

- Monitoring
- Trouble-shooting

Home composting bins can be bought at selected nurseries throughout the Western Cape. These are normally one of two types. The first type is a moulded plastic bin which comes in two sizes as follows:

- Small – volume approximately 500 litres
- Medium – volume approximately 1000 litres

The second type is one made from chicken wire around a plastic framework. This one is also of approximately 1000 litre capacity. The disadvantage to the chicken wire model is the possibility of leaching, flies and foul odours.

However, it does allow for good aeration, whereas the plastic model may tend to result in anaerobic conditions (rotting) if not manually aerated by turning.

3.5.2.3 Vermicomposting

Vermicomposting refers to the deliberate introduction of earthworms (typically) during early stages of the composting process. These would appear naturally at an advanced stage of natural composting, which would be after stabilization, where macrofauna use some of the microflora as a substrate.

The earthworms have the following beneficial effects on the composting process:

- Reduction of particle size
- Removal of old bacteria, stimulating the growth of new bacteria
- Enriching the compost by excretions high in Nitrogen
- Promotes penetration of oxygen into the compost
- Increases pathogen control
- Produces worm castings, a good soil amendment

Vermicomposting lends itself well to household-sized ventures, as it requires very careful control, but produces very high quality compost in a relative short period of time.

It is a very clean process which does not attract flies.

This type of composting is typically done inside special bins designed for the purpose.

Most kitchen-type wastes can be composted in this manner, although onions, citrus & other acidic foods should be avoided as they can be toxic to the worms.

The worms are also quite sensitive to extreme temperatures, humidity and rain. Therefore this process does not lend itself to large-scale industrial composting.

Also the ratio of worms: substrate is approximately 1:4; therefore very large amounts of worms are required for the process. The worm mass doubles in approximately 12 weeks.

3.6 WASTE DISPOSAL

3.6.1 Operating Landfills

Gansbaai Landfill

The Overstrand Municipality currently disposes general waste at the Gansbaai disposal site.

Gansbaai Landfill is permitted in Terms of Section 20 of the Environment Conservation Act (Act 73 of 1989) with license number 16/2/7/G400/D24/Z1/P335 and is classified as G:M:B- (1994 Minimum Requirements). The site is located to the east of Gansbaai (34°35'14.33"S, 19°21'53.65"E)



Figure 3-2: Gansbaai Landfill

The Gansbaai disposal facility is externally audited annually. The latest audit was conducted by JPCE in November 2014. The audit found that the site is not compliant with all of its permit conditions. The non-compliances are listed below:

CONDITION	NON/PARTIAL COMPLIANCE	COMMENT
3.4	The existing Masakhane neighbourhood partially falls within the 800m buffer zone.	The neighbourhood has been inside the buffer zone since the permit was issued.
3.5	Drainage structure exists, but without the 500mm freeboard.	Not critical due to the absorbent nature of the natural soil adjacent to the site.
3.6	No visible internal drainage structures.	Not critical due to the absorbent nature of the natural soil adjacent to the workface.

The Gansbaai landfill is operated by Enviroserv Waste Management. Entrance control is good and all incoming loads are weighed and recorded at the weighbridge. The current average total of waste disposed per day is 157 tonnes. All general waste of the Overstrand Municipality destined for disposal is transported here until the new general waste cell at the Karwyderskraal landfill has been constructed.

Collected source separated waste from the towns of Stanford and Gansbaai is sorted at the Material Recovery Facility (MRF) at the entrance to the site.

From the topographical surveys which are used to determine remaining airspace and usage, it is estimated that the Gansbaai landfill will reach capacity in 2031.

