data (especially where no appropriate bylaw exists), regular independent audits would be required.

Assumptions

The following table describes the assumptions supporting the National Waste Data Framework proposal;

#	Assumption
A1	A request for proposal/request for tender would be created to engage either in an open tender or a closed tender based on the solutions reviewed in this report.
A2	Given the size of some of the organisations reviewed it would be prudent to perform due diligence on the organisations to ascertain their current financial status and long term viability.
A3	The Waste Data Framework has received funding from the following Councils and those Councils would continue to play an active role with implementation of the National Waste Data Framework; • Auckland Council • Bay of Plenty Regional Council • Combined Canterbury Councils • Environment Canterbury • Far North District Council • Gisborne District Council • Kapiti Coast District Council • Marlborough District Council • Palmerston North City Council • Porirua City Council • South Waikato District Council • Tasman District Council • Taupo District Council • Waikato Regional Council • Waitaki District Council • Wellington City Council

Appendix B – Qualitative Costing Breakdown for each option reviewed

Qualitative costs point to the expected costs for each category for each option, they are high level indicators only.

Category	Option 1 – FINNZ	Option 2- WaterOutlook	Option 3 – Auckland Council	Option 4 – NAUS
Build costs	Med/High – bespoke but based on existing product	Low/Med – solution allows for flexible configuration	Low/Med, although unlikely to meet audit and security requirements	If the data collection module is provided probably Low/Med depending on the opportunity to influence the design
Ongoing development costs	Med – while bespoke development, costs shared across TAs	Low – based on the number of customers using the core product – increase to Med due to timeline requirements	Low	Low/Med – Early days of the product should be Low
Hosting costs	Med	Med	Low	Med
Ongoing licence costs	Low	Med	Low	Med

Appendix C – Reporting and audit requirement 2008 Waste Minimisation Act 2008

Part 6
Reporting and audits

Reporting

86 Regulations in relation to records, information, and reports

- (1) The Governor-General may, by Order in Council made on the recommendation of the Minister, make regulations for 1 or more of the following purposes:
    - *Information from operator of disposal facility*
    - (a) requiring the operator of a disposal facility to keep, and provide to the Secretary and any appointed levy collector, records and information to enable amounts of levy payable by the operator to be accurately calculated:
    - *Information from any class of person*
    - (b) requiring any class of person to keep, and provide to the Secretary, records and information to assist the Secretary to compile statistics in order to—
        - (i) measure progress in waste management and minimisation:
        - (ii) report on the state of New Zealand's environment:
        - (iii) assess New Zealand's performance in waste minimisation and decreasing waste disposal:
        - (iv) identify improvements needed in infrastructure for waste minimisation:
    - *Information from territorial authority*
    - (c) requiring a territorial authority to keep, and provide to the Secretary each year, records and information about the territorial authority's—
        - (i) spending of levy money; and
        - (ii) performance in achieving waste minimisation with the services, facilities, and activities provided or funded in accordance with its waste management and minimisation plan; and

- (iii) performance as measured against any performance standards set by the Minister under section 49:

- *Miscellaneous*
- (d) prescribing the form and manner in which, and the times at which, the records and information referred to in paragraph (a), (b), or (c) must be kept or provided:
- (e) prescribing requirements for a person to verify that records and information are correct before providing them under paragraph (a), (b), or (c):
- (f) providing for any other matter contemplated by this Part.

(2) Before recommending the making of regulations under subsection (1), the Minister must—

- (a) obtain and consider the advice of the Waste Advisory Board; and
- (b) be satisfied that there has been adequate consultation with persons or organisations who may be significantly affected by the regulations; and
- (c) consider the costs and benefits expected from implementing the regulations.

(3) Before recommending the making of regulations under subsection (1)(b), the Minister must also consult the Government Statistician.