

Disaster Waste Management Plan template

Developed with assistance from the Ministry of Civil Defence and Emergency Management Resilience Fund
June 2018

Project Partners



Important notes

This planning tool has been prepared by Tonkin +Taylor and its sub-consultants (Rawtec) for Bay of Plenty Regional Council with respect to the particular brief given to us, by reference to applicable standards, guidelines, procedures and practices at the date of issue of this template plan. The purpose of this template plan is to provide generic guidance only. The use, adaptation, modification or distribution of this template plan in specific circumstances is outside the control of the Consultants and is at the sole risk of the user.

Attachment 1: DWM planning workbook

New Zealand Disaster Waste Management
Planning Tool

Working Copy June 2018

Document verification

Date	Version	Prepared by	Reviewed by	Approved by
01/06/2018	Draft	K Heinrich	M Rawson, C Purchas and C Brown	M Rawson
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Section A

Introduction

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Introduction

About this workbook

This document is for people leading disaster waste management (DWM) during the readiness, response and recovery phases. It will help them to identify and evaluate factors that should be considered when developing a DWM Strategy and/or Recovery Programme.

This document accompanies and should be read in conjunction with the New Zealand DWM Planning Tool, which provides:

- Principles for DWM
- Guidance on key elements of DWM
- Guidance on Readiness and Response/Recovery tasks to help a region to prepare for DWM during business as usual
- Technical guidance on select waste streams (handling, transport, storage, recycling and disposal)

Using this document to assist with DWM

Figure A1 shows key steps involved with DWM from initial response through to the end of recovery. Outlined in blue text are the sections where users can find tasks and worksheets to help work through this process. Steps 1, 2 and 3 are also relevant for activity during business as usual with the outcomes including actions to improve the state of readiness and information that can be checked/updated when an event occurs.

The first step is confirming and mobilising those tasked with developing and overseeing the DWM Strategy and/or Recovery Programme. This is likely to include a waste management specialist working with and as part of Planning, Intelligence, Logistics, Operations and Communications functions within the standard CIMS structure.

Planning and action will proceed based on the best available information. Once the most pressing waste issues have been dealt with, DWM activity should focus supporting the recovery of the affected community(ies). For example, streamlining the removal of demolition waste. Developing a DWM Recovery Programme can assist with coordinating these activities and improve efficiency, effectiveness and outcomes for the community and environment.

Stakeholder engagement on DWM issues should be undertaken throughout the Response and Recovery process as part of broader Response and Recovery Public Information Management to ensure that:

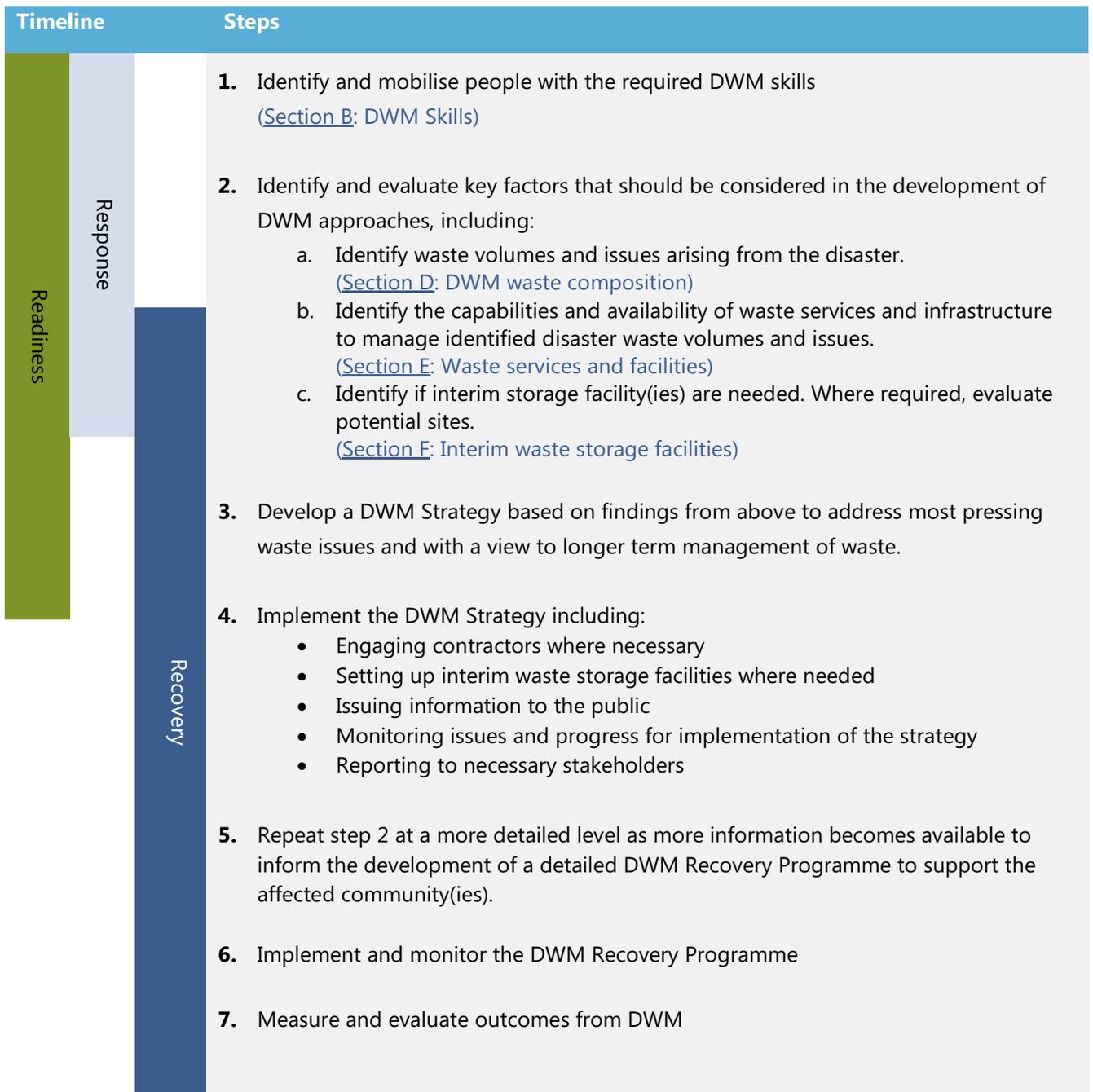
- Approaches consider the needs and expectations of stakeholders
- Efforts are not duplicated across agencies and other organisations involved with DWM
- There is clear communication on DWM to the community and other stakeholders.