Gansbaai Waste Disposal Facility

Summary Table

Type of facility	General Waste Disposal Facility
Licensed/Permitted?	Yes
License/Permit Number	16/2/7/G400/D24/Z1/P335
Classification	G:M:B- (1994 Min Req)
Location	34°35'14.33"S, 19°21'53.65"E
Estimated Remaining Lifetime	Currently estimated until 2031
Access Control?	Yes
Externally audited?	Yes
Waste Types Received	General household, commercial and industrial waste, garden waste, building & demolition waste

Karwyderskraal Regional Landfill

The Karwyderskraal regional landfill is permitted in terms of Section 20 of the Environment Conservation Act (Act 73 of 1989) and is classified as G:M:B+. This landfill is located in the Overstrand Municipality (34°19'52.93"S, 19°09'40.31"E), but with the District Council as Permit Holder. The permit was amended in 2005 to allow on-site composting.

The new disposal cell has been constructed and provides approximately 300 000m³ of disposal airspace. Based on the current disposal scenario where Caledon's waste is still disposed at the Caledon landfill, the waste from Villiersdorp, Grabouw and Botrivier is disposed at Karwyderskraal and the waste from the western portion of Overstrand is disposed at Karwyderskraal, it is estimated that the new cell will have a remaining lifetime of 43 months from April 2015. In other words, capacity is estimated to be reached by end October 2018.



Figure 3-3: Karwyderskraal Landfill

3.6.2 Closed Landfills

The following closed disposal sites are located in the Overstrand Municipal area:

Onrus

This site is located to the north of Onrus (34°24'21.25"S, 19°10'33.81"E) and no longer receives any waste. It was issued with a closure license on 10/12/2014. (License number 19/2/5/1/E2/26/WL0034/14).



Figure 3-4: Onrus Closed Disposal Site

Hermanus

The site is located to the west of the Hermanus solid waste transfer station (34°25'25.50\"/>



Figure 3-5: Hermanus Closed Disposal Site

Hawston

The site is located to the east of Hawston (34°23'17.65"S, 19°08'25.61"E) and no longer receives any waste. It was issued with a closure license on 31/03/2014. (License number 19/2/5/1/E2/13/WL0088/12)

