

1. Hazard Analysis

Hazard Group	Specific Hazard	Risk	Control
Biological	Yeast	Low	Ensure extracted product is kept in airtight containers and not exposed to air for extended periods of time. Granulated honey should not be exposed to moisture or air in order to prevent fermentation.
	Clostridium botulinum	Low	Ensure all extraction, filtering and bottling equipment is thoroughly cleaned before use. Do not allow supers or apiary equipment to sit directly on the ground. This is important, as our honey is not heated to sufficiently high temperatures to kill the pathogen. Advice should be given to all purchasers that the product should not be given to children under the age of 12 months.
Chemical	Varroacides	Med	Use only those approved for use with beehives and document details of product batch numbers and suppliers. All manufacturers' instructions should be followed, paying particular attention to which products should not be used when honey supers are in place.
	Insecticides	Low	Ideally choose a non-chemical method of removing insects such as freezing and then correct stacking of supers during storage to prevent wax moth damage. If chemical products to be used, use only those approved for use with beehives and document details of product batch numbers and suppliers. All manufacturers' instructions should be followed.
	Storage and processing materials	Low	Materials in direct contact with honey should be food grade plastic or stainless steel, glass or fully glazed ceramic. These should be cleaned with non-scented food safe cleaners and then rinsed thoroughly.
	Cleaning Agents	Med	Ensure manufacturers' instructions are followed for dilution rates and product limitations. Ensure products are thoroughly rinsed off equipment before use.
	Toxic Forage	Low	Be aware of forage visited by bees and remove hives from risk areas if necessary.
Physical	Dust/Dirt	Med	Do not place supers directly on the ground. Use clean barrier material or plastic boxes when transporting frames to be processed. Ensure all extraction, filtering, storage and bottling equipment has been cleaned prior to use. Use appropriate level of filters to remove any particles.
	Insect debris	Low	Use filters to remove insect debris.

	Wax particles	Low	Use filters to remove all large particles.
	Glass	Low	Inspect jars prior to washing and again before filling and reject any damaged ones.
	Wood	Low	Ensure hives are sound and undamaged, do not continue to use damaged hive parts and use appropriate level of filtration to remove any particles.
	Metal	Low	Use food grade stainless steel, plastic, glass or fully glazed ceramic to process honey. Regularly inspect tools and equipment for damage and discard any honey processed with broken or damaged equipment.

2. The Pre-requisites

Honey Harvest

Apart from the control points listed in the next section, to ensure no contamination of the honey takes place within the hive before extraction the following actions must be taken during the beekeeping year:

1. Only approved paints and preservatives are applied to beehives and applied during the winter months when bees are inactive or when the equipment is in storage.
2. Mouse guards should be employed in autumn to avoid incursion of mice.
3. Stored combs should either be treated by freezing or with approved chemicals to kill wax moth. The combs should then be stored in a manner to prevent further wax moth entry to the comb.
4. Only approved bee disease treatments should be used in the hive, their use fully documented and all manufacturers' instructions on application followed in full.
5. Any supplementary feeding which takes place during the season should be carried out in such a way to ensure it will not be stored in any super to be extracted for consumption.
6. Clean vehicles should be used for transporting honey supers and any surface to be in direct contact with the super should be covered with a clean barrier material.

