# 

# About

The game plays out in a town on the outskirts of a big city. This allows for easier development and manage expectations to be “reasonably realistic” without what ca be done in a game. The town consists of a several **neighbourhoods,** a **town centre,** surrounding **farms** and a few small **factories**.

Set in current time this management simulation takes the player through a discovery of the world of waste, what is waste, where it comes from, why it exists, how it affects us and what can we do to change all of that.

The management simulation is matched with a driving component that allows the player to take on challenges and their hone driving skills and feel what feels is like to drive a garbage truck complete with the hidden complexities associated with it

**The problem** - Households, Commerce and manufacturing collectively creates a large amount of garbage. Households are categorized into 3 groups each creating a different quantity of garbage. Commerce creates a large amount of garbage in large amounts such as offices generate paper and restaurants organic waste. Industry generates specialized waste such as chemicals etc.

**The solution** - Garbage generated by various sources needs to be collected in order to prevent pollution. In the game there are various methods of collecting the garbage and moving it from the source location to a central site.

**The potential** - Even though garbage collecting helps getting rid of pollution at the source it only solves half of the problem, this is where recycling comes in. The missing piece of the puzzle is to research, develop and implement methods of recycling in order not only relocate garbage but turn it into products through methods such as reduce, reuse and recycle.

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# Game Title

## Garbage King:

With a single truck you set out to change the world, one garbage back at a time.

In the outskirts of a big city you take it upon yourself to clean up the world by using your truck to pickup garbage from the neighbourhood, town centre and helping out the occasional farmer.

Honing your skills as the fastest driver can only take you that far.

Will you take up the challenge to grow and manage your fleet, purchase and expand recycling, build a reputation in your local neighbourhood?

Use your business savvy to shape the recycling industry. Trail new technologies, discover investment opportunities and use the media to your advantage.

Do you have what it takes?

# Story Background

With a keen eye for opportunity and a passion for the environment you set out to conquer the bottomless pile of garbage. Starting out with your trusty truck you enter into the garbage business doing manual pickups for earning a living.

Picking up garbage and delivering it to the local landfill provides you with a steady income that you can use to save up to gradually buy-out the local landfill.

Once you have establish a good profitable business and reputation you can invest in additional trucks, upgrade existing ones, research new ways to dispose of garbage and spread your brand and the word through advertising.

You can then further establish your facility with additional recycling modules and specialize in different types of garbage.

Clean up the neighborhood through random challenges and make sure you do well on a government tender or pay the price!

# Goals

## The Object of the Game

The player collects garbage, disposes of it and gets reputation and income.

Income is used to maintain and upgrade your fleet, purchase and upgrade recycling facilities, provide media coverage to open alternative options for solving some of the challenges of collection, disposing and cost.

Live the motto, reduce, reuse, recycle.

## Immersive Player Experience

# 

# The Landscape

## Buildings

### Garbage Producing Buildings

The composition of garbage is determined by the building the produce the garbage.

Residential

Retail & Commercial

Processing & Manufacturing

Public Services

### Garbage Processing Buildings

**Landfill (NPC)**: The landfill is an area allocated for dumping garbage. Each town has a NPC landfill that charges a fee for disposing of garbage. The functionality is limited and the landfill can only dispose of certain types of garbage. The landfill can strategically be used such as to do time trails where the bonus for completing the trail would exceed the cost of using the landfill.

Limits:

The landfill has its own processing times and may not always have capacity. The landfill has a processing kilogram per day limit.

**Landfill (Player Owned)**

The player can purchase an area for a land for setting up his own landfill. The landfill needs to be certified for healthy standards and there is an occasional check that verifies the capacity. A landfill has a recommend capacity based on the size. If exceeded the traffic should be diverted to the NPC landfill. If the player exceeds the capacity and a successful dice-roll is made to inspect the landfill the player can get a penalty. This penalty needs to be paid by a certain time period. This ensures that is a good risk vs. opportunity for the player

**Recycling Center**

**Recycling Modules** - Modules converts raw garbage that's been sorted into raw goods. Raw goods can be sold or further developer into products.

**Waste Disposal Center**

**Sorting Station** - This allows you to separate garbage into the various types.

Type will increase and decrease independently. I.e. if you realize currently you have a lot of metal it will be good to invest in metal recycling first.

### General Buildings

School

Swimming Pool

Parks

Hospital

### Interactive Buildings

**Bank** - The bank is used to perform financial components of the game. A variety of functions are available from the bank to provide visibility on the financial operations of the business. This is provided through an upgrade with a private banker. Basic operations is getting an income and looking at a balance. This becomes progressively more complex such as dealing with vehicle maintenance, loans, investments.

**Auto Shop-** the auto shop is used to repair your vehicles or upgrade them. Parts can be ordered from the newspaper, the parts are better but there is a delay on the parts as they are ordered. There are also parts that are available at the auto shop which have different attributes.