Although shown as linear, DWM is an iterative process. Approaches can and should be re-visited and refined over time as more accurate and/or detailed information becomes available.

The worksheets in this document help to ensure that DWM activity is informed by a considered approach to decision-making, identifying and evaluating:

- Stakeholder capabilities needs and expectations (Section C)
- Waste types, volumes and issues arising from a disaster (Section D)
- The capacity and availability of waste services and facilities in the region for DWM (Section E)
- The need for interim waste storage facilities (Section F)

Users should refer to guidance provided in the DWM Planning Tool to help them complete the tasks.



Stakeholder engagement ([Section C: Key Partnerships and Stakeholders](#)).

Engage with stakeholders throughout the process, this will involve the CIMS Public Information Management team and include:

- Liaising with Stakeholders (including insurers and recovery authorities) to understand the capacity and capabilities of the affected community to manage waste
- Working with Regulators on emergency exemptions and/or approvals for waste handling, transport, storage processing and/or disposal
- Providing timely information to the public and other stakeholders throughout the response and recovery phases

Figure A1: Key DWM steps from response through to end of recovery

Section B

Disaster Waste Management Skills

DWM Skills

Readiness phase tasks

Task B1: Identify DWM skills required

Purpose

The purpose of this task is to identify existing and required DWM skills, including assigning personnel to roles and identifying the links to the CIMS management and reporting structure.

Instructions

- Identify existing competencies of staff across key DWM roles in Worksheet 1.
- Identify and assign personnel to undertake DWM specific roles in Worksheet 2. Identify decisions that the assigned personnel have been authorised to make, any needs for training and/or professional development to successfully fulfil their roles and how their normal duties will be back-filled following an event.
- Describe the links between DWM activities and the CIMS structure in Worksheet 3 (including lines of authority and reporting) and links with key stakeholders (refer to Section C).

WORKSHEET 1 – STAFF COMPETANCIES

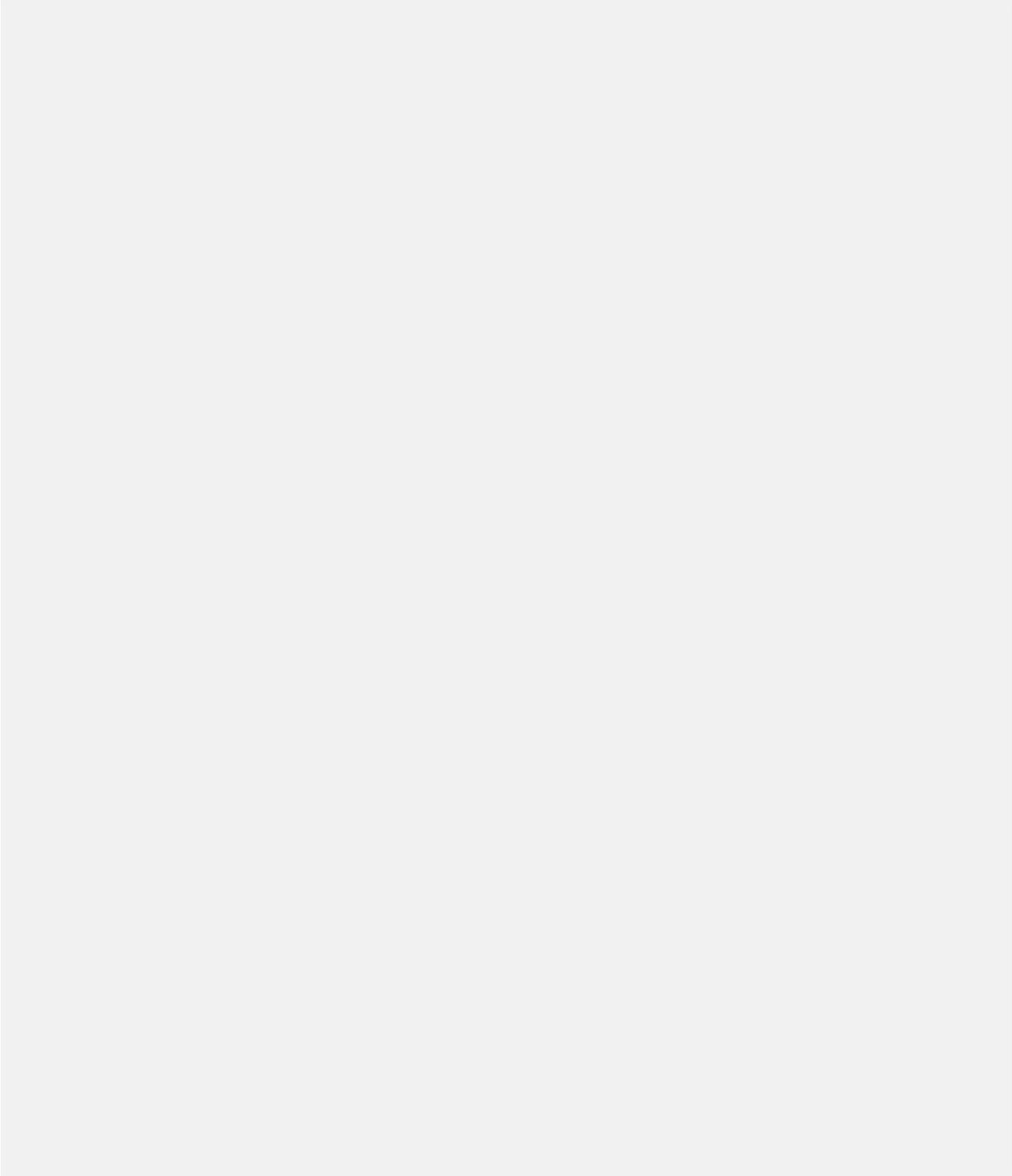
Role	Skills	Staff name, business as usual role and organisation		
Strategic management and coordination	Strategy development and execution	<i>E.g. Julie Smith. Contaminated Land team leader, Environment Canterbury</i>	<i>E.g. John Smith. Contaminated Land team leader, Environment Canterbury</i>	<i>E.g. Joan Smith. Contaminated Land team leader, Environment Canterbury</i>
	Expertise in emergency management, including networks into civil defence management and prior experience responding to emergency events			
	Large scale project management, including procurement of services and management of a diverse mix of team members	X		
	Knowledge and experience in policy and regulation			
Outreach and communications	Partnerships and relationships with key stakeholders	X		
	Expertise in public consultation and communications			
Waste technical advisor	Expertise on disaster waste streams, volumes, key issues/risks (environmental and health and safety) and management options			
	Understanding of the region's capabilities and capacities for waste collection, storage, reprocessing and disposal.			
	Experience in setting up and managing waste storage, processing and disposal and facilities			
	Experience with waste handling, collection and transport			
	Experience in managing waste contracts			
	Understanding of OHS considerations for managing waste			