Honey Extraction, Filtering, Bottling and Storage

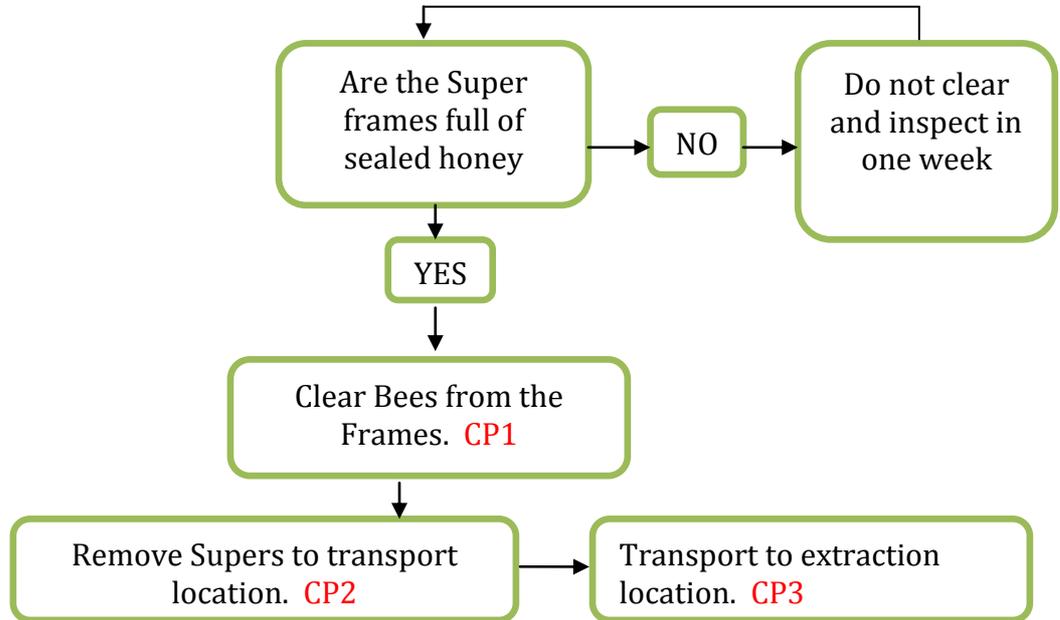
The beekeeper doing the work should:

1. Have hand wash facilities available with clean towels.
2. Wear clean overalls or aprons.