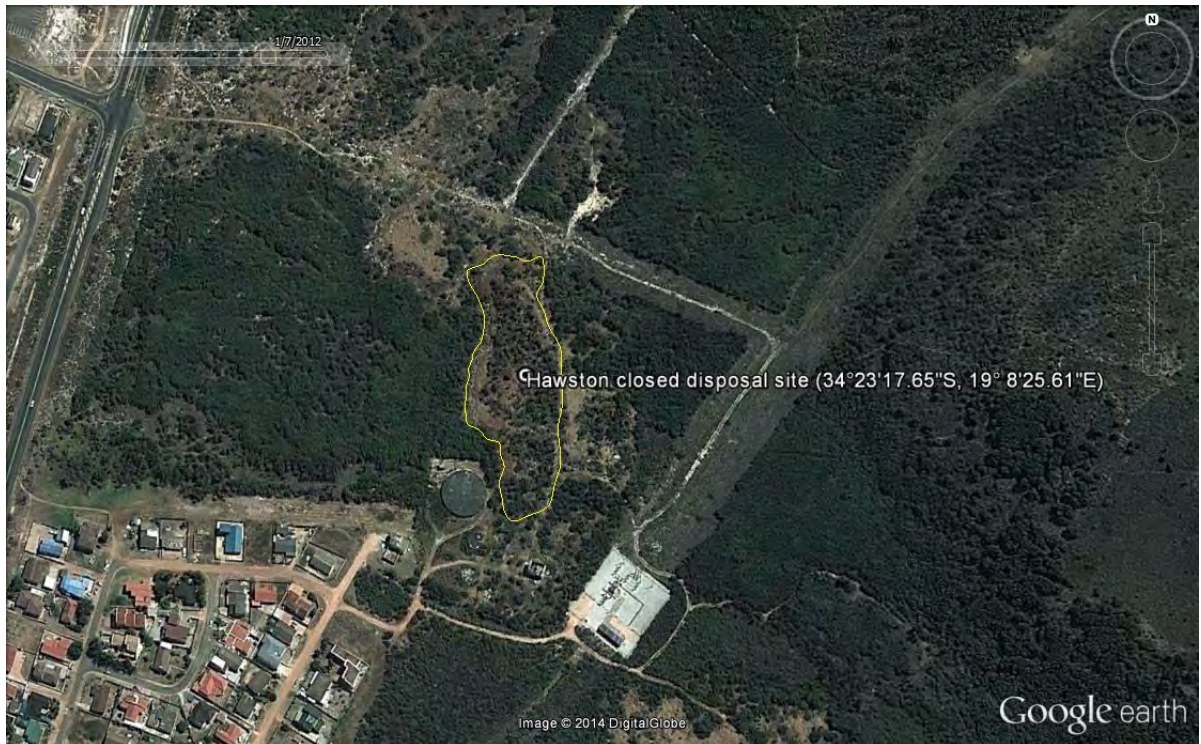


Figure 3-6: Hawston Closed Disposal Site

Fisherman's Haven

The site is located to the south of Fishershaven (34°21'57.16"S, 19°07'31.79"E) and no longer receives any waste. It was issued with a closure license on 10/12/2014. (License number 19/2/5/1/E2/8/WL0035/14).



Figure 3-7: Fisherman's Haven Closed Disposal Site

Voëlklip

The site is located to the east of Voëlklip ($34^{\circ}24'38.81''S$, $19^{\circ}18'26.40''E$) and no longer receives any waste. It was issued with a closure license on 07/11/2014. (License number 19/2/5/1/E2/40/WL0049/14).