WORKSHEET 2 - POTENTIAL ROLES

Staff name:				
	<i>E.g. Julie Smith</i>			
Assigned DWM role	<i>E.g. Lead DWM Strategy</i>			
Decisions that the assigned personal has been authorised to undertake	<p><i>E.g. Instruct or request CIMS functions to gather information and undertake tasks to feed into the development of the strategy.</i></p> <p><i>Engage with Logistics and Operations necessary resources to implement strategy.</i></p>			
Training and/or professional development needs	<i>E.g. Develop knowledge and experiences in policy and regulation</i>			
Considerations for backfilling position to carry out normal duties (where applicable)	<i>Not applicable</i>			

WORKSHEET 3 – DWM IN THE CONTEXT OF CIMS STRUCTURE

Describe key DWM capabilities in the context of the CIMS structure, including lines of authority and reporting and any links to key DWM specific stakeholders (a flow or organisation chart may be helpful here).



Task B2: Keep record of readiness actions

Purpose

The purpose of this task is to record actions needed to successfully ensure DWM capabilities are available, as identified when doing Task B1. This may include actions, such as recruiting and/or training personnel to provide assigned capabilities.

Instructions

Record status of completing key actions in Worksheet 3. For each action, identify priority level (high, medium, low) and target date for completion, person responsible and action status. Some key actions have been listed to start this process.

WORKSHEET 4 – DWM SKILLS ACTION LIST

#	Action	Priority level (high, medium, low) and target date	Person Responsible (Name, position, organisation and contact details)	Action status (not started, in progress, complete)	Notes
1	Assign personnel with specific DWM relevant skills, including ensuring they have the relevant authority/ delegation to fulfil functions	High			
2	Identify where capabilities sit within the CIMS structure	High			
3	Provide training to assigned personnel as needed	Medium			
4					
5					
6					

Response and recovery phase tasks

Task B3: Confirm DWM resources required

Purpose

To confirm the DWM capabilities required. This includes identifying waste management specialists, the role of various CIMS functions, reporting structure and considerations for backfilling business as usual duties where applicable.

Instructions

Confirm the availability of personnel to undertake roles in Worksheet 4. Identify how normal duties undertaken by assigned personnel will be back-filled. An example is provided in grey.

Guidance

Refer to information and guidance in Section B of NZ DWM Planning Tool, including:

- DWM capabilities and links to CIMS Functions
- People with key DWM capabilities, competencies
- Where various DWM activities are located in the CIMS structure including lines of authority and reporting, backfilling positions, equipment needs and psycho-social considerations
- Previous work during the readiness phase (if completed) on setting up a team for your region (see tasks B1 and B2 in the Planning Tool)

WORKSHEET 4 – CONFIRMED DWM SKILLS AND PEOPLE

Personnel	Describe role in Strategic management and coordination	Describe role in Outreach and communications	Describe role as a Technical advisor	Availability	Reporting to	Backfilling business as usual duties
<i>Anne Martin</i>	-	<i>Lead communications officer for DWM</i>	-	<i>Full availability (40 hr/ week)</i>	<i>Judy Smith, DWM Team Leader</i>	<i>Regular activities put on hold.</i>

Task B4: Keep record of actions

Purpose

- Record actions needed to successfully mobilise the required DWM capabilities, as identified from completing Task B3. For example, engaging external contractors to fill in any gaps in expertise or capabilities.
- Record completion of key DWM tasks.

