



**LIVE&LEARN**  
Environmental Education

# **CBSE TRAINING**

**HAZARD AND ENVIRONMENTAL CONSIDERATIONS  
IN SELECTION OF TOILET DESIGN.**





**LIVE&LEARN**  
Environmental Education

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Several sources were consulted for the writing of the different parts of this guide. They include the following:

A River's Journey Lessons Plan  
<http://earthwiseharmony.com/KIDS/EH-A-Rivers-Journey-Lesson-Plan.html>

Clean Communities – A Practical Guide to building and maintaining toilets in the Pacific (English)  
<http://www.livelearn.org/resources/clean-communities-practical-guide-building-and-maintaining-toilets-pacific>

Ol klin komiuniti - Wan praktikal gaedlaen blong bildimap mo lukaotgud long ol toelet long Pasifik - Bislama  
<http://www.livelearn.org/resources/ol-klin-komiuniti-wan-praktikal-gaedlaen-blom-bildimap-mo-lukaotgud-long-ol-toelet-long-p>

Live & Learn would also like to acknowledge the two community based sanitation enterprises (CBSEs) at Blacksand and Erakor Half Road for their input in the development of this manual

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## Disclaimer

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## CBSE TRAINING

### HAZARD AND ENVIRONMENTAL CONSIDERATIONS IN SELECTION OF TOILET DESIGN.

This training is designed to supports information provided in the *Toilet Operation and Maintenance and Solid Waste Management* training. It is important that these trainings are held around the same time.

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## 1 Pre-session

**Facilitator Notes:**

- Have a clear understanding of this training module, its contents, Training Plan and the resources required (see training plan **Annex A & B**).
- Book the venue and organise refreshments and transport (if required).
- Notify the participants well before the training and contact them again two days before (and possibly the day before also).
- If you are to use technical equipment test it at the venue two days before the training.
- Arrive at the venue 15 minutes before the participants are due to make sure all is ok and to welcome the participants.
- Keep to times, with all CBSE training, they are learning about a business and effective and efficient businesses keep time. You set the example for this by keeping to training planned timetable.

## 2 Registration

**Facilitator Notes:**

- Register participant names and their position in CBSE.
- Make sure you start on time.

(15 minutes)

## 3 Introduction

**Facilitator Notes:**

- Welcome participants and discuss the points below with them.

(10 minutes)

- Mention where the building exits and toilets are, and explain the make-up of the training (breaks and refreshment/lunch arrangements)
- Everybody's opinion is valuable, let them give it and consider what they say
- Participants will gain maximum benefit from the training through their involvement and interaction. It is important that they are involved in activities and ask questions
- The focus of the training is to learn and to help each other
- When a person is confused or not sure, please let us know and we will work through the issue. Other participants who are clear can help those who are not
- Please do not walk out of the session with a question in your head!

## 4 Participant expectations and workshop objectives

(10 minutes)

### *Participant expectations*

#### **Facilitator Notes:**

- Ask participants why they are at the training and what they are expecting from it.
- Write these on a flipchart and at the end of the training refer back to them to see if these expectations have been met.

### *Training objectives*

#### **Facilitator Notes:**

- Explain that there are a range of issues that a person has to consider when deciding to improve their toilets including: understanding the reason to improve the toilets; cost; management of solid waste; and the site's potential natural hazards and environment. This training is **only** concentrating on issues related to natural hazards and the environment.
- Hang up the pre-written flip chart sheet listing the objectives (**Appendix B – Slide 2**) and, when required, refer back to it during the training (this can be used to keep people focused when they go off the topic).
- Using this list, explain to participants that the workshop objectives are to provide them with an understanding of:
  - Toilet design options
  - Environment considerations for toilet design and site location
  - Hazard considerations for toilet design and site location
  - How to select a toilet design for different situations.

## 5 Toilet design options

#### **Facilitator Notes:**

- Explain that if we are talking about the effects of environment and hazards on toilet design selection and toilet site location it is important that we are aware of the different toilet design.
- Resources required are copies of pages 15, 25, 59 & 69 (**Annex D – Slides 3-6**) from the Live&Learn Environmental Education publication "*Cleancommunities – A practical guide to building and maintaining toilets in the Pacific*".
- Hand out the toilet designs and discuss with the group the points below relative to each design.

(15 minutes)

- **Ventilated Improved Pit (VIP) Toilets**
  - \* Needs only cleaning water to operate
  - \* Safety improved (especially for children) by covering the open pit
  - \* Compared to open pit, better control of flies and reduces smell inside the toilet
  
- **Compost Toilets**
  - \* Needs only cleaning water to operate
  - \* No smell in the toilet room when properly maintained
  - \* Does not pollute the environment or ground water
  - \* Can be located anywhere
  - \* Decomposed waste can be used to fertilise the soil
  
- **Pour Flush Toilets**
  - \* Controls flies and mosquitoes
  - \* Requires a reliable small water supply all year
  - \* No smell in toilet
  - \* Can pollute the ground water if water-tables are less than 2 metres from the surface
  
- **Flush with Septic Tank**
  - \* Requires a good source of water all year
  - \* Space is required to fit the toilet, septic tank and drainage trench
  - \* No smell in toilet
  - \* Controls flies and mosquitoes
  - \* Can pollute the ground water if water-tables are less than 2 metres from the surface

## 6 Natural hazards and the environment

### 6.1 Natural hazard

(20 minutes)

#### Facilitator Notes:

- Explain that a definition for a natural hazard is “*a natural occurrence that might have a negative effect on people or the environment*”.
- Use this definition and the following questions in a group discussion on the link between hazards and toilet design and location. Use the prompts as a check list against points the group identifies.

**Question 1** Considering this definition, what natural hazards that affect their community. (as they are being listed, write these on a flipchart)

**Prompt** - these could include:

volcanic eruption	earthquake	landslide	flood
cyclone	storm surge	tsunami	

**Question 2** Which of these do you think would influence toilet design and toilet location? Why?

**Prompt for discussion– (Slide 7)** points to consider would include:

- **flood** -
  - \* It is possible to build the toilet on a rise or above ground level to counter high water levels.
  - \* It is also possible in some situations to improve drainage to reduce the effects of flooding
- **storm surge**
  - \* It is possible to build the toilet on a rise or above ground level to counter high water levels.
  - \* It is also possible in some situations to improve drainage to reduce the effects of surges
- **cyclones**
  - \* If walls fall over, a covered pit prevents people walking through rubble falling into an open pit.

**Question 3** Why do you think the others would not be a major consideration?

**Prompt** – The answer to this could be that toilet design would make little difference during the other natural hazards.