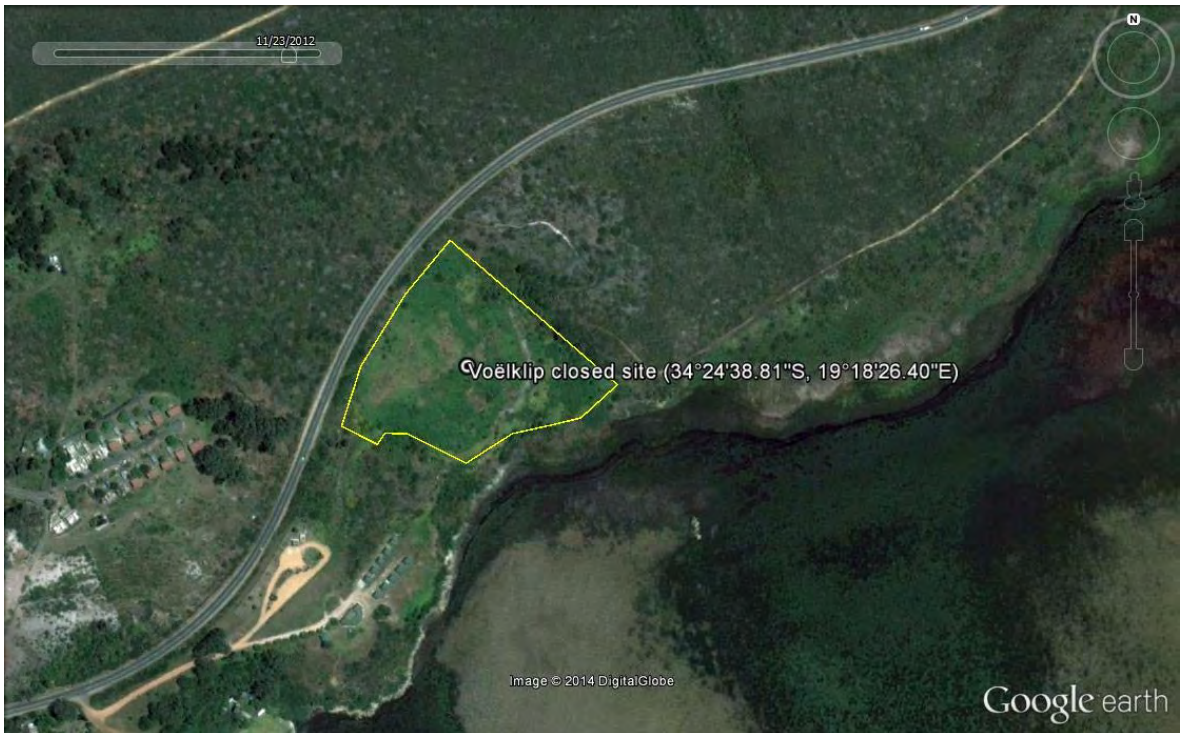


Figure 3-8: Voëlklip Closed Disposal Site

Stanford

The site is located to the south-east of Stanford ($34^{\circ}28'02.40''S$, $19^{\circ}26'46.53''E$) and no longer receives any waste. It was issued with a closure license on 31/03/2014. (License number 19/2/5/1/E2/36/WL0087/12)

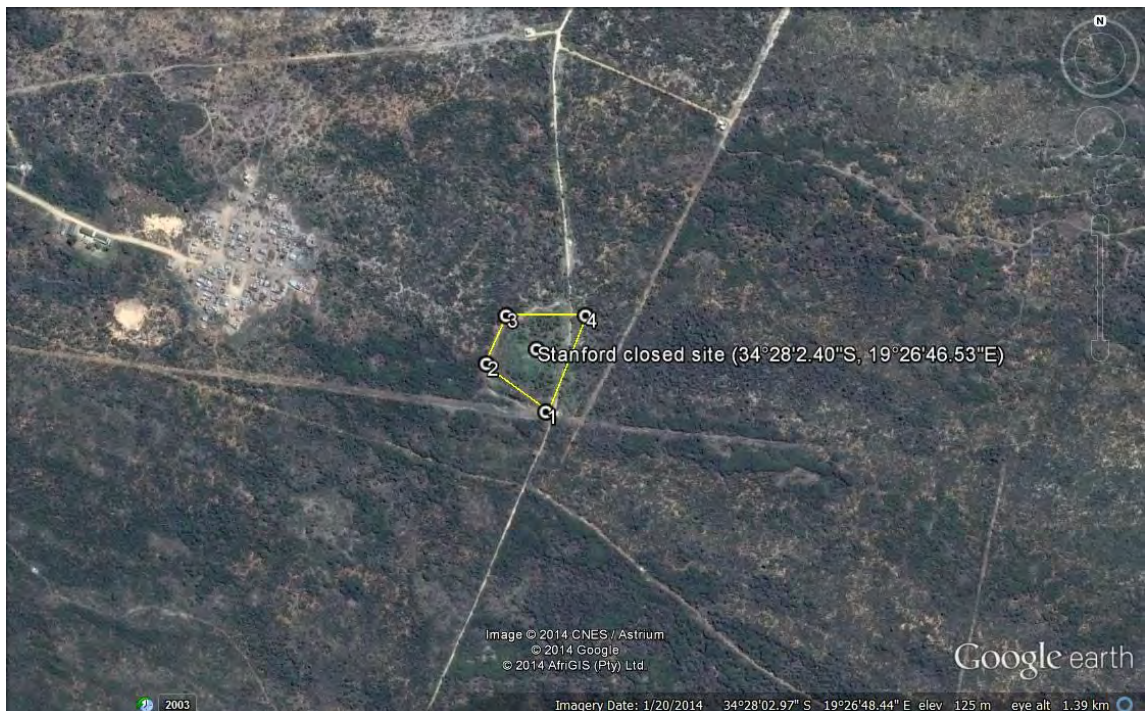


Figure 3-9: Stanford Closed Disposal Site

Pearly Beach

The site is located to the north of Pearly Beach (34°39'01.21"S, 19°29'34.18"E) and no longer receives any waste. It was issued with a closure license on 29/09/2014. (License number 19/2/5/1/E2/29/WL0089/14). A new Waste Water Treatment Works (WWTW) is planned at this location and rehabilitation will take place simultaneously with the construction of the new stabilisation ponds.