**Café** - Upcoming challenges are also available in the newspaper. This provides some heads-up for the player to prepare if they want to take part in a challenge.

The newspaper also features short bits of information about your reputation and customer sentiment. The newspaper is available from a café in town.

**General Store**

**Newspaper** - The media plays a big role in the game for influencing the town, read about city news, find good deals for upgrades, buy and sell trucks. It contains the latest research news with information about the industry and the stock market with opportunity to invest in new technology. The newspaper is used to place ads for selling a vehicle, campaigns. An example of a campaign is pamphlets about “organic recycling” this pamphlet will increase the amount of organic waste for several turns. As people fall back into regular behavior the amount normalizes.

**Town Hall** – This provides an overview of the reputation of the player in the town and can be clicked and viewed over time. The town hall can also be used to see any information on the public services component and contracts available such as looking after a school.

## Roads

Roads are not just use to connect all the buildings of the city with one another, the roads is a major component in the strategy of the game. Road are used to ensure that each day garbage collection is unique. The player can try different roads to try and pickup as much garbage as possible within a specific timeframe.

The neighbourhoods, town centre, farms and factories are all connected with road.

The road all have a speed limit that is recommended. The UI features a speed limit gauge in order that the self-driving player can see the speed of the road. If you exceed the speed limit there is a chance that you won’t be able to stop in time and accidents will impact reputation.

### Road Types

One Way

Two Lanes

Round About

Cul-de-Sac

### Road Attributes

Road Signs; Speed Limits, Yield, Stop

Traffic Lights

Obstacles; Road Block; Ducks; Old People; Children; Animals; Road Closure

## Vehicles

Driving is a large component of the player experience. By having a driving mechanism that can provide a realistic experience such as the behavior of the vehicle suspension, acceleration and deceleration the player can create various strategies by using different upgrade paths for vehicles and play accordingly to the strengths of each to get the best experience.

**Acceleration** – Trucks are slow to accelerate but can be upgraded. This allows the player to fine tune his strategy. For example a truck with many stops requires high acceleration to ensure it picks up the garbage in time and a truck with a single stop such as a factory or office with a lot of garbage only does a single stop and then return to dump the garbage.

**Deceleration** – Braking functions effectively at recommended speeds. If you exceed the speed given the load factor then there is a chance that your brakes may malfunction.

Speed – Speed is indicative of driving without load. There is a recommend speed factor when loaded. If you exceed the speed you risk damaging the truck or garbage has a chance to fall off the truck around corners or speed bumps. This could damage reputation of you drop garbage.

**Speed -** The top speed of the vehicle.

### Trucks

Single – Used for specific garbage due to contamination or weight.

Combo – Used for 2 types typically specific type and other or two specific types.

General – Used for any type of garbage

### Truck Attributes

Carrying Capacity

Engine

Upgrades

Maintenance

Durability

Fuel

Battery

### Upgrades

Trucks can be upgraded, require maintenance, fuel and a driver.

Upgrades are done for the core attributes of the truck. This is carrying capacity (how much), driving mechanics (deceleration speed, acceleration, control) and garbage specialisation.

Street Sweeper - The sweepers are vehicles that can be purchased and upgraded to generate waste from nothing. Normally litter will not be collected due to the sheer economic feasibility. With the street sweeper you can tap into this market. The sweeper drives through the neighborhoods and slowly collects litter and when reaching capacity it can be emptied at the landfill.

Malfunction

Recycling Station - When the game starts there is one landfill. You can hire this landfill which will generate an expense on your cash flow. As you earn money from picking up ad hoc garbage this can be saved to purchase the landfill. Ad hoc garbage collection does not provide additional income such as recycling of items such as glass etc. Thus the strategy would be to expand into more trucks or truck upgrades.

Illegal dumping for manual truck

Manual truck can dump a load with "D key" in order to have capacity for a bonus bag etc.

A roaming police could see the bag before you can drop the bonus bag and pick up the illegally dump garbage. This will result in a fine.

Renting space (in lots)

Space is let at a price per capacity. 100t. Etc. This is a good route if you are interested in buying the facility including the garbage which can then be recycled and sold if the landfill is upgraded.

Shared usage (ad hoc delivery)

This requires no contracts but you pay on delivery at a rate per ton.

Land Acquisition

Buy Land

Acquire land for landfill. This is the best way to store garbage but cost the most money. There is an initial outlay but low overheads.

Landfilling and recycling

Landfill

Agreements

Stop and Drop ($rate per ton)

Lease (Lease landfill space fixed price but limited by capacity)

Purchase lot.Limited by capacity.

Buy Land - Buying land is a way to expand your business. Once you purchase the land you can upgrade it. Each landfill can only be upgraded with a limited amount of modules. This means that you will have to move garbage between landfills to the relevant landfill where it can be processed.