## 6.2 Environment

(30 minutes)

### Facilitator Notes:

- If more than six people in the group, divide the group into two for this activity.
- Provide markers and paper
- Explain that a definition for a natural hazard is “*the circumstances, object, or conditions surrounding us*”.
- Use the venue you are in as an example and explain that the environment includes: the room size; the furniture; the number of people in the room; and availability of water and toilets.
- Use this definition and the following question to promote discussion on the link between environment and toilet design and location selection. Use the prompts as a checklist against points the group identify.

**Question**     **What** environmental issues do you think could be important when making decisions about which toilet design to choose and where to position the toilet on the site?

**Prompt for discussion**– questions that need to be considered would include:

- **Area size**
  - \* What type of toilet would fit into the area?
  - \* Would there be room for a toilet and a seepage pit?
- **Ground water level**
  - \* Is the ground water table less than 2 metres below the surface?
  - \* Could there be ground water contamination through toilet waste seepage?
  - \* Will a pit have to be lined?
  - \* Are dry toilets a better option?
- **Ground and building drainage**
  - \* How would you remove excess water that would otherwise affect toilet pit soakage trenches?
  - \* What can be done to minimise flooding from building runoff in heavy rains?
- **Landscape**
  - \* What areas could be flooded or effected by storm surges?
  - \* Where are the high points?
- **Soil type**
  - \* Does the soil allow water to soak away quickly?



- \* Is the soil stable when digging a hole or do the walls fall in?
- **Water accessibility and availability**
  - \* Is the water source piped or collected?
  - \* Is there a reliable water supply all year?
- **Location of water sources**
  - \* How close are water sources?

## 7 Appropriate toilet design and Disaster Risk Reduction

(10 minutes)

### **Facilitator Notes:**

- Ask participants how they think that considering hazard and environment issues when selecting a toilet design and toilet location is linked to Disaster Risk Reduction (**Slide 8**).

Answering this question should cover the following points:

- By reducing the amount of waste spilling out of toilets the risk of disease is reduced greatly
- Reduced disease results in reduced discomfort for people effected by the emergency
- This enables people in the emergency to be better placed respond to emergencies
- Less resources needed to cover health issues during an emergency frees up resources to deal with other issues in the response and recovery stages.

## 8 Toilet location and design selection activities

(20 minutes)

### **Facilitator Notes:**

- Point out that issues requiring consideration when looking at improving toilets include hygiene/health, cost and appropriate toilet Design. This activity is looking only at the toilet design issue (**Slide 9**).
- Pair participants, provide them with the Toilet Selection Checklist (**Annex D – Slide 10**).
- Discuss with the group how to use this Checklist using **Scenario 1**.
- Give each pair a toilet selection scenario from **Annex E** and ask them to work out which toilet(s) would be best suited to the scenario locations.
- Each pair reports back to the group their selection and why they made their selection.
- Repeat so that each group looks at three scenarios.
- If possible, take the group to an actual location and get them as a group (divide into 2 groups if more than 6 people) to decide what toilet(s) designs would be best in that location.

Answers for the best fitting designs for each scenario are:

**Scenario 1:** Compost

**Scenario 2:** Compost **or** Pour Flush

**Scenario 3:** Flush with Septic Tank **or** Pour Flush **or** VIP **or** Compost

**Scenario 4:** Compost

**Scenario 5:** VIP

**Scenario 6:** Raised VIP

## 9 Summary

(10 minutes)

### **Facilitator Notes:**

- Hang up the summary flip chart (**Slide 11**) and, in a group discussion, discuss the points on it to review and summarise the main points of the training

Summary points:

- Natural hazards and environmental issues need to be considered when choosing a toilet design and deciding where the toilet will be located
- Considering these issues is not complicated
- Other key issues are linked to improving sanitation facilities are family/community health and cost
- Improved sanitation facilities have a positive impact on emergency response and rehabilitation
- The Live&Learn Environmental Education publication “*Cleancommunities – A practical guide to building and maintaining toilets in the Pacific*” is a good reference point when looking at the range of issues to consider when deciding on toilet design and location.

## 10 Evaluation

### **Facilitator Notes:**

- The evaluation is best done with two people, one to facilitate the feedback discussion and the other to document the discussion.
- Hang up the **3 “Smiley” faces** flip chart sheet (**Annex B**) and explain that meaning of each face:
  - **Happy:** happy with the training and understanding the information provided
  - **Indifferent:** clear on most of the information, not clear on a small amount of it
  - **Sad:** not clear or confused on a lot of the information.
- Ask the participants to place a tick beside the face shows how they feel.
- Go to each of the faces and ask those who ticked why they ticked it. This should start a discussion and highlight the messages that were well received and understood and also those that were not. (*document the points raised*).
- A final question to the participants would be “*Do they understand the importance of, and are confident using information about hazards and the environment when deciding on the selection of toilet design and where the toilet should be*”. (*document their responses*)

(10 minutes)

## 11 List of Annexes

<b>Annex A</b>	<b><i>Training plan</i></b>
<b>Annex B</b>	<b><i>List of workshop resources</i></b>
<b>Annex C</b>	<b><i>Images of different toilet designs</i></b>
<b>Annex D</b>	<b><i>Toilet selection Checklist</i></b>
<b>Annex E</b>	<b><i>Toilet selection practice activity scenarios</i></b>
<b>Annex F</b>	<b><i>Powerpoint Presentation</i></b>

Provide participants with the Live&Learn Environmental Education publication “*Cleancommunities – A practical guide to building and maintaining toilets in the Pacific*”

## Annex A: Training Plan



Date: \_\_\_\_/\_\_\_\_/2017

Subject: *DRR & Environment Considerations when selecting toilet designs*

Objectives: *CBSE staff and volunteers trained in dealing with environment and Disaster Risk Reduction issues when selecting toilet design and location.*

Target Audience: Community Based

Session	Time	Topic	Activity	Tools
1	8.45am-9.00am	Registration		Registration form
2	9.00am-9.10am	Introduction	Discussion	
3	9.10am-9.20am	Participant expectations & Training Objectives	Discussion	Flip chart with training's objectives
4	9.20am-9.35am	Toilet design	Discussion	A4 images of toilet design handouts
5	9.35am-9.55am	Natural hazards	Discussion	Flip chart & markers
6	9.55am – 10.10am	<b>Morning tea</b>		
7	10.10am-10.40am	Environment	Group work	Flip chart & markers
8	10.40am-10.50am	Links to Disaster Risk Reduction	Discussion	
9	10.50am-11.10am	Toilet design and location selection activity	Group work	A4 selection & location scenarios
10	11.10am-11.20am	Review & summary	Discussion	Flip chart with summary points
11	11.20-11.30	Evaluation	Discussion	3 smiley faces on flip chart & markers
12	11.30-12.30	<b>Lunch</b>		