Instructions

Record status of key actions in Worksheet 5. List each action on a separate line. For each action, identify target date for completion, responsible person and action status. Key actions have been listed as a starting point.

WORKSHEET 5 – DWM SKILLS ACTION LIST

#	Action	Target date	Responsible person (Name, position, organisation)	Action status (not started, in progress, complete)	Notes
1	Undertake an initial disaster waste management assessment to estimate waste types, volumes and sources (e.g. waste ownership)				
3	Identify and manage waste issues that threaten human health, the environment and/or recovery efforts				
4	Liaise with stakeholders (including insurers and recovery authorities) to understand the capacity and capabilities of the affected community to manage waste				

#	Action	Target date	Responsible person (Name, position, organisation)	Action status (not started, in progress, complete)	Notes
5	Evaluate options for managing disaster waste, including identifying facilities for waste disposal/reprocessing and whether interim waste storage facilities are needed				
6	Liaise with regulators on emergency exemptions and/or approvals for waste handling, transport, storage processing and/or disposal				
7	Undertake more detailed waste assessments in the recovery phase to inform the development of a longer-term programme to manage disaster waste				
10	Establish a disaster waste management policy, in the context of overall CDEM strategy				
11	Develop a DWM Recovery Programme				
12	Oversee implementation of the DWM programme, including engaging contractors if/as appropriate and monitoring				

#	Action	Target date	Responsible person (Name, position, organisation)	Action status (not started, in progress, complete)	Notes
13	Provide timely information to the public and other stakeholders throughout the response and recovery phases, in coordination with civil defence or relevant coordinating body				

Section C

Key partnerships and stakeholders

Key partnerships and stakeholders

Readiness phase tasks

Task C1: Create database of key partnerships and stakeholders

Purpose

The purpose of this task is to:

- Contribute to existing CDEM database of key partnerships and stakeholders
- Identify gaps in information (such as missing contact details)
- Consider the purpose of the relationship and identify what information and resources may be provided by/to the stakeholder to facilitate effective disaster waste management
- Consider how to best engage with the stakeholders (such as what method/forum)

Instructions

Use Worksheet 6 to list key stakeholders. List each stakeholder on a separate line. For each stakeholder, populate information into columns. An example is provided in the table in grey. This information should be added to the existing CDEM Stakeholder database rather than maintained separately - either new stakeholders or additional information for existing stakeholders.

WORKSHEET 6 – DWM SPECIFIC STAKEHOLDERS

Stakeholder (organisation/ group)	Stakeholder group (refer to list in Table C-2)	Purpose of engagement (refer to list in Table C-2)	Information and resource requirements	Relationship status	Key contact (job title) Organisation Contact details	Considerations on how to best engage with stakeholder
<i>Insurance Council of New Zealand (ICNZ)</i>	<i>Insurance company</i>	<i>Understand which properties are insured and the level of insurance within the disaster affected area. Enter into MOUs during business as usual for sharing of information, and cost-sharing arrangements</i>	<i>ICNZ to share information on levels of insurance in affected areas DWM team to provide information to ICNZ on options for managing waste i</i>	<i>No existing relationship with ICNZ. Will need to build this to achieve objectives of engagement.</i>	<i>Managing Director (John Smith at Jun 18 +00 0000 0000 info@icnz.org.nz 100 John Street, Auckland</i>	<i>ICNZ is a national stakeholder, and therefore engagement should be coordinated with other stakeholders at national level</i>

Task C2: Keep record of readiness actions

Purpose

The purpose of this task is to record actions needed to address information gaps and/or stakeholder engagement needs, as identified from completing Task C1. This may include actions, such as:

- Identifying missing contacts for stakeholder groups
- Holding meetings, workshops and events with key contacts to develop relationships
- Developing MOUs with a range of stakeholders (e.g. insurance companies to increase timeliness of releasing information relating to levels of insurance across community)

The worksheet may also be used to keep a record of discussions with stakeholders.

Instructions

Record status of completing key actions in Worksheet 7. List each action on a separate line. For each action, identify priority level (high, medium, low) and target date for completion, responsible person and action status. An example is provided in the table in grey.

WORKSHEET 7 – DWM STAKEHOLDER ACTIONS

#	Action	Priority level (high, medium, low) and target date	Responsible person (Name, organisation and contact details)	Action status (not started, in progress, complete)	Notes on discussions held with stakeholder
0	Identify what information may be provided by ICNZ	High priority Complete by June 2018	Harry Smith, Director of Emergency Management, Environment of Canterbury	Completed on 1 August 2018	
1					
2					
3					
4					
5					

Response and recovery phase tasks

Task C3: Checklist and record of engaging with stakeholders

Purpose

Check whether stakeholders have been engaged and keep a record of discussions using CDEM communications management structure. This consultation is needed to collect data and information and ensure that disaster waste management approaches consider the needs and expectations of the community and other stakeholders.

Instructions

Use the Worksheet 8 below to check if key stakeholder groups have been consulted with. Keep record of discussions using established communications management systems.