Buy lot

Expand size (capacity)

Upgrade

Plastic Recycling Module

Glass Recycling Module

Metal Recycling Module

Paper Recycling Module

Rubber Recycling Module

Organic Matter Recycling Module

Chemical Recycling Module

Electronics Recycling Module

Textiles Recycling Module

Solar Panels (Reduces Expense)

Water Recycling (Reduce Expense)

Module properties

Power Usage

Water Usage

Processing Modules

This converts the raw goods into products. Products can be sold at a higher price than raw goods.

Selling

Ad hoc - This is the default where you can sell a range of goods but the number can vary, AI can buy a range of items which can vary.

Contract - generally contracts provide a steady income but the Gross profit is less. Failing to deliver on a contract will cancel the contract.

Tender - You get issued with a tender and have to fulfill the entire delivery before payment is made. Failure to make the delivery void the consignment.

Neighbourhoods

Depending on the map there are one of more neighbourhoods. Each neighbourhood has several families. Each family generates garbage. Garbage can be generated on a schedule or randomly.

When a family is part of a schedule you can specify the day that the garbage is left outside the house for collection. If the family is not part of a schedule the garbage is generated random.

City

The city puts out regular tenders that anyone can bid for. This is considered to be advanced play because there are penalties if you fail the tender. [Options]

Truck (Collection)

Collection is performed with a truck. By driving into the pickup zone the garbage is picked up. The pickup zone is proximity close to garbage. Trucks can be specialised to pickup a single item, combo or generic.

Landfill (NPC)

Upgrades:

The landfill can be upgraded with additional building to recycle different types of garbage. The cost would be reduced as you would “partner” with the NPC. However the profit is also shared with the NPC. The profit pays for the land use and also covers “certification” for the property.

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## Garbage

Garbage is produced on a daily basis by garbage producing buildings, garbage accumulates until such time that the building “flushes” the garbage at which point the garbage is ready for collection.

The production of garbage by specific buildings is based on the type of building and the rating of the building. There are 3 ratings for each building each creating a slightly different composition of the garbage.

Each building has a default method for flushing garbage and making it available for collection. Residences might use bags while other industries might use boxes. This concept is for visual differences but it doesn’t have any mechanical differences.

A day timer event is responsible for triggering the production of garbage.

### Garbage Attributes

The different attributes of garbage can be used by the player to change their strategy. Imagine that if a truck only collecting egg cartons have a compression unit on board the density of the egg carton can be increase by squashing the carton. The can also compression the garbage while driving which means that the truck can spend more time on the road.

The unit of garbage generated is kilogram per day, depend on the garbage type this will have a volume.

**Weight** – this refers to the kilogram weight of garbage produced.

Example Steel is 7:1 , paper 1:1, glass 3:1. This means that 1 cubic steel weights 7 tonne.

**Volume** – this refers to the volumetric weight of the garbage produced.

When the player starts out garbage is “general” and the player cannot see the composition.

With research the player can discover the composition of garbage. This is required for sorting and specialisation. The price per kg of general garbage is low but it is available in large volume and it doesn’t require specialised equipment.

The price per kg of specific types of waste is higher but it requires capital to build the sorting stations, processing plants and trucks.

The price per kg of products such as recycled paper sales, compost, and glass is the highest but requires significant capital and management.

### Garbage lifetime

The garbage item has a set duration on which it is active before expiry.

When the garbage expires reputation is lost.

When garbage is picked up reputation increases.

### Type of Garbage

The spawner will determine the % breakdown of types of garbage. This is randomized on garbage creation. The types of garbage are implemented as a family variable and the % breakdown as on created function for the garbage on the active spawner.

### Garbage Types

Non-recyclable - Items that cannot be recycled due to price or size.

Metals - Steel, Copper, Aluminum

Plastics - Bottles, Toys

Rubber - Tires

Glass - Bottles, Windows

Chemical - Paint, Detergents, Poisons, Oil, Cooking oil

Organic - Grass, Wood, Food

Paper - Cardboard, Paper, Boxes

Textiles - Clothes, Wool

Electronics - Computers, Mobile Phones

# Game Engine - Key Components

## Reputation

In order to advance in the game you will come to face your reputation. Reputation is used in order to tell you whether you are doing a good job or not. Each neighborhood will have its own reputation and that is averaged to generate the overall reputation. Public opinion is also used to display reputation for the overall performance. This can be improved by public ventures. Neighborhoods where you have poor reputation may block you access or kids might run in front of the truck, kids are like that…

There are 3 levels of reputation indicated by smiley faces. 30%, 60%, 90%. Reputation percent is measured by satisfied customers. When garbage is spawned in the neighborhood it will be available for the duration of the day. Once it is the next day the previous days garbage is destroyed.

The next spawn of garbage will have a multiplier of 2 (the previous week's garbage).

