

6.4.8.2 Ashton MRF

The Ashton MRF (Photo 6.18) lies next to the Ashton WDF landfill offices, located less than 400m north of the township of Zolani and about 2km east of the town of Ashton (33°50'9.38"S, 20° 6'7.37"E). The facility is owned and operated by LLM. The recyclables are piled in the MRF using a forklifter (Photo 6.19). The waste is then fed onto the conveyor belt and sorted by 16 sorters (Photo 6.20). The non-recyclables are collected in a skip and taken to the Ashton WDF whilst the recyclables are baled and stored inside and outside the MRF (Photo 6.21 - Photo 6.23). The recyclables are sold to private recycling companies and transported to Cape Town.

Photo 6.18: Ashton MRF main building



Photo 6.19: Forklifter moving waste



Photo 6.20: Waste being sorted on conveyor belt



Photo 6.21: Baling of recyclables



Photo 6.22: Baled material stored inside MRF



Photo 6.23: Baled material stored outside MRF



6.4.8.3 Ashton Transfer Station

The Ashton Transfer Station has been recently constructed and will service the Ashton (33°50'1.12"S, 20° 5'35.86"E). In the interim it will serve as a transfer station point for Ashton WDF but once WRWDF is operational it will serve as a local transfer station that will then relay waste onto WRWDF.

Photo 6.24: Guardhouse



Photo 6.25: Recyclables drop-off section



Photo 6.26: Refuse Transfer Station Building and access ramp



Photo 6.27: Working Apron of Refuse Transfer Station



6.4.8.4 Bonnievale WDF

Bonnievale WDF permit 16/7/H500.D79.Z1.P304, is an operational G:S:B- landfill site. The site is located approximately 1.5km west of the main town of Bonnievale (30°55'36.2070"S, 20°4'49.8690"E). The Bonnievale WDF currently receives garden and park waste and builders rubble from Bonnievale. The waste is stockpiled, windrowed, chipped and sold twice a year (Photo 6.30). The site will continue to

receive garden and park waste until 2020 and has capacity to receive garden and park waste up until 2050 when WRWDF is operational. During the site visit the site was observed to be in neat condition. The site was fenced, had gated access, had ablution facilities was manned and no fires or animals were present on site (Photo 6.28 - Photo 6.30).

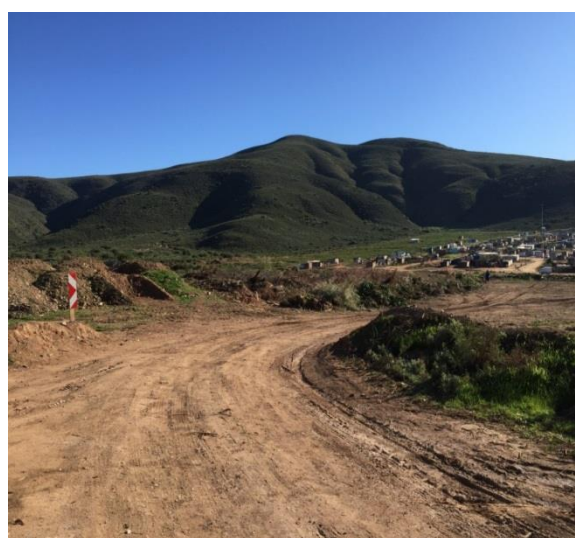
Photo 6.28: Notice board and security outhouse



Photo 6.29: Security outhouse and ablution



Photo 6.30: Garden and park waste piles



6.4.8.5 McGregor Historical WDF

McGregor WDF has been issued with a closure licence. The site is located approximately 2km south west of the town of McGregor, behind the current McGregor drop off facility (33°57'43.76"S, 19°48'28.31"E). The site is one of the CRR funded projects that LLM has prioritised within the next 3 years.

The site was identified by DEA&DP audits to have a compliance rating of 18%. The score was attributed to the following:

- No waste management compliance officer.
- No leachate monitoring.
- No water quality monitoring.
- Lack of external auditing.
- No record keeping.
- No soil contamination test.
- Inadequate soil erosion measures.

A test for volatile organic compounds including methane was conducted on 11 May 2016. No Methane Gas was detected.

Photo 6.31: McGregor Historical WDF



6.4.8.6 McGregor Drop Off Facility

The McGregor Drop Off Facility is located approximately 2km south west of the town of McGregor (33°57'44.78"S, 19°48'30.25"E). The site can be accessed via a dirt road to the south of the town. The site is fenced, has gated access, and security building with ablutions (Photo 6.32 and Photo 6.33). Waste can be dropped off into skip containers for general waste, garden and park waste, building and demolition waste and recyclables, which is accessed via a concrete ramp that loops around the site (Photo 6.34 - Photo 6.36).

Photo 6.32: Access to site



Photo 6.33: Security building



Photo 6.34: Ramp with skips



Photo 6.35: Skip for garden and park waste

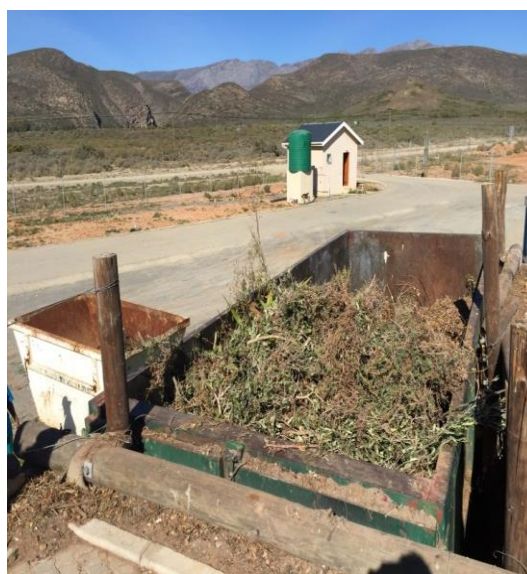


Photo 6.36: Skip with general waste



6.4.8.7 Bessieskop (Montagu) WDF

Bessieskop in Montagu permit B33/2/800/45/2/P169 receives building and demolition waste. The site is located approximately 1km east of the town of Montagu (33°47'37.50"S, 20° 8'5.63"E), adjacent to the Montagu Transfer Station. The site is accessed via a dirt road from the R62 (Photo 6.37). The site is

situated on top of a hill, with the waste pile being much higher than the fences surrounding it (Photo 6.38 - Photo 6.40).

Photo 6.37: Gated access



Photo 6.38: Waste pile looking west

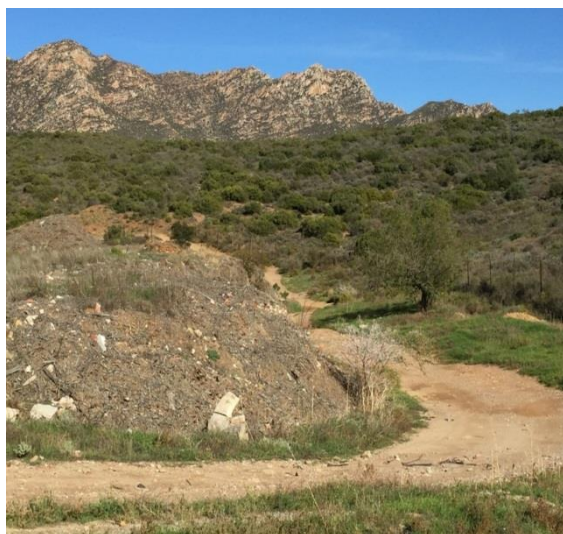


Photo 6.39: Waste pile looking south



Photo 6.40: Looking north east of site



6.4.8.8 Montagu Transfer Station

The Montagu Transfer Station is located approximately 1km east of the town of Montagu and is accessed via a turn off from the R62 to Barrydale (33°47'39.5280."S, 20°8'1.6008"E). The site is well run and neat. It hosts controlled access, a security building, parking for waste vehicles and a ramp for dropping of waste. Skips are provided on the elevated level of the ramp for plastic, paper and cardboard, metal and tin and glass. Containers for garden and park waste and non-recyclable waste are placed at the lower level of the retaining wall so that waste can be dropped from top. The garden and park waste containers are then transported to the garden and park waste chipping facility in Robertson. The recyclables are then sent to Ashton MRF, sorted, baled and sold to private recycling companies.