## Annex B: List of workshop resources

### 1. Flip chart and markers

### 2. A4 sheet - Registration Form

No	Name	CBSE Position	Mobile Number

### 3. Flip chart sheet with objectives written on it:

Workshop objectives are to provide participants with an understanding of:

- different toilet design options
- environment links to toilet design and site location
- hazards links to toilet design and site location
- toilet design selections for different situations

### 4. A4 sheet – Images of different toilet designs (Annex C)

- Ventilated Improved Pit
- Compost
- Pour Flush
- Flush with Septic Tank

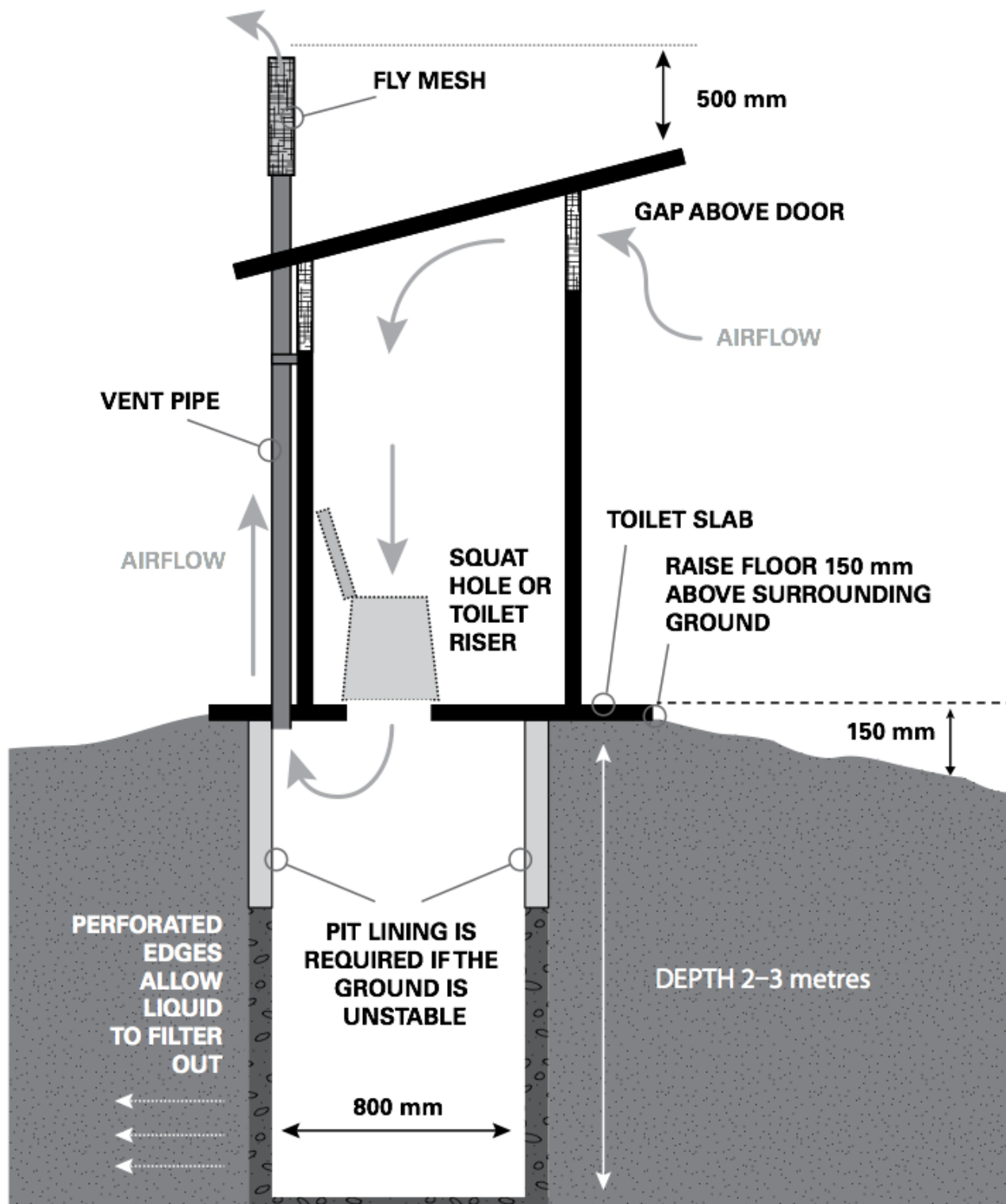
### 5. Summary points

- Natural hazards and environmental issues need to be considered
- Considering these issues is not complicated
- Other key issues are family/community health and cost
- Improved toilets have a positive impact on emergency response and rehabilitation
- *“Cleancommunities – A practical guide to building and maintaining toilets in the Pacific is a good reference*

### 6. Flip chart with 3 “Smiley” faces



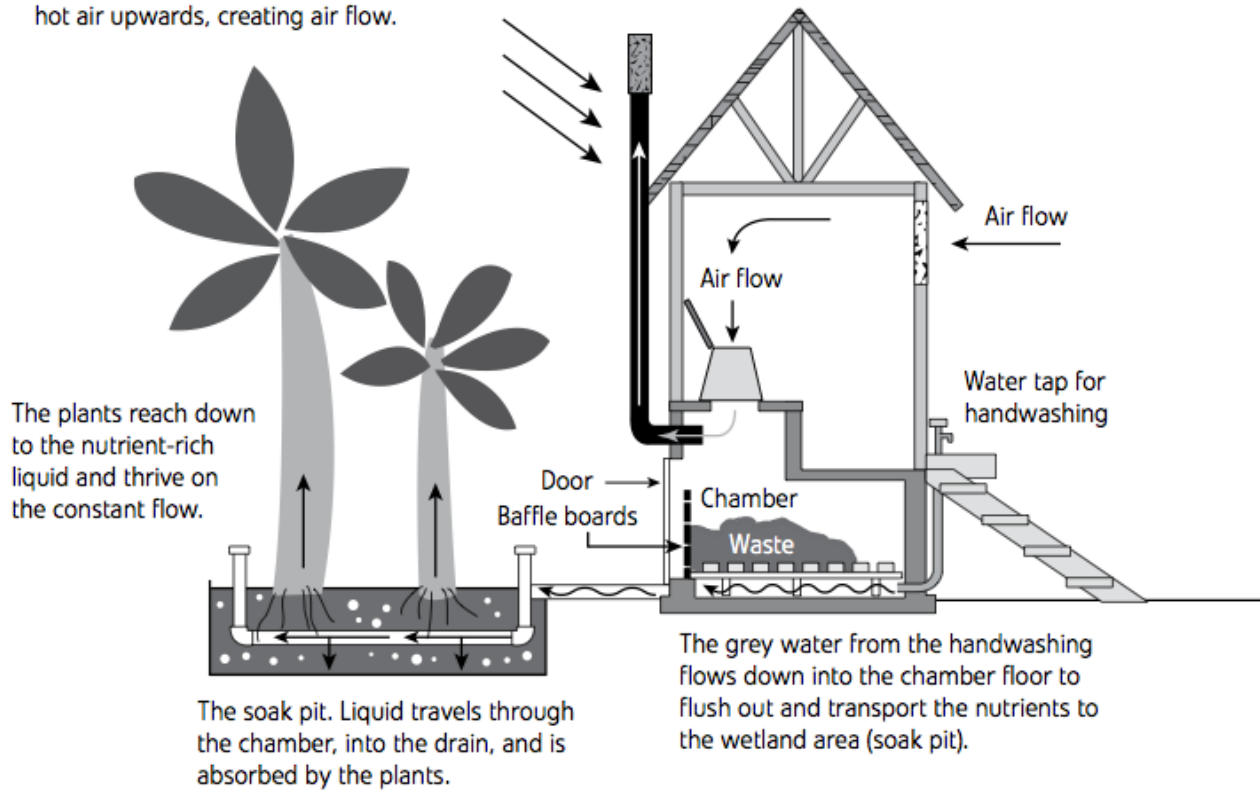
## Annex C: Different types of toilet designs