Figure 3-10: Pearly Beach Closed Disposal Site

The Betty's Bay and Kleinmond closed disposal sites have both been issued with closure permits. Betty's Bay permit number: 12/9/11/P18 and Kleinmond permit number: 12/9/11/L17/9. Both of these sites have already been rehabilitated and are externally audited and monitored.

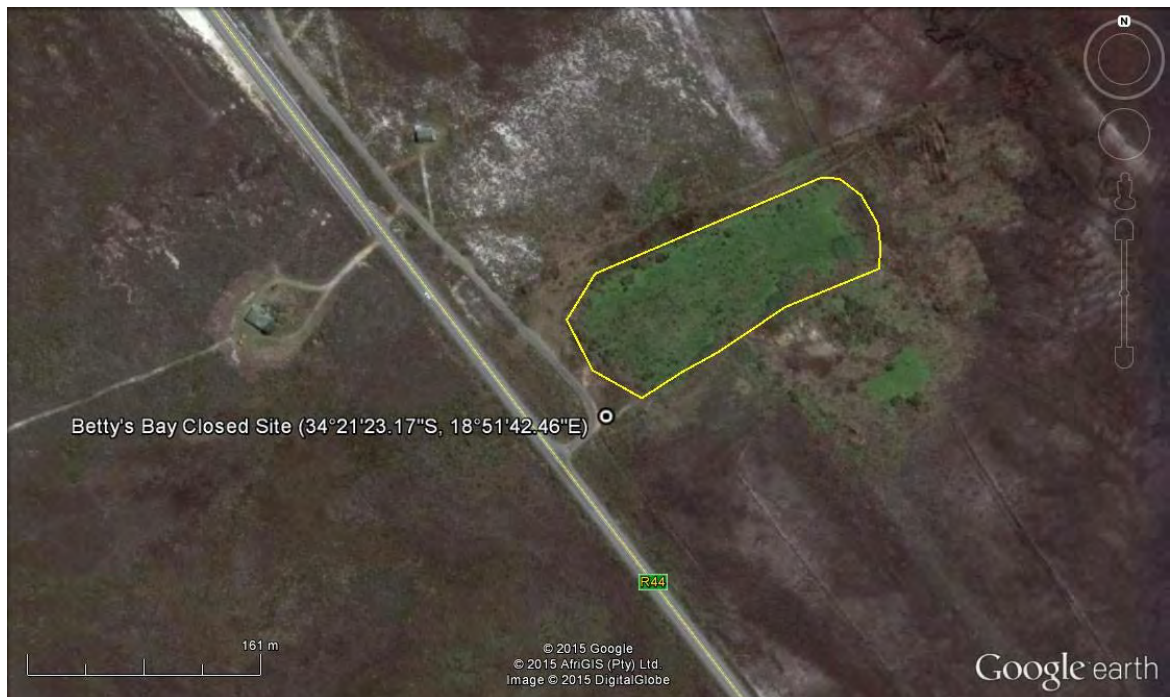


Figure 3-11: Betty's Bay Rehabilitated Disposal Site



Figure 3-12: Kleinmond Rehabilitated Disposal Site

The following table shows the rehabilitation cost estimates as at January 2015 with new closure license requirements.

Table 3-11: Estimated Rehabilitation Costs

	Onrus	Hermanus	Hawston	Fishershaven
Rehab estimate excl. VAT	R7 152 827.00	R18 431 235.00	R4 052 778.00	R5 904 258.00
	Voëlklip	Stanford	Pearly Beach	
	R9 440 861.00	R4 228 013.00	R2 910 199.00	

Provision must be made in order to rehabilitate the abovementioned sites, except Pearly Beach which will be part of the new WWTW construction (MIG funding).

3.6.3 Garden Waste and Building & Demolition Waste Sites

There are no dedicated garden waste or building & demolition waste sites in Overstrand. Garden waste and building & demolition waste are accepted at the transfer stations and drop-offs.