Photo 6.41: Notice board



Photo 6.42: Access to site



Photo 6.43: Skips for recyclables



Photo 6.44: Plastic skip



Photo 6.45: Paper and Cardboard skip



Photo 6.46: Metal and tins skip



Photo 6.47: Glass skip



Photo 6.48: Non-recyclables drop off platform



Photo 6.49: Garden and park waste



Photo 6.50: non-recyclable general waste



6.4.8.9 Robertson WDF

The Robertson WDF is a class B landfill that has been closed and rehabilitated. The site scored 51.67% for compliance audit done by DEA&DP and requires attention. There is no leachate dam and no monitoring of water quality testing.

6.4.8.10 Robertson Transfer Station

The Robertson Transfer Station is located approximately 1.3km south west of the town of Robertson (33°49'15.55"S, 19°52'15.27"E). The site has a dedicated area for drop-off of recyclables waste and non-recyclables (Photo 6.51 - Photo 6.56). The site is gated, manned, has a good condition access road and an access ramp that allows waste to be offloaded from a platform into skips and containers. The sign was well kept and has good sign posts for waste streams.

Photo 6.51: Site access and security building



Photo 6.52: Containers for non-recyclable waste



Photo 6.53: Skips for recyclables



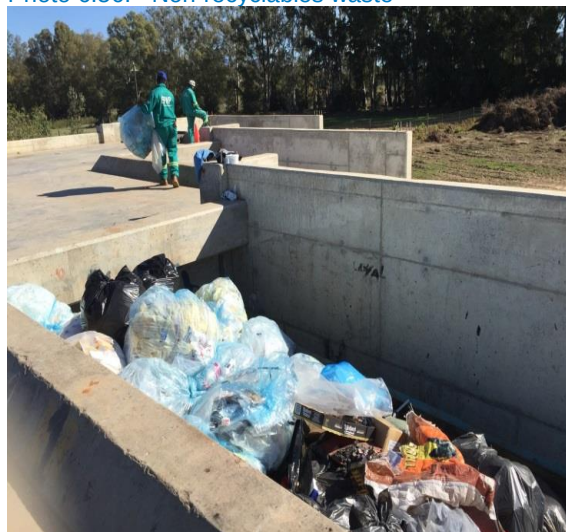
Photo 6.54: Rusty glass skip



Photo 6.55: Non-recyclables waste platform



Photo 6.56: Non-recyclables waste



6.4.8.11 Robertson Composting Facility

The Robertson Composting Facility shares the same site as the Robertson Transfer Station and is located approximately 1.3km south west of the town of Robertson (33°49'11.68"S, 19°52'16.46"E). The site is gated, manned and makes use of a FEL for the operations with respect to garden and park waste. The garden and park waste is moved and laid in windrows to produce compost.

Photo 6.57: Hired chipper for Robertson Composting Facility



Photo 6.58: Windrows of compost at Robertson Composting Facility



6.4.9 Waste Minimisation, Re-use and Recycling Initiatives

LLM is engaged in multiple waste minimisation, reuse and recycling initiatives. Besides offering separation at source for the main towns, the municipality provides educational programmes that drive and increase the levels of participation of the community. These initiatives include:

- LLM presentations to school and organisations about waste reduction, re-use and recycling
- Tedcor (Youth in Waste) door to door campaign - The main aim of the intervention was to increase community involvement and participation in recycling. The campaign also was used to inform communities of solid waste services offered by the municipality and collect information on the performance of solid waste management through the use of surveys.
- LLM hosts educational tours of the Ashton MRF for schools and organisations

6.5 Previous Waste Management Objectives

The 2nd generation LLM IWMP prescribed five main objectives (JPCE, 2012):

- Awareness and Education
- Quantifying Prevention, post collection recovery, post collection composting & data collection
- Engineered Waste Disposal Facilities & Monitoring of Waste Disposal
- Collection Service Review
- Cleansing

LLM has partially met its objectives as can be seen in Table 6-28, and the outstanding actions will need to be included as part of the needs assessment and gap analysis processes of the 3rd generation IWMP.

Table 6-28: Previous Waste Management Objectives as per 2ND generation IWMP

Objective	Actions being carried out	Outstanding Actions	Overall Achievement of Objective
Awareness and Education	Talks are given to schools and organisations, Tedcor have a door-door campaign, Ashton MRF hosts site tours for schools and organisations	None – ongoing process	Goal has been met
Quantifying Prevention, Post Collection Recovery, Post Collection Composting & Data Collection	LLM is registered on IPWIS, Ashton MRF and composting in Robertson are assisting diversion of waste	Increase diversion of waste through completion of transfer stations at Ashton	Goal has been partially met
Engineered Waste Disposal Facilities & Monitoring of Waste Disposal	Closure and Rehabilitation applications have been submitted	Completion of closure and rehabilitation of WMFs Addressing non-compliances	Goal has been partially met
Collection Service Review	No action has been taken	Route Optimisation Study for waste collection services	Goal has not been met

Objective	Actions being carried out	Outstanding Actions	Overall Achievement of Objective
Cleansing (Waste collection services)	Waste collection services are provided by the municipality	Ongoing process	Goal has been met

6.6 Economics & Financing of Waste Management Practices

This section discusses existing projects, expenditure, solid waste tariffs and income for the LLM Solid Waste Management.

6.6.1 Projects

The majority of projects are capital replacement reserve (CRR) funded projects with the new transfer station in Montagu and the drop off facility being MIG funded. The total medium term revenue expenditure (MTREF) for the next 3 years is estimated to be R26 million, with the bulk being in 2018/19 for the closure and rehabilitation of the McGregor landfill site. These are some of the identified action items for compliancy that will ensure that LLM meets its objectives. The Assessment of Municipal Integrated Waste Management Infrastructure Summary Report (JPCE, 2016) states that no further projects are required to meet the 20% waste diversion target. As per the report, the Ashton and Bonnievale WDFs are scheduled to commence closure in 2017 for compliance purposes, but this may be financially prohibitive for the municipality to do so within the next 5-year period. The cost of compliance with existing licenses is approximately R4.1 million for operational compliance and a further R23.7 million for rehabilitation compliance. The cost requirement for the rehabilitation and closure of the WDFs as no further infrastructure is required to meet the 20% diversion. It is estimated that the closure and rehabilitation costs for Ashton WDF and Bonnievale WDF will be R18 million and R12.5 million respectively. The table below shows scheduled projects from the municipality prior to the development of the Assessment of Municipal Integrated Waste Management Infrastructure Summary Report. All the projects will be examined in the gap analysis and needs assessment of this IWMP.

Table 6-29: Projects Summary and Expenditure

	Wards	Total MTREF	2016/17	2017/18	2018/19	Source of funding
Closure and Rehabilitation of the McGregor Landfill Site	5	16000000	-	-	16000000	CRR
Purchase of 2Axle Single Bin Trailer With Extra	All	350000	-	350000	-	CRR
Purchase of new Skip Truck	All	950000	950000	-	-	CRR
Supply and Installation of Street Bins in Robertson	1,2 & 5	150000	-	150000	-	CRR
Purchase of Wheelie Bins	All	1500000	500000	500000	500000	CRR
Purchase of Skips	All	560000	110000	450000	-	CRR

	Wards	Total MTREF	2016/17	2017/18	2018/19	Source of funding
Double Axle High Lifter Compactor Refuse Removal	All	2300000	-	2300000	-	CRR
New Drop Off Facility Bonnievale	4, 8	4251850	4251850	-	-	MIG
Total		26061850	5811850	3750000	16500000	

6.6.2 Solid Waste Expenditure

The LLM Solid Waste cost expenditure budgeted for the 2016/17 financial year has been split into the main subcategories of salaries, wages & allowances (Table 6-30), general expenditure (Table 6-31), repairs (Table 6-32), capital gains tax (Table 6-33) and contribution to capital expenditure (Table 6-34).