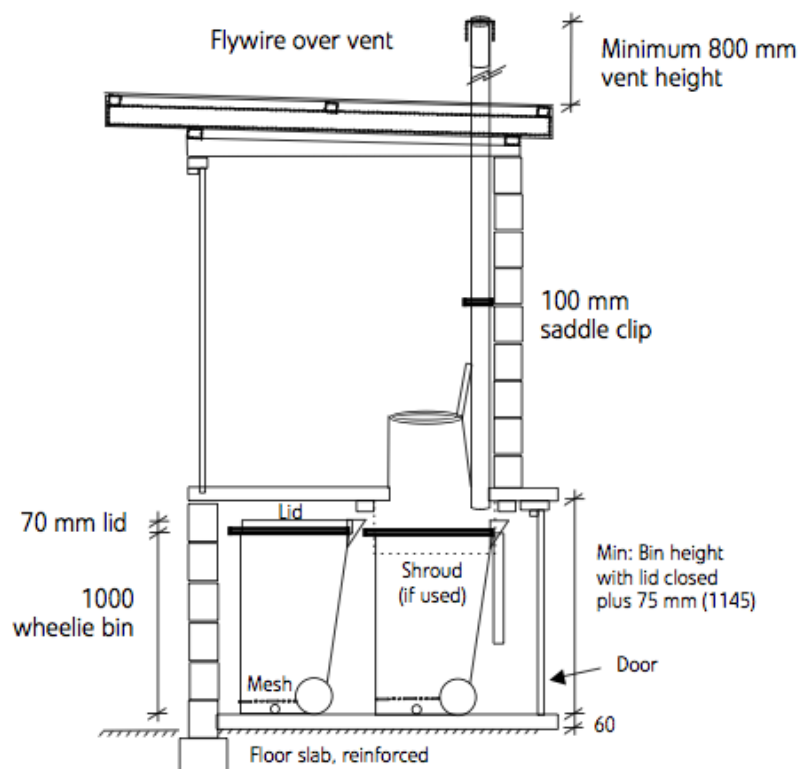
## This section provides information on two compost toilet designs:

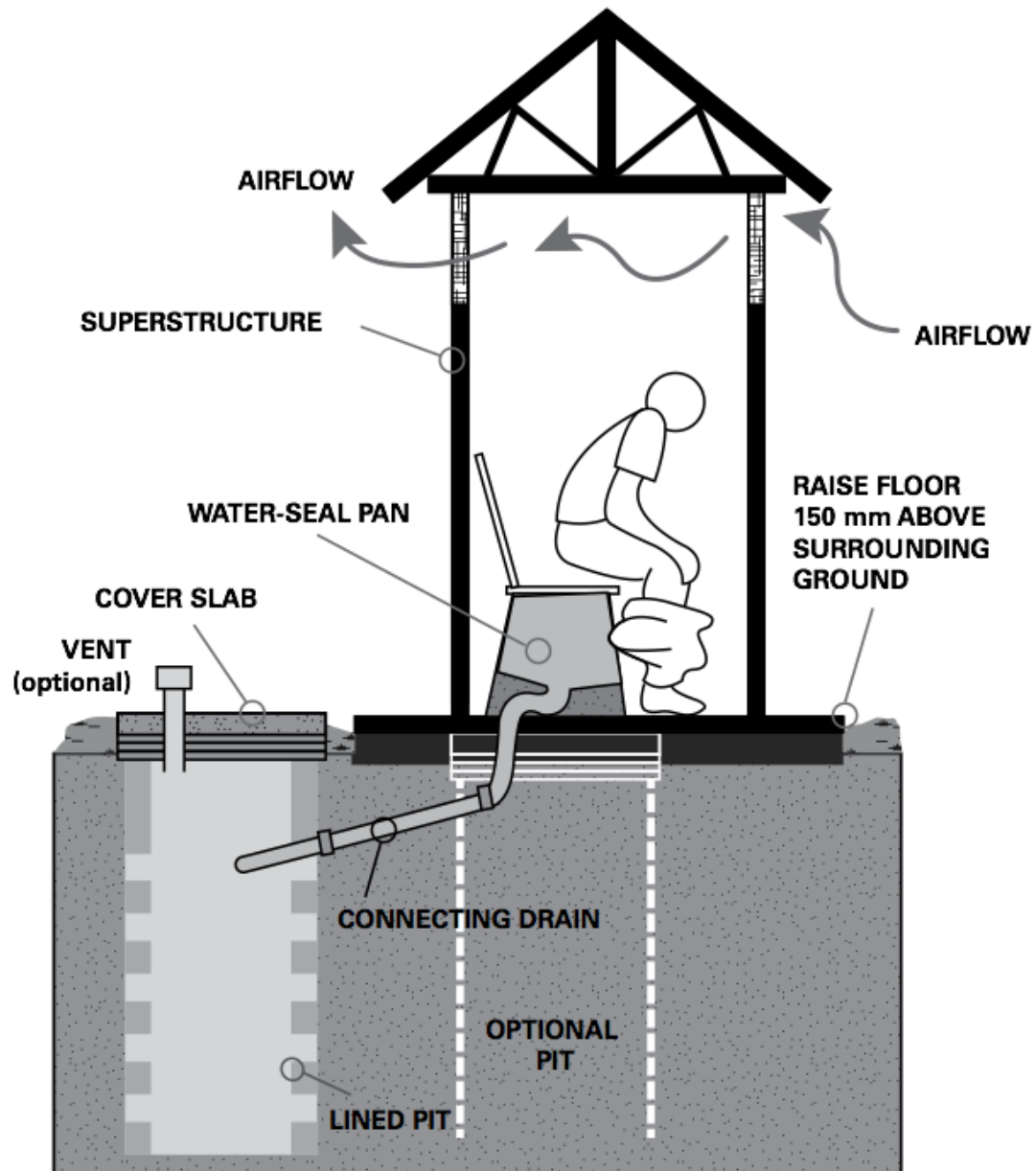
### 1. Compost toilet - 2 chambers

The vent pipe is painted black to absorb sunlight. This heats up the pipe and draws the hot air upwards, creating air flow.

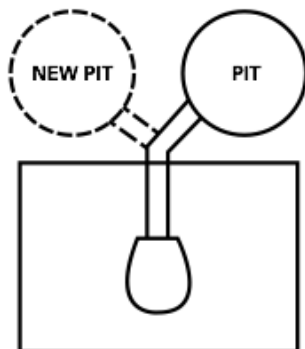


### 2. Compost toilet - 1 chamber, two wheelie bins

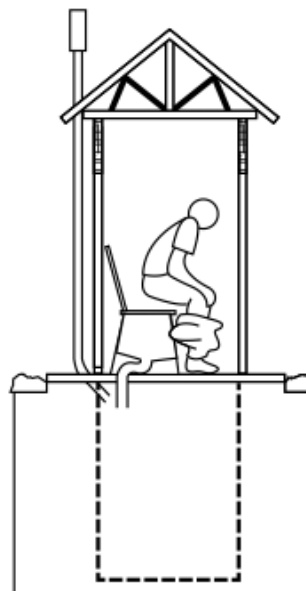




OFFSET OPTION ALLOWS FOR  
A SECOND PIT WITHOUT  
MOVING TOILET HOUSE



PIT BELOW TOILET TYPE

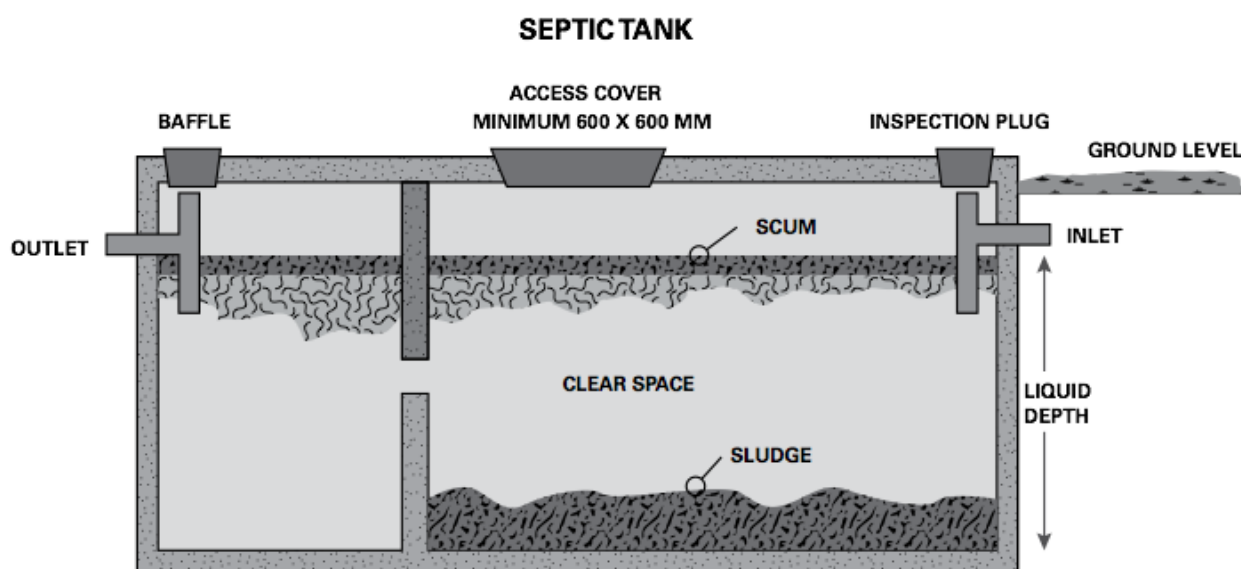
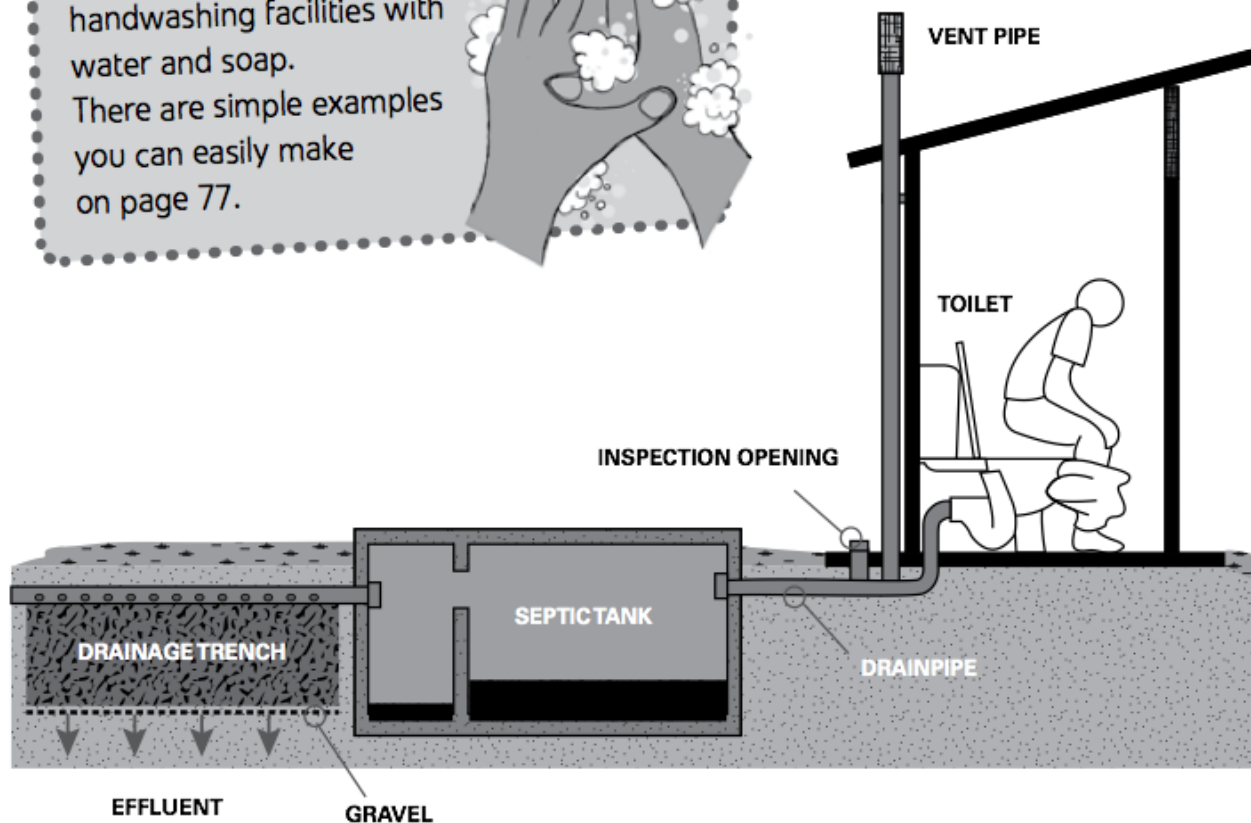