3. Have been symptom free, for at least 48 hours, following an episode of diarrhoea or vomiting.
4. Tie back or cover any long hair.

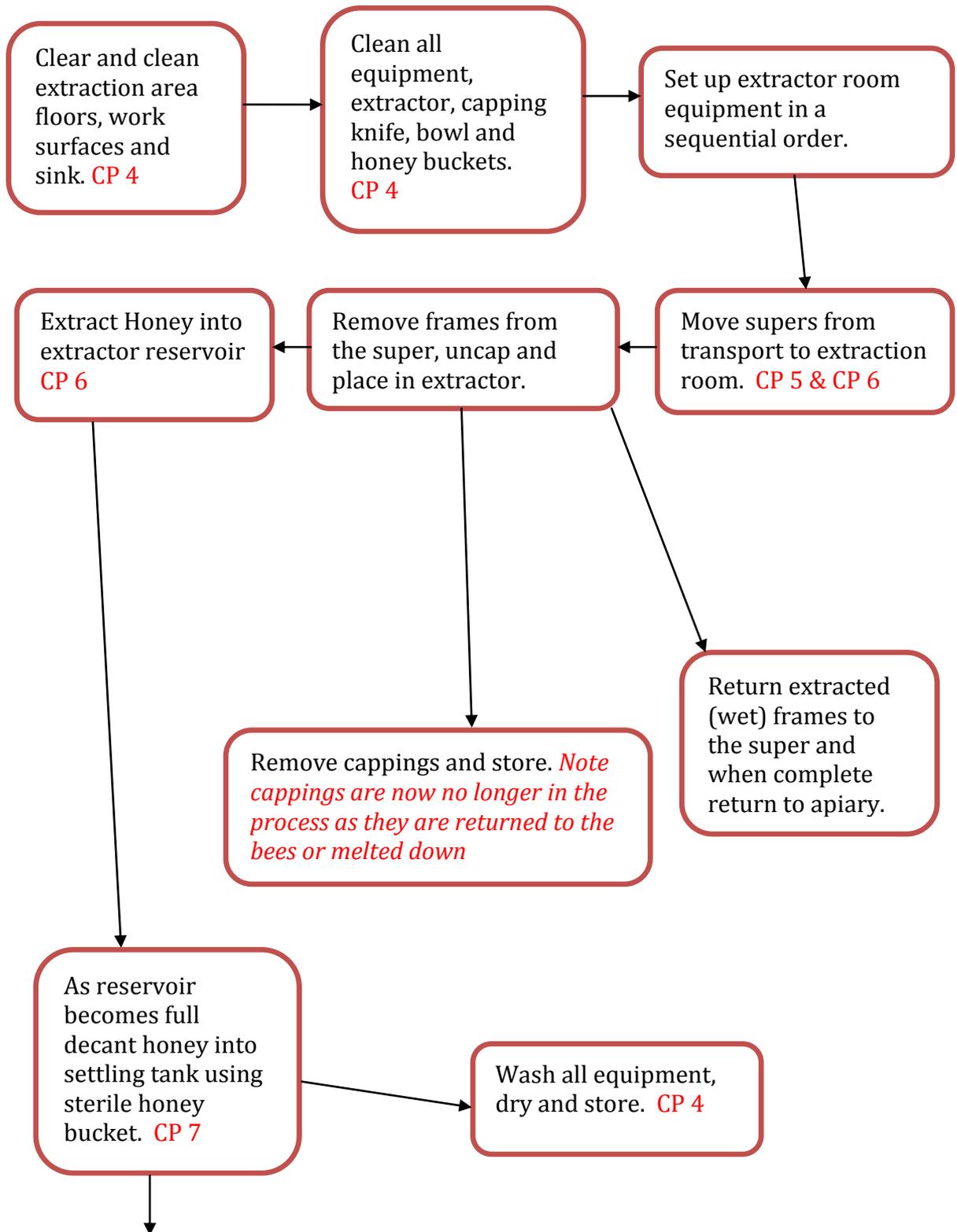
The room where the Extraction, Filtering and Bottling take place should:

1. Have no access points for pests.
2. Have no children or pets permitted into the area while the work is taking place.
3. Should be in good repair, have smooth impervious surfaces which are cleaned before and after use.
4. Have a suitable supply of hot and cold potable water.
5. Have adequate lighting.
6. Must not be storing or washing dirty laundry at the time of extraction.

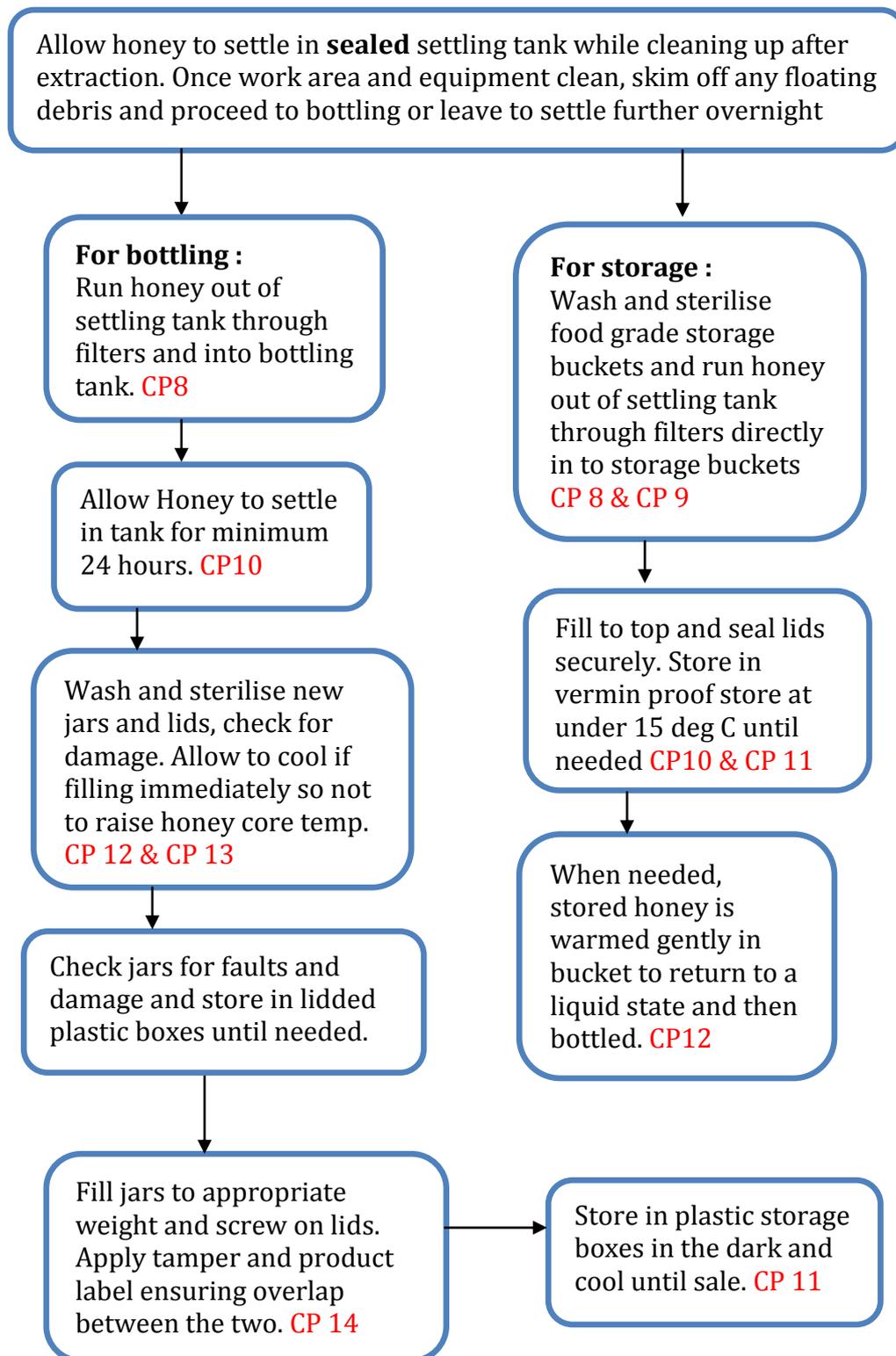
3a. Process – Honey Harvest



3b. Process – Honey Extraction



3c. Process – Filtering and Bottling



Exceptions to the processes listed in the flow charts

This document covers the processes used to extract a large proportion of the honey produced for sale. At times however, the market demands honey for sale with the absolute minimum amount of processing or honey which is either wholly or partially from ling heather nectar.

To accommodate these instances there will be a divergence in process as follows:

Honey with minimal processing – Harvest and extraction remains unchanged. The honey may or may not be left to settle to remove air bubbles (aesthetic consideration). After that, the process follows the flow diagrams, including control points CP8 to CP14. If taken from storage once again the flow chart will be followed along with the control points apart from the section which requires the honey to be heated. Instead it can be jarred directly from the storage buckets. The lack of heating in no way increases the risk of any of the specific hazards identified.

Heather honey - The honey harvest remains unchanged as does the extraction up until the point the frames are placed into the extractor. At this point when the frames are spun it may be found impossible to remove the honey due to the higher viscosity of heather honey. The frame contents will then be scraped into a large sheet of clean muslin and placed into a honey press, which has been pre-sterilised. If it is suspected from the outset that the frames contain heather honey the frames may be directly scraped into the heather press without the need to try the extractor first. Filtering will take place naturally as the honey is squeezed through the muslin sheet. Further filtering may or may not take place depending on the viscosity of the honey extracted. All storage and bottling protocols are then followed as per the normal flow charts.

4a. Control Points and Critical Limits – Honey Harvest

Control Point	Hazard	Control	Critical Limits
CP 1	Chemical residues from clearing of Bees from supers.	Use non chemical methods i.e. use porter escapes to allow bees to exit naturally.	Unable to test for presence of chemical residues. Control by using only non-chemical methods.
CP 2	Contamination from dust, dirt and debris of supers removed from the hive.	Place supers on upturned lid by the hive, place clean barrier material on transport floor and cover supers to eliminate contaminants and bee incursions.	Absence of areas of dirt and debris.
CP 3	Frames contaminated by insect incursion following the supers or hiding in the frames	Ensure the frames and supers are free from bees and other insects before entering the extraction area.	Absence of insects.