Table 6-30: Salaries, wages & allowances

Salaries, wages & allowances	2016/17 Expense (Rands)
Housing	213931
Bonus	705013
Group Insurance	19435
Leave reserves	315147
Medical help	229445
Medical contribution pensioner	220423
Overtime	705020
Pension fund	1447792
Registrations	7458
Salaries	8045469
Allowances - Travel and Accommodation	11151
Allowances - Motor	0
Allowances - Other	139110
Unemployment insurance	92989
Long service awards	74485
Sub total	12226868

Table 6-31: General expenditure

General expenditure	2016/17 Expense (Rands)
Administration fees	636162
Delegation fees	5976
Developers	0
Fuel	2303946
Municipal services	34522

General expenditure	2016/17 Expense (Rands)
Sundry expenditure	9825
Recycling material	27154
Impairment	0
Composting works	54054
Contractors	1041439
Licences	0
Plant hire	20426
Nuisance control	877
Professional services	139382
Rehabilitation	596225
Cleaning substances	19731
Cleaning of erven	0
Cleanup projects	13750
Uniforms	126001
Loss on Sale on Assets	584
Insurance Premiums	98532
Refuse bins	0
Refuse bags	689216
Depreciation	11535204
Sub total	17353006

Table 6-32: Repairs

Repairs	2016/17 Expense (Rands)
Equipment	131786
Buildings	12892
Sites and lawns	8374
Vehicles	2199286
Sub total	2352337

Table 6-33: Capital gains tax

Capital cost	2016/17 Expense (Rands)
External interest	1810
Post retirement medical	412118
Long service awards	62982
Provision - Landfill site	3279513
Sub total	3756422

Table 6-34: Contribution to capital expenditure

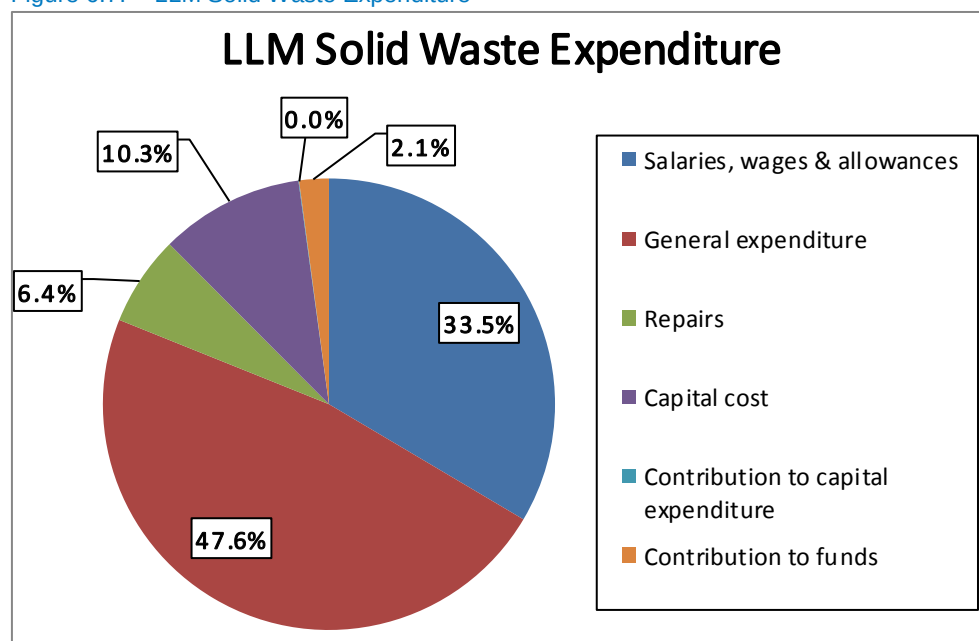
Contribution to capital expenditure	2016/17 Expense (Rands)
Inventory items	16716
Sub total	16716

In 2016/17, the LLM Solid Waste Management spent approximately R36.5 million (Table 6-35). The largest allocations are general expenditure (47.6%) and salaries, wages & allowances (33.5%). The major expenses in general expenditure include the depreciation, contractors and impairments. The results are also displayed in Figure 6.7. This information is important as it may inform future actions such as reducing costs such as revising contracts and or staffing. The issues will be looked at in the gap analysis.

Table 6-35: Expenditure Summary

Expense Category	2016/17 (Rands)	Share of expense category as percentage of total expense (%)
Salaries, wages & allowances	12226868	33.5%
General expenditure	17353006	47.6%
Repairs	2352337	6.4%
Capital cost	3756422	10.3%
Contribution to capital expenditure	16716	0.0%
Contribution to funds	771540	2.1%
Total Expenditure	36476889	100.0%

Figure 6.7: LLM Solid Waste Expenditure



6.6.3 Solid Waste Tariffs

The LLM Solid Waste Tariffs are rendered to LLM residents and businesses under seven general categories:

- General Refuse removal – residential and business waste
- Building and demolition waste – large quantities of building and demolition waste
- Rejected material – waste that is generated because of non-conformance with business or industry service/product standard including poor quality, old or damaged goods.
- Skips – skips for hire by businesses
- Garden refuse – residential and businesses garden and park waste including purchasing of chipping operations
- Special services – waste disposal services for special waste such as asbestos and tyre waste.
- Refuse bags – sale of refuse bags

LLM has created a comprehensive set of tariffs and uses a combination of measurements for their tariffs including mass (kg and tons), frequency (monthly), or volume (m³).

Table 6-36: LLM 2016/17 Additional Solid Waste Service Tariffs

Category	Subcategory	2016/17 Tariff (incl. VAT)	2016/17 Tariff (excl. VAT)
General Refuse Removal	Removal of rejected tins per ton	304	266.67
	Removal of garden refuse per m ³	99	86.84
	Removal of garden refuse per ton	268	235.09
	Special removal of household refuse per ton	372	326.32
	Special removal of business refuse per ton (afterhours)	475	416.67
	Removal of industrial refuse per ton	424	371.93
	Small holdings that dump refuse up to 4 households (farms)	89	78.07
	Rural businesses that dump refuse up to 12 times (households/farms)	288	252.63
	Additional dumpings per household more than 12 times	25	21.93
	Rural businesses that dump refuse on an ad-hoc basis per ton	180	157.89
	Removal of illegal dumpings	-	-
	Clean building rubble / top soil self dump at landfill site	-	-
Building and demolition waste	Clean (only sand, stone, soil, small pieces of concrete, bricks less than 100mm)	Free	Free
	Contaminated with tree stumps and refuse and contains concrete pieces greater than 100mm(price per ton)	180.00	157.89
Disposal of rejected material	Removal of rejected material per kg	3.00	2.63
	Self dumping of rejected material per kg	2	1.75
	Fruit delivered at compost area per ton	243	213.16
Skips	1603 Monthly rent 6 m ³ (One removal per month)	530	464.91
	1604 Monthly rent 9 m ³ (One removal per month)	648	568.42

Category	Subcategory	2016/17 Tariff (incl. VAT)	2016/17 Tariff (excl. VAT)
	1606 Additional removal of skip 6m ³ (Additional to first removal per month)	295	258.77
	Additional removal of skip 9m ³ (Additional to first removal per month)	377	330.7
Garden Refuse	Disposal of Clean Approved Garden Refuse	Free	Free
	Compost per m ³	201	176.32
	Compost per 30 kg bags	25	21.93
	Green Chippings per/ton	198	173.68
	Green Chippings per/m ³	86	75.44
	Compost per ton	266	233.33
Special Services	Safe disposal of Asbestos (R/kg)	450	394.74
	Safe disposal of Tyres (R/tyre)	18	15.79
	Safe disposal of Fluorescent Tubes (pre tube)	5	4.39
Refuse Bags	Refuse Bags (Per Pack)	25	21.93

The LLM solid waste tariff projections for the next years increased by 8.4% between the previous year and the current 2016/17 financial year. The waste is in categories for general household waste, mega industries which pay for collections and disposal, sports grounds, rejected wastes which are not accepted at the Ashton WDF and municipal waste.