Guidance

Refer to [Section C](#) of NZ DWM Planning Tool for information and guidance on:

- The importance of building key partnerships and engaging with stakeholders
- Key stakeholder groups, their typical involvement in disaster waste management and key objectives of engaging with them
- Established Database of key partnerships and stakeholders (if prepared during Readiness phase). Refer to tasks C1 and C2 in the Planning Tool.

WORKSHEET 8 – STAKEHOLDER ENGAGEMENT RECORDS

Stakeholder	Contacted (yes/no)	Record details of discussions/engagement
Emergency services (first responders)		
Iwi		
Property owners and tenants		
Insurance companies		
Territorial authorities		
Waste management contractors		
Regulators		
Volunteer groups		
Civil defence and emergency management		

Task C4: Keep record of actions

Purpose

To keep a record of stakeholder engagement actions, as identified from completing Task C3. This may include actions such as:

- Requesting information from insurance companies on the level of insurance across the affected community.
- Contacting waste companies to identify their capacity, availability and willingness to manage waste from the event This includes if any facilities/equipment have been damaged by the event.
- Preparing and releasing communications to the community on how to manage their waste.

Instructions

Record the status of key actions in Worksheet 9. List each action on a separate line. For each action, identify priority level (high, medium low) and target date for completion, responsible person and action status. An example is provided below in grey.

WORKSHEET 9 – STAEKHOOLDERS ACTION LIST

#	Action	Target date	Responsible person (Name, organisation and contact details)	Action status (not started, in progress, complete)	Notes
0	<i>Prepare and release communications to the community on how to manage their waste</i>	<i>5 December 2020</i>	<i>Mary Smith, Director of Emergency Management, Environment of Canterbury</i>	<i>Completed</i>	
1					
2					
3					
4					
5					
6					

Section D

Disaster waste composition

DWM waste composition

Readiness phase tasks

Task D1: Identify potential strategies and options for managing disaster waste issues

Purpose

The purpose of this task is to identify local strategies and options for managing likely disaster waste issues in advance of an event.

Instructions

Complete Worksheet 10. For each potential waste issue, identify management strategies and/or options considering available services and resources in the region (refer Section E). An example is provided in grey.

WORKSHEET 10

Potential waste issue	Management strategies and/or options	Follow up action(s), responsibility
<i>Interruption of normal waste collection services across occupied dwellings, with waste posing a threat to human health and the environment if not collected</i>	<p><i>Option A:</i> Re-establish regular collections of household waste to occupied dwellings where possible.</p> <p><i>Option B:</i> Engage private contractors to set up skips across accessible public spaces (public parks) for drop-off of household waste by the public, until regular collections can be resumed.</p>	<i>See Action 0 in Worksheet 11, Christchurch City Council in consultation with private waste collectors</i>

Debris blocking road access for first responders, or search and rescue operations

Debris obstructing the restoration/operation of critical infrastructure service

Escape of hazardous materials posing risk to human health and/or the environment

Potential waste issue	Management strategies and/or options	Follow up action(s), responsibility
<p>Prolonged power outages and warehouse/retail/hospitality property damage, leading to spoiled perishable food posing a threat to human health if not removed</p>		
<p>Presence of friable asbestos posing a threat to human health if not safely handled</p>		
<p>Animal carcasses posing a threat to the environment, human health and wellbeing if not appropriately managed</p>		
<p>Damaged and/or inaccessible waste and recycling facilities, resulting in reduced options for waste storage, reprocessing and/or disposal</p>		
<p>Volunteers and private-sector opportunists not taking adequate safety precautions when handling waste</p>		
<p>Burning of treated timber posts</p>		
<p>Large volumes of unwanted donated needing management and disposal</p>		
<p>Unable to determine owner of waste</p>		

Potential waste issue	Management strategies and/or options	Follow up action(s), responsibility
<p>Inadequate capacity across facilities to manage types and volumes of disaster waste</p>		
<p>Unauthorised and/or uncontrolled management of waste (e.g. private operators setting up waste management facilities)</p>		
<p>Slow removal of waste, hindering return of economic activity and community services</p>		

Task D2: Keep record of readiness actions

Purpose

The purpose of this task is to record actions needed to increase the readiness of the region in formulating/implementing strategies and options to manage disaster waste issues. This may include consulting with stakeholders to understand what options are available for managing waste issues.

Instructions

Record status of completing key actions in Worksheet 11. List each action on a separate line. For each action, list the target date for completion, responsible person and action status. An example is provided in the table in grey.

WORKSHEET 11 – DWM COMPOSITION ACTION LIST

#	Action	Target date	Responsible person (Name, organisation and contact details)	Action status (not started, in progress, complete)	Notes
0	Contact private contractors to explore and discuss other options for managing MSW volumes where normal systems have been disrupted	June 2019	Harry Smith, Director of Emergency Management, Environment Canterbury	In progress	.
1					
2					
3					
4					
5					
6					
7					

Response and recovery phase tasks

Task D3: Undertake preliminary waste assessment to estimate waste volumes and identify waste issues and approaches for managing them.

Purpose

To undertake a preliminary assessment to identify potential waste types and volumes generated by the event. Then identify and consider how waste issues will be managed.

Instructions

1. Enter the expected timeline and volume of waste [Worksheet 12](#).
2. Identify waste issues, risk levels and document the management approach using [Worksheet 13](#).

Guidance

Refer to [Section D](#) of NZ DWM Planning Tool for guidance and information on:

- Common waste streams and relative volumes for select disaster events: floods, earthquake and volcanic eruption
- Methodology for estimating waste volumes (use real world data where available)
- Timelines for potential disaster waste risks and considerations for their management
- Potential strategies and options to manage likely disasters waste streams and issues in the region (if prepared during readiness phase). Refer to tasks D1 and D2 in the Planning Tool.