# Flush toilet (septic tank)

## Don't forget ...

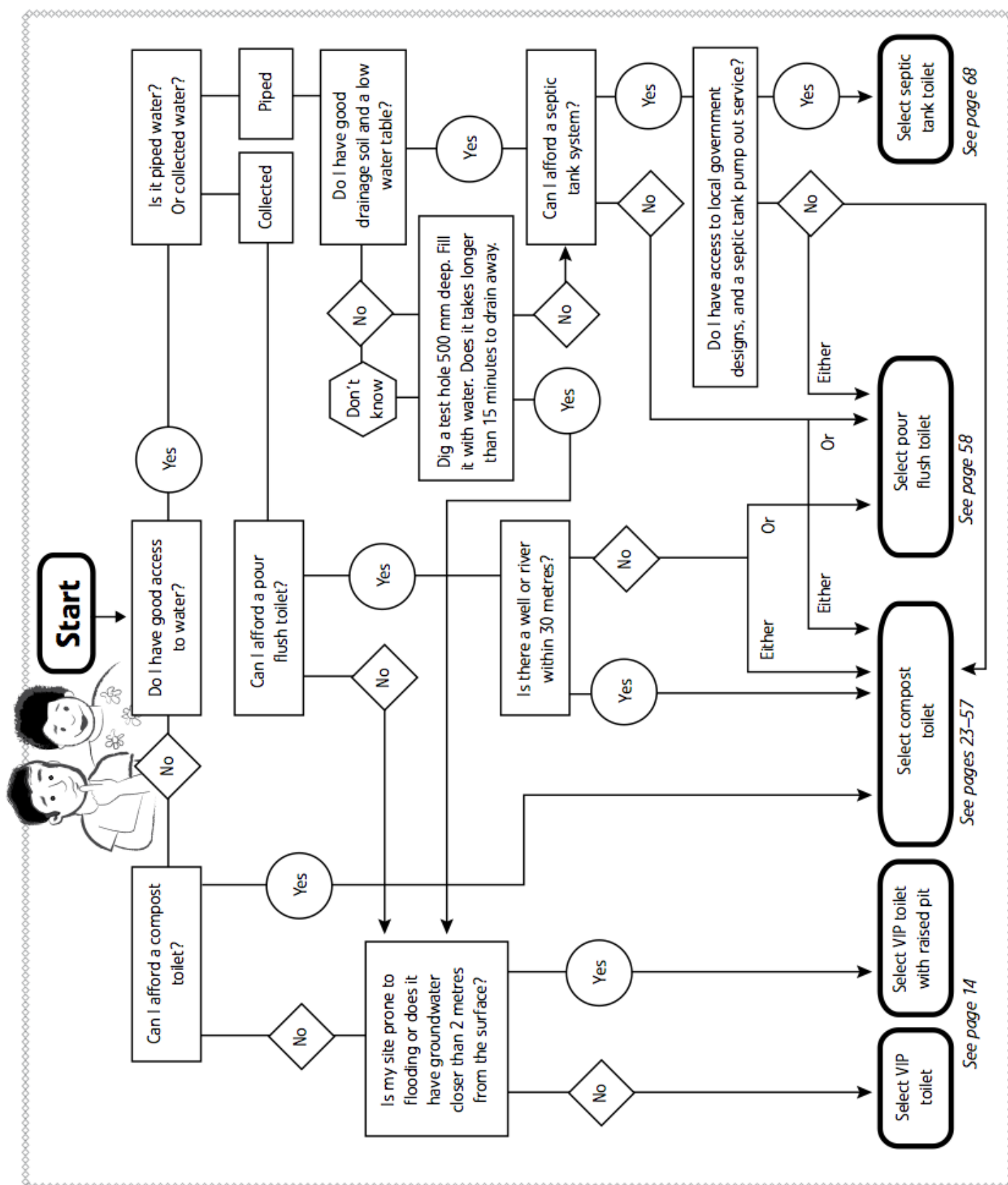
Every toilet needs to include handwashing facilities with water and soap. There are simple examples you can easily make on page 77.



## Annex D: Selecting toilet options for household

### Which toilet option is best for my household?

Use this chart to help your customers work out which toilet best suits their household. Find the 'START' and discuss the pathways to lead you to the most suitable toilet model for them.



## Annex E: Scenario cards for Activity 7

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**Scenario 1:** You are looking at a situation that has the following. Using the Toilet Selection Checklist, decide on what toilet design(s) would be best to select for this location:

- Limited money, cannot afford a Flush with Septic Tank but can afford a compost
- High water table
- Good drainage through the soil
- Access to good pipe water all year
- Subject to flooding
- 20 meters from a small river

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**Scenario 2:** You are looking at a situation that has the following. Using the Toilet Selection Checklist, decide on what toilet design(s) would be best to select for this location:

- Access to collected water all year
- Access to money
- No river or water sources for 30 meters
- Low water table
- No septic sludge removal service available
- Compost waste removal available

**Scenario 3:** You are looking at a situation that has the following. Using the Toilet Selection Checklist, decide on what toilet design(s) would be best to select for this location:

- Piped water
  - Low water table
  - Money is available
  - There is a septic sludge removal service available
  - Good soil drainage
  - Compost waste removable service available
- 