Table 6-37: Solid Waste Collection Services for Households and Businesses Tariff

Category	Subcategory	2015/16 Tariff (excl. VAT)	2016/17 Tariff (incl. VAT)	Increase (%)
General	One removal per week - general	100.14	108.55	8.40%
	One removal per week - additional levy per bag > 2 bags per removal	5.50	5.96	8.40%
	Indigent tariff (income =< 3000 per month) (100% subsidized)	100.14	108.55	8.40%
	Informal Housing (100% subsidized)	100.14	108.55	8.40%
	Two - Three removals per week	421.68	457.10	8.40%
	Bulk removals and perishable products	792.77	859.36	8.40%
	Complexes/developments liable for internal services	90% of basic fee	90% of basic fee	
Mega Industries – rejected material	Langeberg & Ashton Foods factory 1	14439.94	15652.89	8.40%
	Langeberg & Ashton Foods factory 2	11345.58	12298.72	8.40%
	Fruit Packers	1488.17	1613.16	8.40%
	Parmalat	2781.61	3015.27	8.40%
	All wine cellars	1390.81	1507.64	8.40%
	Small cheese factories	1390.81	1507.64	8.40%
	Moreson	1001.39	1085.51	8.40%

Category	Subcategory	2015/16 Tariff (excl. VAT)	2016/17 Tariff (incl. VAT)	Increase (%)
Sports Grounds	Sports Grounds	90.41	98.00	8.40%
Rejected Material	Robertson Abattoir	9429.70	10221.79	8.40%
	Robertson Abattoir (Manure)	6147.38	6663.76	8.40%
	Bonnievale Abattoir	4464.50	4839.52	8.40%
	Excull	6147.38	6663.76	8.40%
	Delgado Fishery	3379.67	3663.56	8.40%
	Parmalat	11905.33	12905.38	8.40%
Municipal Departments	One removal per week	100.14	108.55	8.40%
	Two - Three removals per week	403.35	437.23	8.40%
	Department of Sport	90.41	98.00	8.40%

6.6.4 Income Summary

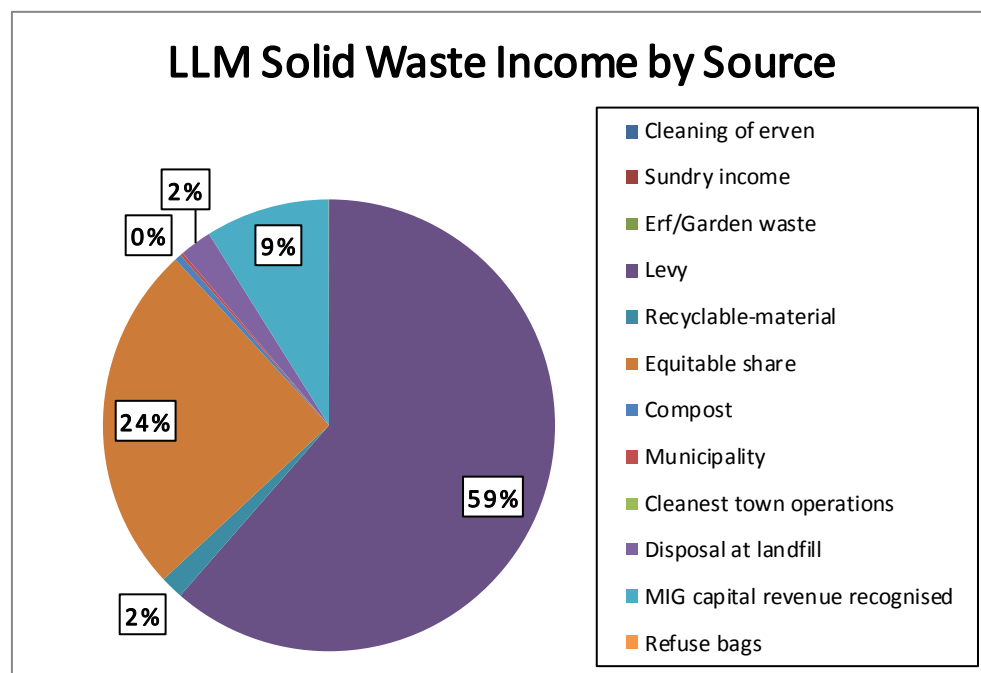
The main income categories are shown in Table 6-38. The total income for LLM is approximately R28.3 million. This total represents the amount less the cost of covering the free waste services afforded to the 5500 indigent households within LLM (as per the LLM IDP 2016/17). The income generated by the billing of residents and businesses for waste services (levy), is the largest component of the income accounting for 59% of the total income followed by the equitable share allocation (24%) and MIG capital which accounts for a further 9% of the total share.

The expenditure of the LLM Solid Waste Management as mentioned in the previous section on expenditure, was approximately R36.5 million. Hence, there is a deficit amounting to nearly R8.2 million for Solid Waste Management.

Table 6-38: Summary of Income

Income source	Income (Rands)	Income source as a percentage of total income (%)
Cleaning of erven	0	0%
Sundry income	484	0%
Erf/Garden waste	2393	0%
Levy	20119648	59%
Recyclable-material	540507	2%
Income due to change in discount rate	1244505	4%
Equitable share	8205861	24%
Compost	154518	0%
Municipality	68675	0%
Cleanest town operations	0	0%
Disposal at landfill	749693	2%
MIG capital revenue recognised	2914970	9%
Refuse bags	5111	0%
Indigents - Income foregone	-5705472	
Previous years corrections	-5703	
Total Income	28295192	100%

Figure 6.8: LLM Solid Waste Income by Source



6.6.5 Prosecution

Currently LLM does not have an applicable waste by-law and so cannot impose penalties or fines or properly enforce or prosecute any persons or parties for contraventions of national and provincial solid waste legislation. The Waste By-law is viewed by the LLM Solid Waste Management as a key component to be addressed in the needs assessment.

7 Public Participation Process

Following the approval of the Situational Analysis Report by LLM, a public participation process was undertaken to establish the needs and gaps of the communities in LLM. The process was conducted as shown in the table below:

Table 7-1: Public Participation Meetings

Date	Town/Settlement	Time	Venue
06 March 2017	Robertson	19:00	Robertson Town Hall
07 March 2017	Ashton	19:00	Ashton Town Hall
08 March 2017	Bonnievale	19:00	Chris van Zyl Hall
09 March 2017	Montagu	19:00	Wilhelm Thys Hall
13 March 2017	McGregor	19:00	McGregor Community Hall

The public participation was advertised in Gazette 31 January 2017, the local newspaper, and public notices were placed on the LLM website and in public facilities. In addition to the above, SMS's were sent to all residents in the respective towns.

Some of the issues raised during the public participation were common gaps and needs raised by the various communities. These included illegal dumping, recycling and provision of waste services. The issues were grouped and summarised in terms of the main issues, concerns as raised by the communities, the towns affected and the arising need. The consultant from Mott MacDonald, was accompanied by one representative from the municipality, for each of the meetings. No members from the communities of Ashton, Bonnievale and Montagu attended the meetings.