WORKSHEET 12 – DISASTER WASTE PRELIMINARY ESTIMATES

Typical sources	Waste stream	Expected timeline	Expected volume (T, m or relative volume H/M/L)
Damaged buildings and other structures	Asbestos containing material		
	Construction and demolition inert waste (bricks, concrete, rubble, etc.)		
	Mixed waste		
	Metal		
	Bulky waste (including furniture, carpets, etc.)		
	E-waste and whitegoods		
	Household hazardous waste		
Damaged and/or displaced vehicles	Vehicle waste		
Fallen trees and/or other damaged vegetation	Green (vegetative) waste		
Displaced soil and sediment	Soil and sediment waste		
Ash from volcanic eruption	Ash and volcanic debris		
Spoiled perishable food from supermarkets, restaurants and households	Food waste		
Agricultural properties	Copper chrome arsenate posts		
	Agriculture (including greenhouse) waste		
	Animal carcass waste		

Typical sources	Waste stream	Expected timeline	Expected volume (T, m or relative volume H/M/L)
	Fencing wire		
	Chemical (hazardous) waste		
	Empty chemical waste drums		
Flood prone properties	Sandbag waste		
Non-profit organisations and welfare centres	Unwanted donated goods, food and drink packaging		

WORKSHEET 13 – EXPECTED TIMELINE FOR WASTE GENERATION

Expected timeline	Waste issue	Is waste issue present?			Risk level (High, medium, low)	Management approach (consider waste services and infrastructure from completing tasks in Section E)
		Yes	No	NA		
Immediate	Debris blocking road access for first responders, or search and rescue operations					
Immediate	Debris obstructing the restoration/operation of critical infrastructure service					
Immediate	Escape of hazardous materials posing risk to human health and/or the environment					
Within 1-2 weeks	Prolonged power outages and warehouse/retail/hospitality property damage, leading to spoiled perishable food posing a threat to human health if not removed					
Within 1-2 weeks	Presence of friable asbestos posing a threat to human health if not safely handled					
Within 1-2 weeks	Animal carcasses posing a threat to the environment, human health and wellbeing if not appropriately managed					
Within 1-2 weeks	Interruption of normal waste collection services across occupied dwellings, with waste posing a threat to human health and the environment if not collected					
Within 1-2 weeks	Damaged and/or inaccessible waste and recycling facilities, resulting in reduced options for waste storage, reprocessing and/or disposal					
Within 1-2 weeks	Volunteers and private-sector opportunists not taking adequate safety precautions when handling waste.					

Within 1-2 weeks	Large volumes of unwanted donated needing management and disposal					
Weeks and months following event	Burning of treated timber posts by landowners or other					
Weeks and months following event	Unable to determine or contact owner of waste					
Weeks and months following event	Inadequate capacity across facilities to manage types and volumes of disaster waste					
Weeks and months following event	Unauthorised and/or uncontrolled management of waste (e.g. private operators setting up waste management facilities)					
Weeks and months following event	Slow removal of waste, hindering return of economic activity and community services					
Other:						
Other:						
Other:						

Task D4: Keep record of actions

Purpose

To document actions required to manage waste issues, as identified from completing Task D3. This may include actions such as issuing information to farmers on how to safely manage treated timber posts.

Instructions

Record the status of key actions in Worksheet 14. List each action on a separate line. For each action, list the target date for completion, responsible person and action status. An example is provided below in grey.

Worksheet 14 – DISASTER WASTE COMPOSITION ACTION LIST

#	Action	Target date	Responsible person <small>(Name, organisation and contact details)</small>	Action status <small>(not started, in progress, complete)</small>	Notes
0	<i>Issue information to farmers on how to safely manage treated timber posts</i>	<i>4 May 2023</i>	<i>Abigail Waters, Leader Emergency Communications</i>	<i>Not started</i>	
1					
2					
3					
4					
5					
6					
7					

Section E:

Waste management services and facilities

Task E2: Create database of waste disposal/reprocessing facilities in the region

Purpose

The purpose of this task is to:

- Create a database of waste disposal/reprocessing facilities in or accessible to the region
- Identify gaps in information (such as missing information on facility capacities)

Instructions

Complete Worksheet 16. List each facility on a separate line. For each facility, provide information on the facility type, location, contact, waste streams licensed to receive, normal operating capacity and maximum operating capacity.

WORKSHEET 16 – WASTE DISPOSAL AND PROCESSING FACILITIES

Facility ID	Facility name (operator)	Facility type(incl landfill class)	Location (Street address, suburb and GPS coordinates)	Contact (Name, position, phone number and email address)	Opening times (days, hours)	Approved transport route to/ from site	Waste streams licenced to receive	Consent number and expiry date	Normal operating capacity (tonnes per day, and per annum)	Maximum operating capacity (tonnes per day, and per annum)
001	Christchurch Landfill (City of Christchurch)	Landfill, Class I	10 Smart Street, Christchurch -0.0000, 0.0000	John Smith, Operations Manager. 00 0000 0000 john@waste.com	7 days per week: 7:00AM - 5:00PM	Access via John Street	C&D inert Putrescible waste	#0001 Expiry: 30/06/2020	100 tonnes per day (36,500 tonnes per annum)	300 tonnes per day (110,000 tonnes per annum)

Task E3: Identify gaps in local waste service and facility capabilities and capacities

Purpose

The purpose of this task is to consider whether there are any gaps in the capacities or capabilities of local services and facilities to manage expected types and volumes of waste for a select disaster scenario.