**Scenario 4:** You are looking at a situation that has the following. Using the Toilet Selection Checklist, decide on what toilet design(s) would be best to select for this location:

- Limited money, cannot afford a Flush with Septic Tank but can afford a Compost
- No flooding or sea surges
- Groundwater less than 2 meters
- A water source 20 metres away
- Poor water availability

**Scenario 5:** You are looking at a situation that has the following. Using the Toilet Selection Checklist, decide on what toilet design(s) would be best to select for this location:

- Limited money
  - Low water table
  - Good drainage
  - Poor access to water
- 

**Scenario 6:** You are looking at a situation that has the following. Using the Toilet Selection Checklist, decide on what toilet design(s) would be best to select for this location:

- Limited money
- High water table
- Poor drainage
- Has sea surges

# HAZARD AND ENVIRONMENTAL CONSIDERATIONS IN SELECTION OF TOILET DESIGN

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COMMUNITY BASED SANITATION ENTERPRISE TRAINING.    DATE.....:



# TRAINING OBJECTIVES

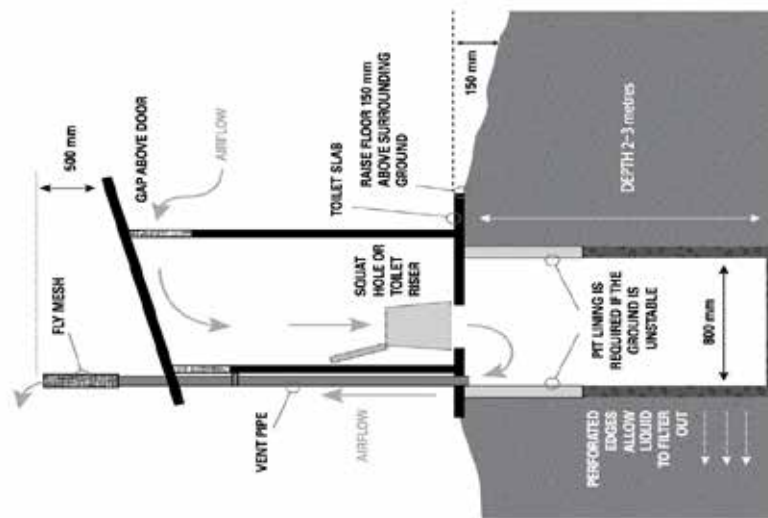
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The objectives are to provide participants with an understanding of:

- Toilet design options
- Environment considerations for toilet design and site location
- Hazard considerations for toilet design and site location
- Toilet design selections for different situations

# VENTILATION IMPROVED PIT

- Only cleaning water to operate
- Safety improved (especially for children) by covering the open pit
- Compared to open pit, controls flies and reduces smell inside the toilet





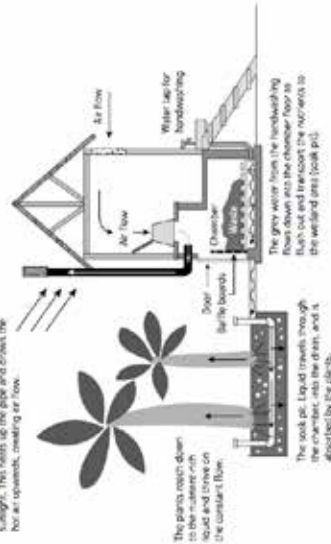
# COMPOST

- Only cleaning water to operate
- No smell in the toilet room
- No environment or ground water pollution
- Can be located anywhere
- Decomposed waste can be returned to the soil

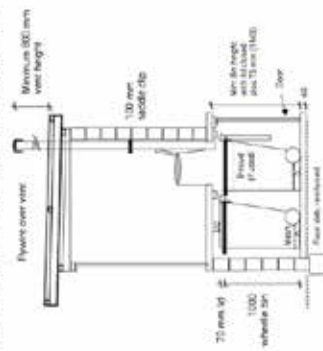
This section provides information on two compost toilet designs:

## 1. Compost toilet - 2 chambers

The vent pipe is pulled back to absorb sunlight. This heats up the pipe and draws the hot air upwards, creating air flow.

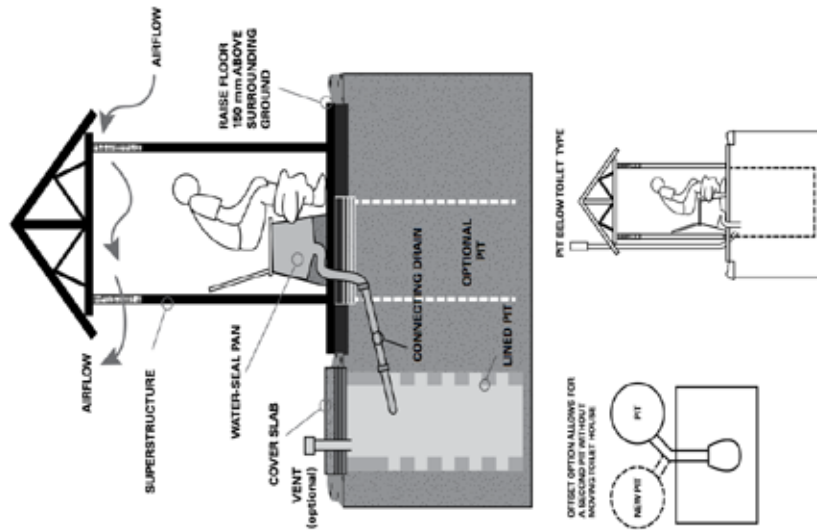


## 2. Compost toilet - 1 chamber, two wheellie bins



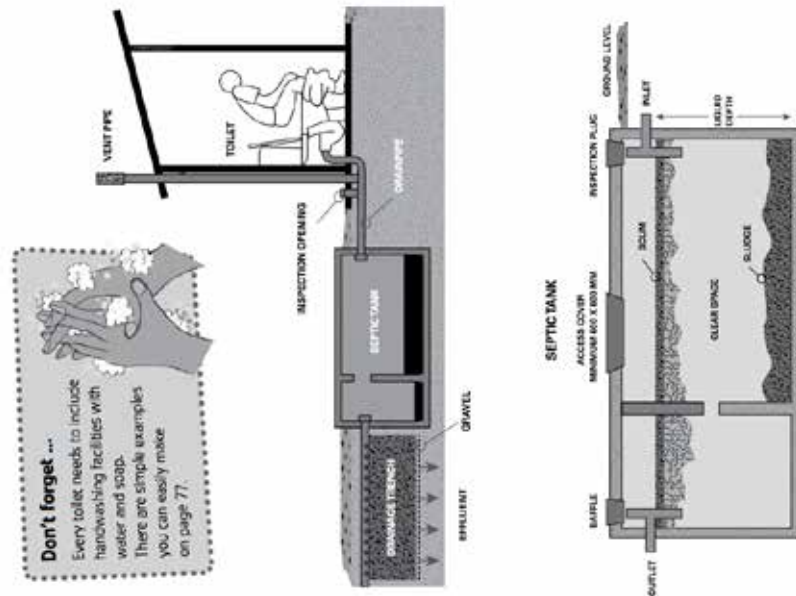
# POUR FLUSH

- Controls flies and mosquitoes
- Requires a reliable small amount of water all year
- No smell in toilet
- Can pollute the ground water if water-table is high