Please refer to Appendix D for all documents related to the public participation process.

Table 7-2: Outcomes of public participation process meetings

Issue	Town	Needs
Illegal dumping – skips are being used for all types of waste	Robertson	Education and awareness camp. Wheelie bins. Swop shops or buy back centres.
Waste collection is dropping waste on street when bins are lifted		Allocation and performance of street cleaner teams. need to be revised and reviewed.
Illegal dumping in new camp area	McGregor	Education and awareness camp. Wheelie bins. Swop shops or buy back centres.
Certain streets are littered with dirt		Allocation and performance of street cleaner teams. need to be revised and reviewed.
Lack of recycling		Education and awareness camp. Swop shops or buy back centres. Possible outsourcing.
Building rubble being dumped and not monitored		Enforcement of illegal dumping.

8 Gaps and Needs Assessment, Targets, Objectives and Policies

8.1 Gaps and Needs

The “Gaps” section discusses the gaps between the status quo and the desired state. The desired state was based on the objectives of the Framework for the National Waste Management Strategy, 8 June 2009, which summarises the general duties in respect of waste management as specified in the National Environmental Waste Act:

- preserving natural resources by minimising their consumption and preventing pollution;
- waste minimisation, which includes recycling, re-using, and recovering waste;
- treatment and safe disposal of waste as a last resort;
- effective delivery of waste services;
- remediation of contaminated land;
- integrated waste management reporting and planning;
- promoting public awareness of the impact of waste; and
- achieving compliance with waste legislation and policy.’ (DEAT, 2009)

8.2 Needs Matrix and Prioritisation of Needs

The needs identified from the public participation process were then included in the needs assessment done from comparing the status quo as observed during site visits and consultation with LLM. Some of the needs identified in the latter process overlap with those from the public participation and comments on the draft IWMP (Appendix D), so a consolidated needs matrix was developed to eliminate duplication.

The needs were then assessed in terms of strength, weakness, opportunities, and threats (SWOT) to determine the importance and hence priority of the needs.

Using the SWOT analysis the needs were then rated in the following categories:

- Legal – Importance to legislative requirements such as the Waste Act
- Financial – Impact on financial sustainability and costs of the waste management system
- Institutional – Impact on human and institutional resources and service delivery of solid waste management, and
- Environmental – Impact on environment stemming from meeting need
- Socio-economic impact – will the need create jobs or add to the economy through provision of goods and services

The impacts were rated in terms of the positive benefits stemming from meeting the need. The ratings and scores are shown in Table 8-1.

Table 8-1: Rating and scores for impact categories

Benefit Rating	Score
None	0
Little	1
Average	2
Good	3
Very good	4
Excellent	5

The categories were given even weightings and added to give a total priority rating. The needs were then ranked as per the priority rating (Table 8-2).

Table 8-2: Prioritised and Ranked LLM Needs Matrix

Ranking	Current State	Desired State	Gaps	Causes	Needs	SWOT analysis				Priority category					Priority rating
						Strengths	Weaknesses	Opportunities	Threats	Legal Impact	Financial Impact	Institutional Impact	Socio-economic impact	Environmental Impact	
1	LLM has a second generation IWMP	Comprehensive and legally compliant IWMPs updated every 5 years.	The IWMP has not been revised.	Lack of funding and lack of prioritisation by municipality. More than 5 years has elapsed and it is time for a new review.	LLM needs to review their previous IWMP – it is being reviewed in this IWMP report.	Guiding document for waste management over a 5-year period. Discusses what waste management needs are and what projects are priority. Helps to attain funding for waste management projects. Used to attain a sustainable waste management system.	Requires action from municipality. Depends on whether funding is acquired in time.	Creates a basis for waste management. Can include sustainable principles and use of new technologies.	Poor monitoring of KPIs. Projects may be overlooked in favour of politically appealing projects such as housing or water and sanitation.	5	5	5	5	5	25
2	LLM has an outdated waste by-law.	Comprehensive, holistic, and legally compliant waste by-laws.	LLM has a waste by-law that does not cover new legislation released by DEA&DP and DEA.	Waste management by-law was not granted funding to be updated.	LLM needs to develop a waste by-law.	States the minimum requirements for service levels, collection services, transportation of waste, waste transfer, waste treatment, waste disposal, waste pollution, payment of services and enforcement of waste contraventions that residents are afforded and that are provided by the LLM as well as roles and responsibilities of waste management.	Needs legal and financial input.	Creates a basis for waste management. Can include sustainable principles and use of new technologies. Enforces municipality to be legally bound and compliant to waste management services.	Might exclude important waste issues.	5	2	5	5	5	22
3	LLM has no waste policy.	Comprehensive, holistic, legally compliant waste policy.	LLM has no waste policy.	Waste management was not considered a high priority in the past.	LLM needs to develop a waste policy.	Guides LLMs waste management and aids the development of strategic objectives.	Needs legal and financial input.	Creates a basis for waste management. Can include sustainable principles and use of new technologies.	Lack of funding. Lack of skills.	4	4	4	4	4	20
4	Waste services are costly.	Cost reflective waste services.	Actual cost versus sub-optimal cost to currently provide waste services.	Poor management of collections fleet.	Need to consider outsourcing work to a private contractor as an option.	Ensures safe, reliable, service delivery. Reduces waste collection transport costs.	Difficult to assess contracted prices for waste services.	Reduced waste tariff costs. Reduced expenses for waste management system.	Company becoming insolvent.	1	4	5	3	5	18
4	Low income population unaware of littering, dumping, minimisation and recycling.	Ensure that people are aware of the impact of waste on their health, well-being, and the environment.	No knowledge of waste and the environment.	Poor level of education in LLM and lack of awareness and education programs concerning waste.	Create awareness amongst residents about waste and their environment.	Targets problem at source. Long lasting. Inexpensive way of preventing littering and dumping.	Difficult to effect behavioural change. Requires people with knowledge about solid waste.	Creating a clean and healthy environment. Town beautification.	Illiteracy of population. No education about importance of not littering or dumping solid waste.	3	3	3	4	5	18

Ranking	Current State	Desired State	Gaps	Causes	Needs	SWOT analysis				Priority category					Priority rating
						Strengths	Weaknesses	Opportunities	Threats	Legal Impact	Financial Impact	Institutional Impact	Socio-economic impact	Environmental Impact	
6	Few vacancies are available in the LLM solid waste department.	Adequate labour resource in LLM Solid Waste department.	Vacancies in LLM solid waste department.	Lack of skills. Lack of funding.	Fill the vacancies in the LLM Solid Waste Department.	Build institutional capacity at LLM. Improve service delivery.	Increased costs of labour.	Building a competent Solid Waste Department. Acquiring solid waste knowledge.	Lack of skilled people.	0	4	5	4	4	17
7	McGregor WDF is no longer operational and due for closure and rehabilitation.	Well maintained WMFs with infrastructure that is reliable, safe, sustainable, and sufficient for service provision.	Infrastructure that is reliable, safe, sustainable, and sufficient for service provision.	Rehabilitation has not taken place yet.	Completion of rehabilitation process.	Ensures safe, reliable, waste disposal.	Increases in capital costs. Increases in maintenance costs. Increases in operational costs.	Protection of environment from pollution.	Delays in construction. Poor construction quality. Failure to meet legal and environmental requirements.	5	2	2	2	5	16
8	Two collection vehicles being used are older than 7 years, which may be incurring high operational and maintenance costs.	Vehicles must be reliable and age appropriate.	Two Collection vehicles are too old.	Lack of funding to replace vehicle.	Replace waste collection vehicles.	Reduced transportation costs over extended period. Reduced waste tariff costs. Reduced expenses for waste management system.	Initial capital cost is expensive.	Reduced waste tariff costs. Reduced expenses for waste management system.	Vandalism.	2	5	5	2	1	15
9	Bessieskop WDF has reached capacity	Closure and rehabilitation.	Completion of closure and rehabilitation.	Rehabilitation process still underway Lack of funding.	Completion of closure and rehabilitation process.	Ensures safe, reliable, waste disposal.	Increases in capital costs.	Protection of environment from pollution.	Delays in construction. Poor construction quality. Failure to meet legal and environmental requirements.	5	0	2	2	5	14
9	Ashton WDF is nearing insufficient airspace for future waste needs.	Sufficient airspace for future waste disposal.	Additional airspace requirements.	Nearing end of useful life Waste will be diverted to Worcester Regional Waste Disposal Facility.	Application for extension on operational license.	Ensures safe, reliable, waste disposal.	Increases in capital costs.	Protection of environment from pollution.	Delays in construction. Poor construction quality. Failure to meet legal and environmental requirements.	5	0	2	2	5	14
9	Ashton WDF is nearing insufficient airspace for future waste needs.	Sufficient airspace for future waste disposal.	Additional airspace requirements.	Nearing end of useful life Waste will be diverted to Worcester Regional Waste Disposal Facility.	An application for closure and rehabilitation will need to occur when the Worcester Regional Waste Facility is operational.	Ensures safe, reliable, waste disposal.	Increases in capital costs.	Protection of environment from pollution.	Delays in construction. Poor construction quality. Failure to meet legal and environmental requirements.	5	0	2	2	5	14
12						Diverts waste from WDFs	Greater collection efforts to ensure bags			0	2	3	3	5	13