4b. Control Points and Critical Limits – Honey Extraction

Control Point	Hazard	Control	Critical Limits
CP 4	Contamination from biological, physical and chemical elements on equipment and in the workplace environment.	Remove physical debris from all surfaces, use hot solution of cleaning agent to remove dirt, grease and pathogens from all surfaces and equipment. Rinse with clean potable water until all residues of cleaning agent and dirt has been removed. Dry surfaces with paper towel and leave to air dry before starting operation.	Absence of visible signs of contaminants or residue on equipment and in the work place environment.
CP 5	Extraction environment contaminated by insect incursion.	Check that no other insects have entered the area before extraction begins. Check area is sealed - doors, vents and windows closed.	Absence of insects in extraction area.
CP 6	Contamination of work surfaces from bee remains, honey, propolis, wax and external hive dirt.	Swap excessively dirty super bodies for clean ones or place frames in suitable clean container before entering extraction area to reduce contamination. Place super on clean barrier material and leave in same location during extraction. Follow CP 4 when	Absence of visible signs of contamination on work surfaces.

		extraction is complete and before filtration begins to separate 'dirty' process from final product filtration and preparation.	
CP 7	Contamination of honey from bucket/tank resting on floor.	Ensure floor bucket/tank is only used to hold honey from the extractor reservoir and is used as a means of transportation to the filtration bucket. The floor bucket/tank will not be used to hold final product as it contains unfiltered honey and is positioned on the floor on a drip tray or clean barrier material. Final contents of the floor bucket can be scraped out only into the filter system.	Absence of visible signs of contaminants in honey floor bucket.

4c. Control Points and Critical Limits - Filtering and Bottling

Control Point	Hazard	Control	Critical Limits
CP 8	Failure of filtration to remove harmful material.	Use appropriate mesh food grade filters.	Absence of any harmful material in honey after filtration.
CP 9	Contamination after filtering.	Filter into food grade storage buckets. Buckets to be washed out with sterilising fluid before use and then rinsed thoroughly with clean water.	Absence of any harmful material in honey after filtration.
CP 10	Fermentation.	Ensure moisture content complies with statutory requirements using a refractometer.	Moisture content to be <20% for floral, <23% for ling heather and <25% for bakers honey.
CP 11	Creation of conditions likely to cause fermentation or contact with substances likely to affect flavour.	Store in tightly sealed air-tight jars or buckets. Store away from direct sunlight and avoid extremes of temperatures.	Unable to test chemically for tainting, simple taste and visible test will detect contaminants.
CP 12	High temperatures.	Avoid heating honey above 40deg C and always store in a cool place below 15deg C to avoid the risk of increasing Diastase and HMF levels and causing fermentation.	Unable to test chemically for HMF and Diastase. Fermentation can be confirmed by visual and olfactory inspection.
CP 13	Jars and lids contaminated and not suitable for filling.	Jars – wash in detergent solution and rinse in clean water, dry with paper and place on a clean oven tray. Place in pre-heated oven 180 ^o C for 10 minutes,	Absence of damage or areas of dirt or residue on lids and jars.

		<p>remove and cool ensuring to cover whilst cooling. Or alternatively, wash in a dishwasher.</p> <p>Lids – wash in detergent solution and rinse in clean water, place in a pan of boiling water for 10 minutes. Remove onto clean paper and dry. Do not use any that are damaged or unclean.</p>	
CP 14	Labels and tampering.	<p>Ensure labels conform to current legislation and the product is fully traceable back to the producer. Fit tamper labels to ensure consumer can be sure product has not been adulterated.</p>	<p>Product labels fully compliant with current regulations and tamper proof labels fitted to all jars for sales to public.</p>