# FLUSH WITH SEPTIC TANK

- Requires a good source of water all year
- Space is required to fit the toilet, septic tank and drainage trench
- Controls flies and mosquitoes
- No smell in toilet
- Can pollute the ground water if water-table is high



# DESIGNS CONSIDERING HAZARDS

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- Build the toilet on a rise or above ground level (floods & heavy rainfalls)
- Improve drainage to reduce the effects of flooding (floods & heavy rainfalls)
- Covered pits prevent people falling in (cyclone rubble covering the pit)

# APPROPRIATE TOILET DESIGN AND DISASTER RISK REDUCTION

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- Reduced toilet waste spilling leading to reduced risk of disease
- Reduced disease results in reduced discomfort
- People physically and mentally in a better position to respond to emergencies
- Less resources needed to cover health issues
- More focus on other issues in the response and recovery stages

# TOILET DESIGN SELECTION ACTIVITY

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Issues to be considered when selecting a toilet design include:

- Raising hygiene/health levels
- Cost
- Natural hazards
- The environment

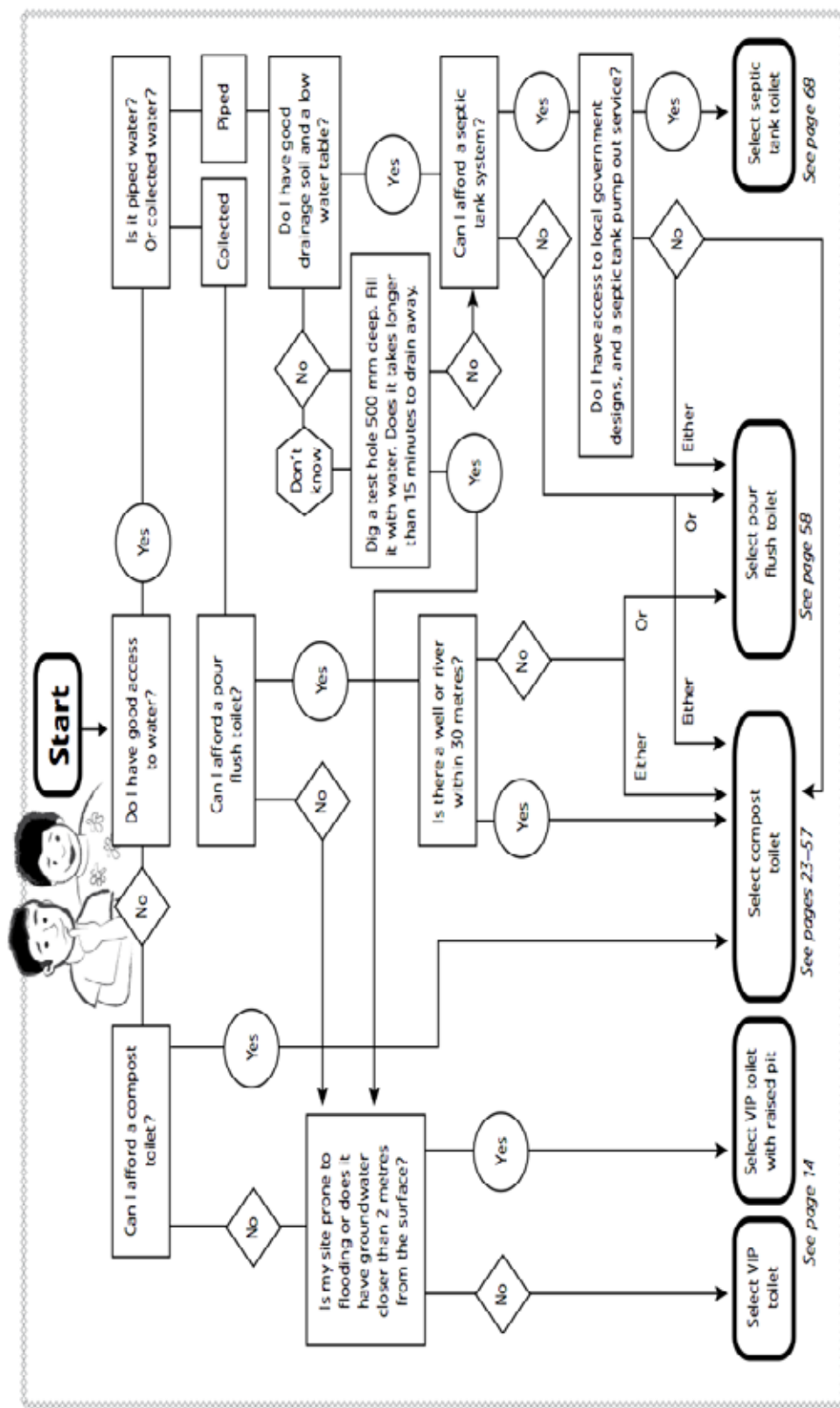
**This activity** focuses on hazard and environment issues.



# TOILET SELECTION CHECKLIST

## Which toilet option is best for my household?

Use this chart to help your customers work out which toilet best suits their household. Find the 'START' and discuss the pathways to lead you to the most suitable toilet model for them.



# NEW - IMPACTS ON THE ENVIRONMENT

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- Daily Hazards
- Flooding in low lying areas destroys wells and bush toilets and they become unhealthy and unsafe to use. Causes sickness
- Disposals of waste water from toilets, kitchens, laundries, tap - stands, bathrooms into the environment allows the release of bacteria into the environment and poisons the water-table (where water-table is high) and affects the quality of water
- Poor sanitation structures can cause sickness
- Weak toilet structures can be damaged by strong cyclones and heavy flooding



# SUMMARY

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- Consider natural hazards and environmental when choosing a toilet design & location
- Considering these is not complicated
- The Live & Learn Environmental Education publication “*Cleancommunities*” is a good reference for toilet design selection
- Family/community health and cost also need to be considered
- Improved sanitation have a positive impact on emergency response.