Ranking	Current State	Desired State	Gaps	Causes	Needs	SWOT analysis				Priority category					Priority rating
						Strengths	Weaknesses	Opportunities	Threats	Legal Impact	Financial Impact	Institutional Impact	Socio-economic impact	Environmental Impact	
	Food waste is sent to landfill.	Composting food waste and diverting it away from landfills.	Composting food waste and diverting it away from landfills.	No separation at source system in place.	Green bags for residents and businesses to place their food waste in.	Decreases leachate in WDFs. Decreases global warming gas emissions.	are kept separated from the general waste black bags.	Compost can be produced and sold to farmers.	Need buy in and participation from the community.						
12	Littering is a problem in low income communities.	Clean healthy environments and communities.	Reducing litter.	55% of communities have wheelie bins for black bags Lack of awareness about littering and recycling in communities.	Provision of wheelie bins to all households by LLM Education and awareness campaigns.	Reduces littering. Increases cleanliness of towns. Improvement in service levels. Reduce cleansing and illegal dumping costs.	Greater collection effort required to empty bins	Town cleanliness competitions. Improve relations with the community.	Vandalism of bins could prove costly for LLM.	0	2	3	3	5	13
12	No information on vehicle routes.	Optimised waste collection and disposal vehicle routes to promote financial sustainability.	Optimised waste collection and disposal vehicle routes.	Insufficient recording and planning of routes.	Development of optimised waste collection vehicle routes.	Reduced transportation costs over extended period. Reduced waste tariff costs. Reduced expenses for waste management system.	Needs to be outsourced to a transport consultant which could be expensive.	Reduced waste tariff costs. Reduced expenses for waste management system.	Consultants could take longer than expected to complete study.	0	5	5	2	2	13
12	No waste minimisation practised.	Waste minimisation practiced by all residents, businesses, and industries.	No waste minimisation is practised.	No planning documenting how waste minimisation should be implemented or monitored.	Development and inclusion of waste minimisation in all waste management planning documents. Continual monitoring of waste minimisation.	Diverts waste from WMF. Reduces waste collection costs. Reduced tariff costs. Reduced waste management expenses.	Decrease in revenue from waste collection services. Decrease in revenue from WDF disposal.	Diverts waste from WMF. Reduces waste collection costs. Reduced tariff costs. Reduced waste management expenses.	Lack of participation from community.	0	2	3	3	5	13
16	LLM's strategic objectives are not environmentally aligned with provincial and national strategic objectives	LLM's strategic objectives are aligned with provincial and national strategic objectives.	Alignment of environmental objectives.	Preservation of environment not a high priority.	Inclusion of environmental objectives in LLM planning documents such as IDP.	Makes environmental protection and conservation a priority.	Reduces focus on financial and social aspects.	Environmental protection of pristine environments. Promote remediation of damaged or polluted environments.	May not receive priority it deserves.	3	0	3	3	3	12
17	Businesses are being minimally assisted by LLM with waste management	Businesses being assisted by LLM with waste management	Assistance from LLM with waste management license applications.	No comprehensive database of stakeholders in LLM that can be used by	A comprehensive database of stakeholders in LLM that can be used by	Enabling businesses to treat own waste and be legally compliant. Diverting waste from WDF.	Constant upkeep required from LLM	Build stronger relations with businesses in the area.	Chance of excluding vital stakeholders which may later halt processes	3	1	1	3	3	11

Ranking	Current State	Desired State	Gaps	Causes	Needs	SWOT analysis				Priority category					Priority rating
						Strengths	Weaknesses	Opportunities	Threats	Legal Impact	Financial Impact	Institutional Impact	Socio-economic impact	Environmental Impact	
	license applications.	license applications.		businesses to develop waste license applications.	businesses to develop waste license applications.	Ashton WDF and increasing remaining airspace life. Increasing waste diversion from Ashton WDF.		Build stronger relations with communities. Opportunity for skills and knowledge sharing.							
18	Public participation in recycling in low income areas is low.	High rate of public participation in recycling in low income areas.	Public participation rates need to increase.	Lack of education and awareness .	Need to increase participation using an incentive scheme.	Increases public participation.	Establishment and monitoring of scheme by municipality.	Can promote a culture of recycling in community. Build stronger relations with communities. Opportunity for skills and knowledge sharing.	Lack of participation or ownership from community.	0	1	2	3	4	10
18	Hazardous Waste included as part of the waste stream to landfill	Only general waste disposed at Ashton WDF and hazardous waste sent to hazardous WDF.	Safe method to collect and dispose of hazardous waste.	Hazardous waste not seen as a priority since it is only 2% of the waste stream.	A strategy for dealing with hazardous waste	Ashton WDF and increasing remaining airspace life. Increasing waste diversion from Ashton WDF. Environmentally safer method of disposal which ensures that not only is the community and environment safe but that legal requirements such as the Ashton WDF permit are upheld.	Might cost time and effort for a small amount of investment Hazardous waste is difficult to handle and collect Hazardous WDFs are few and far between.	Possibility of including household hazardous waste as a separate tariff. Possibility of business opportunity for household hazardous waste collection and treatment.	Lack of interest from community.	0	1	2	3	4	10

9 Viability and Scenarios

9.1 Scenarios

Five waste management scenarios were developed by using combinations of actions from the objectives and policies table. The following scenarios were developed:

- Scenario 1: Base case
- Scenario 2: New collection fleet
- Scenario 3: Waste minimisation, education and awareness
- Scenario 4: No waste diversion, and
- Scenario 5: New fleet, waste minimisation, education and awareness (Best practice scenario)

9.1.1 Base Case

The base case has been developed on the following assumptions:

- LLM has a 3rd generation IWMP report.
- LLM develops a waste by-law.
- LLM develops a waste policy.
- Replacement of waste collection vehicles older than seven years.
- Completion of closure and rehabilitation process for McGregor WDF.
- Monitoring and reporting of WMFs.
- Development of optimised waste collection vehicle routes.
- All vehicles replaced in 2022 and every seven years thereafter (All vehicles are seven years or older).
- Implementation of a waste information system.
- Reporting to SAWIS.
- The vacancies in the LLM Solid Waste Department are filled.
- Development and inclusion of waste minimisation in all waste management planning documents.
- Continual monitoring of waste minimisation.
- Inclusion of environmental objectives in LLM planning documents such as IDP.
- Monitoring and reporting of solid waste plant and equipment.
- Ashton RTS will be operational from February 2017.
- Bonnievale RTS will be operational from June 2017.
- Worcester Regional Facility will be operational from 2020.
- Green bag system for household food waste implemented in 2017:
 - Diversion of food waste from WDFs increasing from 0% in 2017 to 100% of all household food waste by 2021. As per the waste characterisation, food waste makes up 32% of household waste. However, the total waste consists of both household waste and business waste. Since there is no way to estimate the business, it is assumed that only half of the waste sent to WDFs, are from households. This is a conservative approach and will also allow for low household participation rates. Thus, it has been assumed that the diversion of food waste will reduce the total waste sent to Ashton WDF by 16% in 2021.
- Bins will be provided to all households by 2021.