3.6.4 Waste Transfer Stations and Public Drop-offs

The Overstrand Municipality operates two Solid Waste Transfer Stations at Hermanus (34°25'29.31"S, 19°13'03.98"E) and Kleinmond (34°20'11.92"S, 19°00'16.43"E). Both transfer stations are licensed. A number of solid waste drop-offs have also been established throughout the Municipal area which act as satellite collection points for general waste. The weekend drop-offs allow for weekend visitors to drop off their waste on the weekends if they are not in the Overstrand to put it out for weekly collection.



Figure 3-13: Hermanus Solid Waste Transfer Station & Material Recovery Facility (MRF)

The Hermanus transfer station is externally audited annually. The latest audit was conducted by JPCE in November 2014. The audit found that the site is compliant with all of its permit conditions.

The transfer station functions as a “clean” and “dirty” MRF as well where source separated collected materials (clear bags) are recycled alongside recyclables from mixed waste in black bags. The clear bags originate from middle and high income neighbourhoods in Hermanus, Kleinmond, Bettiesbaai, Hangklip, Pringle Bay and Rooi-Els and the black bags are from the same neighbourhoods in Hermanus that also have source separation.

Clean garden waste is delivered to the transfer station by the public from where it is transported to the Karwyderskraal landfill for chipping and composting. The public may also deliver small loads of clean building & demolition waste. This is also transported to the Karwyderskraal landfill and used there as cover material.

The public has the opportunity to bring their household hazardous waste to the transfer station where it is stored in dedicated locked bins inside a locked shipping container for later removal to the Vissershok Hazardous waste Facility in Cape Town. A second locked shipping container has been placed for household e-waste.

Non-recoverable general waste, tailings from the MRF and contaminated garden waste is hauled from the transfer station to the Gansbaai Landfill for disposal, but will be transported to the Karwyderskraal landfill after from April 2015.

Hermanus Transfer Station Summary Table

Type of facility	Waste Transfer Station/ Public Drop-off / Material Recovery Facility
Licensed/Permitted?	Yes
License/Permit Number	16/2/7/G403/D2/Z2/P457
Classification	G:M:B+
Location	34°25'29.31"S, 19°13'03.98"E
Estimated Remaining Lifetime	Indefinite (transfer station)
Access Control?	Yes
Operating Hours	Monday to Friday: 08:00 – 18:00; Saturday: 09:00 – 14:00; Sunday closed
Externally audited?	Yes
Waste Types Received	General Waste, Garden Waste, Building & Demolition Waste, Household hazardous and e-waste



Figure 3-14: Kleinmond Solid Waste Transfer Station

The Kleinmond transfer station is externally audited annually. The latest audit was conducted by JPCE in November 2013. The audit found that the site is compliant with all of its permit conditions.

Waste is not recovered at the Kleinmond transfer station, but collected clear bags are transported to the Hermanus MRF for recovery.

Collected general waste is offloaded onto the apron floor and pushed into containers for haulage to the Gansbaai landfill for disposal, but will be transported to the Karwyderskraal landfill from April 2015. The public off-loads garden waste and clean building & demolition waste at the drop-off area. The garden waste is chipped and transported to the Karwyderskraal landfill for composting. The building & demolition waste is also transported to the Karwyderskraal landfill to use as cover material.

The public can also bring their household hazardous waste which is stored in dedicated containers which are locked in a shipping container and transported to the Vissershok Hazardous waste disposal site. A locked shipping container has been provided for e-waste as well.

**Kleinmond Transfer Station
Summary Table**

Type of facility	Waste Transfer Station, Public Drop-off
Licensed/Permitted?	Yes
License/Permit Number	16/2/7/G401/D21/Z2/P458
Classification	G:S:B+
Location	34°20'11.92"S, 19°00'16.43"E
Estimated Remaining Lifetime	Indefinite (transfer station)
Access Control?	Yes
Operating Hours	Monday to Friday: 07:30 to 18:00; Saturday and Sunday: 07:30 to 16:30
Externally audited?	Yes
Waste Types Received	General waste, Garden Waste, Building & Demolition Waste, Household Hazardous and e-waste