Instructions

This activity can be undertaken following completion of tasks D3, E1 and E2 above. Use Worksheet 17 to list each expected waste type and volumes on a separate line for a selected disaster scenario based on completion of Task D3. Compare this to the capacities and capabilities of identified facilities that receive the waste stream (based on findings from Task E2). Note down any gaps that exist in capabilities and/or capacities. An example is provided in grey. This task can be repeated for additional disaster scenarios.

WORKSHEET 17 – WASTE SERVICES AND FACILITIES – GAP ANALYSIS

Anticipated waste stream	Expected volumes	Service providers that can collect and transport this waste stream	Facilities that can receive this stream, and their capacities	Gaps/issues in capabilities and/or capacities
<i>C&D (bricks, rubble, concrete)</i>	<i>300,000 tonnes</i>	<i>Waste company Ltd</i>	<i>Inert landfill - 100,000 tpa C&D recycler - 50,000 tpa</i>	<i>Total capacity in region is 150,000 tpa. It would take an estimated 2 years to process anticipated volumes of C&D waste. Interim storage may need to be considered. Alternatively, options to increase speed of processing may be considered, such as expanded operating hours following an emergency.</i>

Task E4: Keep record of readiness actions

Purpose

The purpose of this task is to record actions needed to address information gaps and/or waste disposal/reprocessing capacity needs that were identified by undertaking tasks E1, E2 and E3. This may include actions, such as:

- Liaising with regulators to check consent conditions for facilities
- Consulting with waste companies to collect missing data on facility capacities
- Developing strategies to manage volumes where there are identified gaps in capabilities and/or capacities

Instructions

Record status of completing key actions in Worksheet 18. List each action on a separate line. For each action, list the target date for completion, responsible person and action status. An example is provided in the table in grey.

WORKSHEET 18 – WASTE SERVICES AND FACILITIES ACTION LIST

#	Action	Target date	Responsible person (Name, organisation and contact details)	Action status (not started, in progress, complete)	Notes
0	Consult with waste companies to collect missing data on facility capacities	June 2019	Harry Smith, Director of Emergency Management, Environment Canterbury	In process	
1					
2					
3					
4					

Response and Recovery phase tasks

Task E5: Evaluate disposal/recycling options

Purpose

To evaluate each disposal/recycling option for disaster waste volumes and streams (as identified in Section D).

Instructions

1. Complete [Worksheet 19](#) for each facility (simply copy and paste the table for each facility).
Record:
 - Details of the facility status (in full operation, damaged and/or limited access to utilities, or destroyed)
 - Distance from disaster affected area, road access to facility
 - Estimated time to process disaster waste volumes at normal operating capacity
 - Potential need for extended operating hours
 - Estimated cost to process waste (\$/tonne) and other considerations.

An example is provided in grey.

Guidance

Refer to [Section E](#) of NZ DWM Planning Tool for guidance on:

- Equipment needed and potential providers to collect handle, transport, store, recycle and dispose of disaster waste
- What to consider when selecting a waste management facility
- Database of waste collection and transporters in the region (if prepared during Readiness phase). Refer to task E1 in Planning Tool. Alternatively refer to Waste Assessments and discuss with waste technical experts
- Database of waste reprocessing/disposal facilities in the region (if prepared during Readiness phase). Refer to task E2 in Planning Tool. Alternatively refer to Waste Assessments and discuss with waste technical experts
- Gaps in local waste service and facility capabilities and capacities (if identified during Readiness phase). Refer to task E3 in Planning Tool.

WORKSHEET 19 – WASTE MANAGEMENT SERVICES AND FACILITIES

Facility ID	001
Facility name (operator)	Burwood Landfill (City of Christchurch)
Operational status	No damage to facility but has limited access to power. Full utility access expected to be restored within 7 days.
Materials accepted	C&D inert waste Putrescible waste
Approximate disaster from disaster affected area	20 km
Access to facility	Access between disaster affected area and facility via Smith Road
Estimated time taken to process waste volumes at normal operating capacity	Approx. 4 years (150,000 tonnes of inert waste be processed at a capacity of 36,500 tonnes per year)
Potential need for extended operating hours	Yes, if extended to a two-shift per day operation, then could reduce time to process waste by half.
Expected outcomes for the community and environment	Disposing of waste locally would provide local employment. Waste would be landfilled rather than recycled. Waste would need to be stockpiled prior to disposal. An interim storage facility would need to be established for this.

Task E6: Keep record of actions

Purpose

To record actions required to complete the assessment of recycling/disposal options for disaster waste, as identified in Task E5. This may include actions, such as:

- Contacting waste facility operators to identify operation status
- Contacting road authorities to confirm road networks are open to enable facility access

Instructions

Use Worksheet 20 to list actions. List each action on a separate line. For each action, list the target date for completion, responsible person and action status. An example is provided below in grey.

WORKSHEET 20 – DWM SERVICES AND FACILITIES ACTION LIST

#	Action	Target date	Responsible person (Name, organisation and contact details)	Action status (not started, in progress, complete)	Notes
0	Consult with waste companies to collect missing data on facility capacities	June 2019	Harry Smith, Director of Emergency Management, Environment of Canterbury	In process	
1					
2					
3					
4					
5					
6					
7					

Section F:

Interim waste storage facilities

Interim waste storage facilities

Readiness phase tasks

Task F1: Identify potential locations for interim waste storage facilities

Purpose

The purpose of this task is to create a database of potential sites for interim waste storage facilities.