9.1.2 Other Scenarios

The other scenarios are adaptations of the base case scenario. The main differences are highlighted in the table below:

Table 9-1: Assumptions per scenario

Scenario 2: New Collection Fleet	Scenario 3: Waste Minimisation and Education	Scenario 4: No waste diversion	Scenario 5: Waste Minimisation & Education & Awareness + New Collection Fleet
Same as base case except: Old vehicle replaced immediately and replacement of fleet every 7 years thereafter	- Same as base case except: All businesses and households implement waste minimisation practices reducing waste collected by 5%. - Education and awareness campaigns have reduced wastage in homes and businesses by 5%. - Outsourcing of waste education and awareness campaign work to a private company	Same as base case except: No recycling or composting practised.	Same as base case except: - Old vehicle replaced immediately and replacement of fleet every 7 years thereafter. - All businesses and households implement waste minimisation practices reducing waste collected by 5%. - Education and awareness campaigns have reduced wastage in homes and businesses by 5%. - Outsourcing of waste education and awareness campaign work to a private company.

9.1.3 Waste Flows for Scenarios

The waste flows for each scenario show how waste is treated per scenario. The waste flows are a snapshot of the waste quantities from the waste model for the year 2016. These values represent the waste quantities at collection. Hence, scenarios with waste minimisation and recycling will have decreased quantities.

Table 9-2: Waste flow quantities per scenario

Town	Scenario				
	Scenario 1 - Base Case (tpa)	Scenario 2: New Collection Fleet (tpa)	Scenario 3: Waste Minimisation and Education (tpa)	Scenario 4: No waste diversion (tpa)	Scenario 5: Waste Minimisation & Education & Awareness + New Collection Fleet (tpa)
Ashton	627	1012	738	746	404
Bonnievale	373	373	336	275	247
McGregor	33	41	37	30	20
Montagu	0	0	0	0	0
Robertson	746	746	671	550	495
LLM	1779	2172	1782	1601	1166

9.1.3.1 Scenario1: Base Case

All non-recyclable household waste from the towns is taken to Ashton WDF whilst all household and business recyclables are collected by LLM at source and transported to Ashton MRF (Figure 9-1). Bonnievale garden and park waste is taken to Bonnievale WMF. All other garden and park waste is taken

to Robertson composting facility. Building and demolition waste is taken to Montagu (Bessieskop) WDF and Bonnievale WMF. Bessieskop WDF was not included as this site has limited airspace.

9.1.3.2 Scenario 2: New Fleet

There is no difference between the scenarios apart from the fact that scenario 2 uses new vehicles (Figure 9-1).

9.1.3.3 Scenario 3: Waste Minimisation and Education

Waste from all towns has been reduced by introducing waste minimisation practices and education and awareness campaigns (Figure 9-2).

9.1.3.4 Scenario 4: No waste diversion

Waste from all towns goes directly to Ashton WDF and no diversion such as recycling and composting occurs (Figure 9-3).

9.1.3.5 Scenario 5: New fleet, waste minimisation, education and composting

This scenario represents a combination of scenarios 2 and 3. The waste flows are the same as Scenario 3 (Figure 9-2).

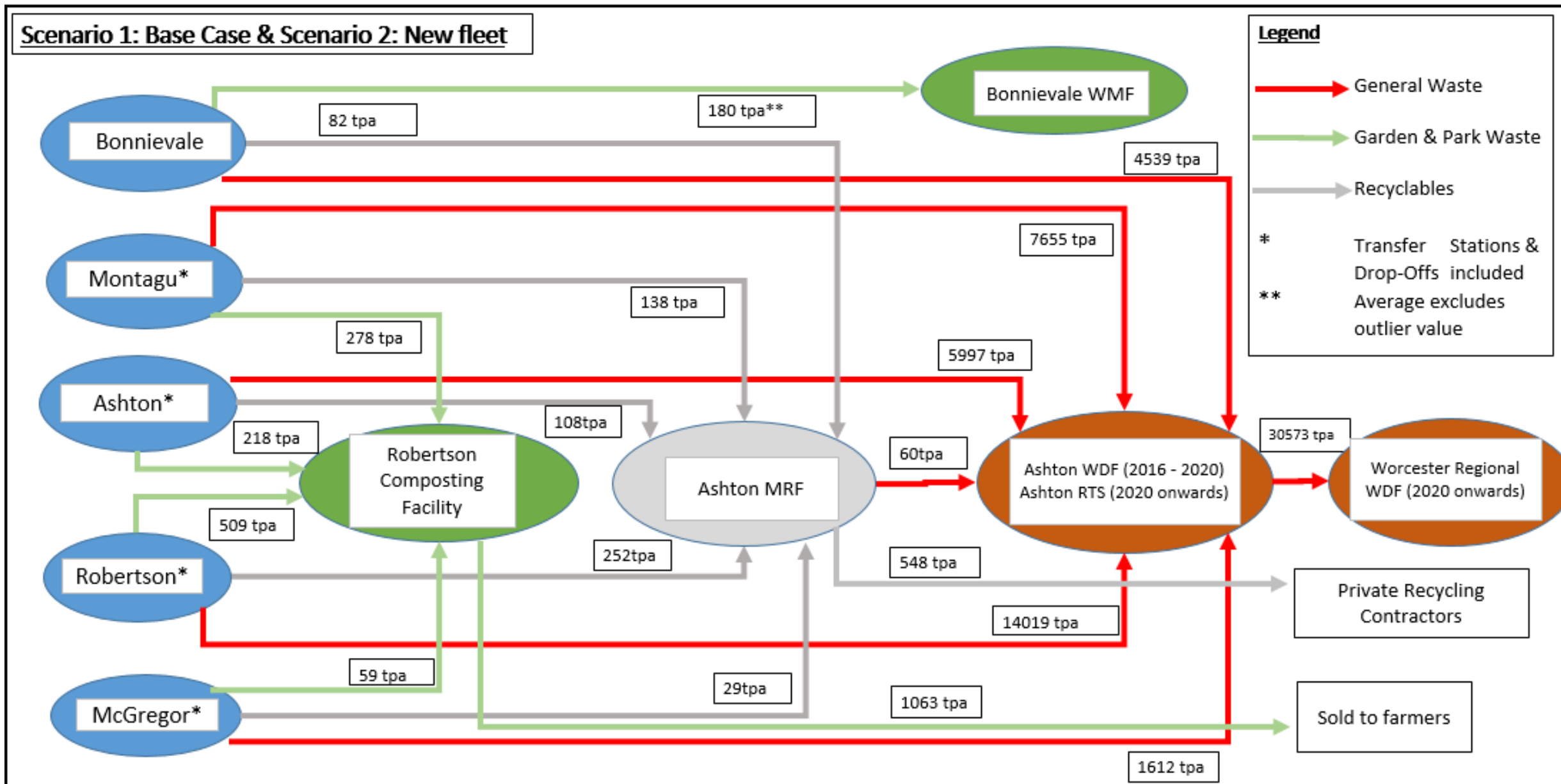


Figure 9-1: Waste flows for Scenario 1 and 2

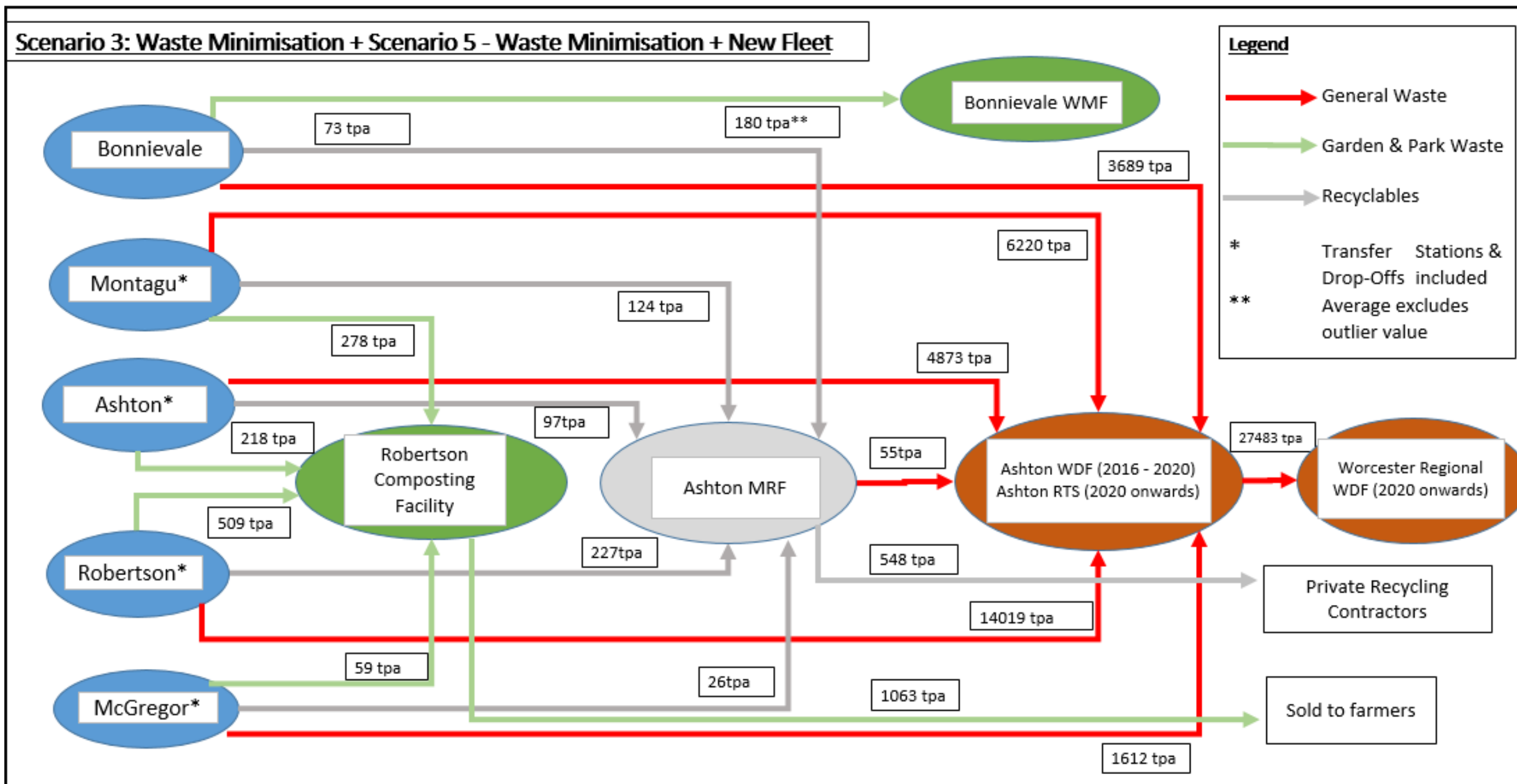


Figure 9-2: Waste Flows for Scenario 3 and Scenario 5

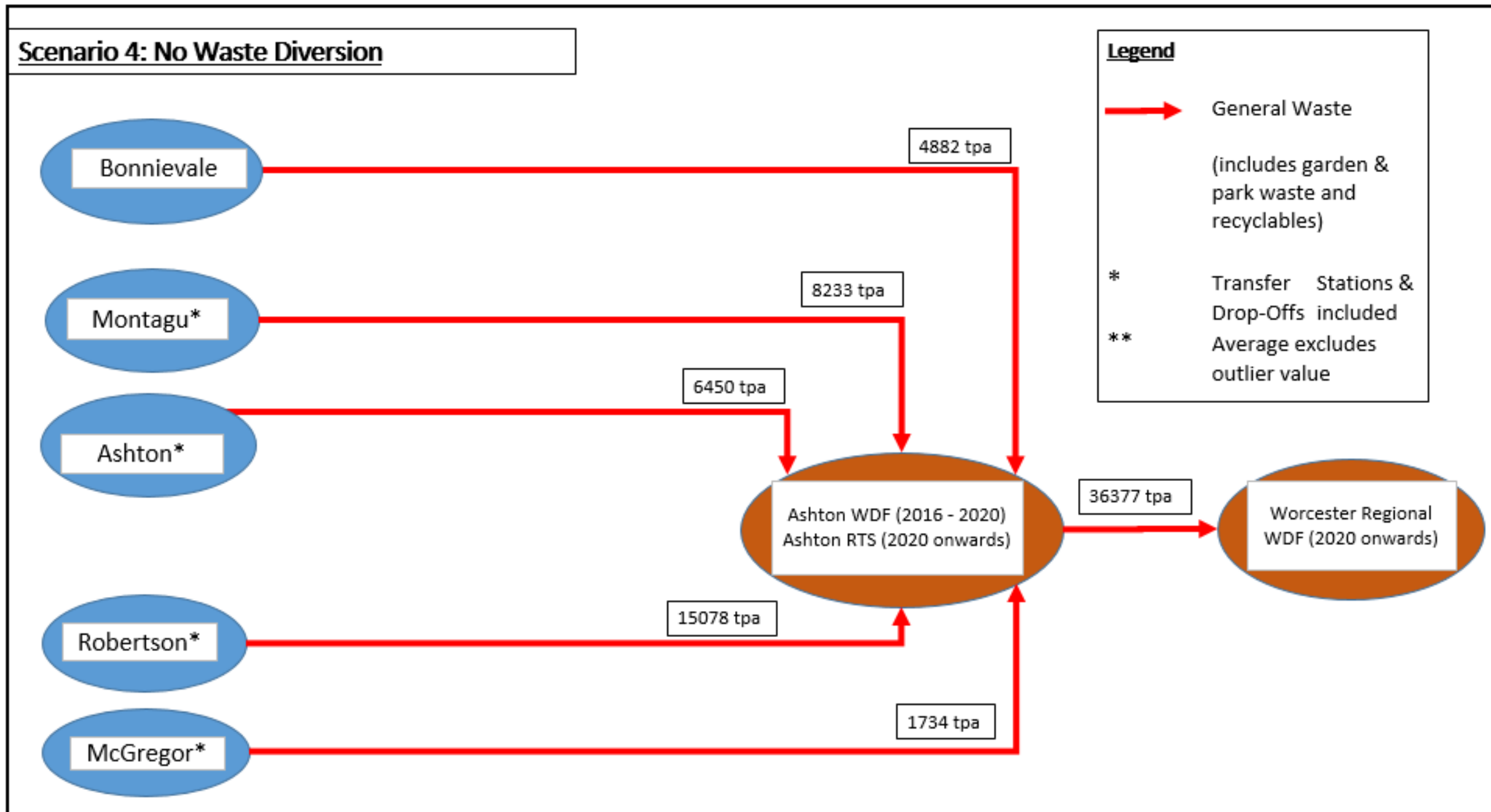


Figure 9-3: Waste Flows for Scenario 4