Instructions

List each facility on a separate line in Worksheet 21. For each facility, provide information on the facility type, location, contact, waste streams licensed to receive, normal operating capacity and maximum operating capacity.

WORKSHEET 21 - POTENTIAL INTERIM STORAGE SITES

Site/ facility name (owner)	Facility type	Zone	Location (Street address, suburb and GPS coordinates)	Contact (Name, position, phone number and email address)	Waste storage capacity	Site facilities and design (e.g. access to utilities, equipment, weighbridge, site security amenities)	Other considerations (cultural/ heritage) *consult with Local Iwi
<i>Christchurch Landfill (City of Christchurch)</i>	<i>Closed landfill</i>	<i>Industrial</i>	<i>10 Smart Street, Christchurch -1.11100, 3.24555</i>	<i>John Smith, Operations Manager. 00 0000 0000 john@waste.com</i>	<i>20 hectares of land, potential to store 8,000 tonnes of waste</i>	<i>Fenced site, no weighbridge</i>	<i>No known cultural/heritage significance</i>

Task F2: Keep record of readiness actions

Purpose

The purpose of this task is to record actions during the readiness phase relating to identifying potential interim waste storage facility, as identified in Task F1. This may include actions, such as consulting with community to identify potential interim waste storage facilities.

Instructions

Record status of completing key actions in Worksheet 22. List each action on a separate line. For each action, list the target date for completion, responsible person and action status. An example is provided in the table in grey.

WORKSHEET 22 – INTERIM STORAGE SITES ACTIONS LIST

#	Action	Target date	Responsible person (Name, organisation and contact details)	Action status (not started, in progress, complete)	Notes
0	<i>Consult with community on potential locations for interim waste storage facilities</i>	<i>June 2019</i>	<i>Harry Smith, Director of Emergency Management, Environment Canterbury</i>	<i>In process</i>	<i>-</i>
1					
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Response and recovery phase tasks

Task F3: Consider the need for an interim waste storage facility and evaluate potential sites

Purpose

To consider if interim waste storage facilities are needed. Where necessary, evaluate potential sites.

Instructions

1. Answer each question in Worksheet 23. If you answered yes to one or more questions, then an interim waste storage facility may be needed.
2. If an interim storage facility is needed, evaluate potential sites using Worksheet 24. Any questions where you answer 'no' may indicate that the site is not suitable (or not ideal). Repeat this task for each site evaluated. The use of GIS may be helpful in completing this task, considering transport linkages and readily available information on key considerations such as land ownership, and identified ecological areas.

Guidance

Refer to [Section E](#) of NZ DWM Planning Tool for guidance on:

- Conditions when an interim waste storage facility may be needed
- Considerations for site selection, operation and closure of an interim storage facility
- Potential locations for interim waste storage facilities in the region (if identified during the Readiness phase). Refer to tasks F1 and F2 in the Planning Tool.

WORKSHEET 23 – EVALUATE THE NEED FOR DWM INTERIM STORAGE SITES

Question	Yes	No	Notes
Is there a need to remove large volumes of debris from the site of an orderly manner gain access and/or to effect the rescue of trapped people			
Is access to waste recycling and disposal facilities limited due to damaged roads and/or other transport infrastructure?			
Are local recycling and disposal facilities out of operation due to physical damage by the disaster?			
Is the volume of waste more than the capacity of local facilities to process the waste within a reasonable timeframe, or are existing facilities not suitable for managing the particular disaster waste?			
Is an interim waste storage facility needed to centrally control the flow of disaster debris and other waste, prior to recycling or final disposal?			
Is an interim waste storage needed to segregate waste away from impacted properties?			
Is more time needed to determine the appropriate reuse, recycling and/or disposal method?			

WORKSHEET 24 - EVALUATE POTENTIAL DWM INTERIM STORAGE SITES

Question	Yes	No	Notes
Is the site zoned as industrial?			
Is the site located away from sensitive land uses such as residential and mixed-use zones and areas of significant natural and cultural heritage?			
Is the land owned by the government?			
Is the site a suitable distance from groundwater, potable water wells, and rivers, lakes and streams?			
Is the site located away from floodplains, wetlands and tsunami flood levels?			
Are you confident that the site does not have heritage or cultural significance?			
Are there suitable road networks between the site and the disaster-affected area?			
Are there suitable road networks between the site and facilities for final disposal/ reprocessing of materials?			
Is there enough space for the storage of expected waste volumes, considering maximum stockpile heights?			
Does the site have access to water, electricity and toilets?			
Is the site secured with fencing?			
Is the site paved?			
Where applicable, does the site have an area for undercover storage of potentially hazardous material?			
Does site need bunding for run off from storage area?			

Task F4: Keep record of response/recovery actions

Purpose

To record actions required to establish, operate and close an interim waste storage facility. This could include installing site security and fencing.

Instructions

Record the status of key actions in Worksheet 25. List each action on a separate line. For each action, list the target date for completion, responsible person and action status. An example is provided below in grey.

WORKSHEET 25 – INTERIM STORAGE SITES ACTION LIST

#	Action	Target date	Responsible person (Name, organisation and contact details)	Action status (not started, in progress, complete)	Notes
0	<i>Engage contractor to install site security and fencing</i>	<i>3 May 2022</i>	<i>Bob Smith, DWM coordinator</i>	<i>Complete</i>	
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7					