In order to get contracts you have to have a positive 90% + reputation.

In order to get tenders you have to have 90% reputation.

Reputation determines if customers subscribe to your service. A subscription enables scheduling. You can now specifics which day’s garbage is collect to improve efficiency and be more profitable.

can be schedule days for pickup which helps planning your trucks.

Reputation allows you to bid for contracts with local businesses.

## Research

By doing research you can find better ways to deal with the problem of collecting and disposing of garbage. Research can be accessed through the newspaper at the café. The research also have a range of dependencies and you may not see certain research options if you don’t have the specific trucks to deal with the research.

Truck specialist such as compression or garbage related upgrades.

Residence

Commerce

Legislation

This will permanently increase types of garbage being marketed.

Landfill

Sorting Station

This enables the landfill to give the breakdown of the types of garbage. The values can be used to determine the route to upgrade from here.

## Research

Paper

Paper Shopping Bags

Boxes

Metals

Collection Stations

Rubber

Military

Electronics

Glass

Chemical

Textiles

Organic

Vermiculture Bins

Plastic

Plastic Garbage Bins

Produce your own garbage bins.

Specialty Bins

## Upgrading

- Upgrading is not done through toolbar this is not only to bring a "old-school" feel to it but also to brings functionality to assets for immersion instead of developer an in-the-air toolbar. This is also done to support touch while maximizing real estate.

**Vehicles** - Upgrading vehicles are done by navigating to a commercial building according to the vehicles. Clicking on the business will provide a new screen where you can purchase upgrades. The truck that's in focus (That you are driving) will be upgraded.

Trucks - Trucks are the main source of collection. Trucks can be upgraded and will collect garbage until a point where it reaches capacity. The speed of the truck will slow down when exceeding capacity.

Tip: There is a tradeoff for picking up garbage. If you pick up ad-hoc garbage you get paid on collection which means that if you get one more bag which pushes you over capacity you might drive so slow that you cannot unload in time for the next collection.

The re-sell value of litter is low as well as it's recycling capability. However the income is constant and it also generates positive reputation.

Aerial vehicle - These are not limited to the roads so they can

**New trucks** can be purchased through the newspaper. Available at any café.

When purchasing a truck you can associate it with a zone. Each spawner is associated with a zone. When garbage is created it inherits the zone from the schedule.

**Council** - required for approval.

**Landfill** - In order to upgrade a landfill you have to own it. You could buy a piece of land for a new landfill. In order to be able build a new module you need a sorting station at the landfill. Before you can buy a module you would have to the relevant research in order to have the required module.

Commercials can be contacted to buy from you. For instance, if you have develop a product like plastic cutlery you can contract a supply to a commercial. Commercials carry significant reputation and if you do not fulfill a contract it can have a bad effect.

Tip: If you are going down the route to supply specific products to commercials you can ensure you have a steady supply of raw material such

# Events

## Challenges

### Town Challenges

The local town spawn challenges based on special scenarios such as yearly celebrations, new year etc. These events come with specific road blocks, types of garbage, speed or sound limits to provide the player with a way to think about the challenges ahead.

* Have to be completed in the local town to pick up garbage, typically within a certain timeframe.
* There are no financial penalties for failing a town challenge but reputation will suffer.
* The challenges are available in the newspaper and can be accepted by the player.

### City Challenges

The city challenges are published in the newspaper prior to their launch date in order to give the player some time to prepare. If the player accepts the challenge a nominated truck will go to the city to complete the challenge. If they succeed they get rewarded financially but no reputation. If you fail the challenge you will have to pay a financial penalty, this can be done over a period of time.

## Regular Events

Random - This is for non-subscriber \ contracts, it applies to residences only.

Bonus bags

Randomly spawned bags of garbage to be collected manually. (Provides an arcade feel to it).

## Quests, Bonuses and random events.

This feature is available to enhance the gameplay. This will include the following random events and encounters.

Random bonus garbage.

Government tender.

Collect specific number of garbage.

# Implementation

## Mechanics of the game.

The problem of garbage is solved through collection and the game advance that the various "potential" options for disposing of garbage.

The generation and interaction between the problem and solution is the game mechanics.

**The problem** - Garbage is generated in the following ways.

### Residential

R1 – Lower income; Garbage includes a higher variety of paper, plastic, it’s not sorted.

R2 – Medium income; Less plastic and more organic, glass, textiles, chemicals.

R3 – High income; Glass, Organic, Paper, Electronic components, textiles, chemicals

### Commercial

C1 - Office ; Generates paper, chemicals, electronic components.

Retail Plastic, Cardboard

C2 - Boutique; textiles

Restaurant; organic

General Store;

C3 - Hardware Store; metal, paper, plastic, chemicals

C4 - Service

Car Service Station; chemicals

Hair Salon; chemicals

### Industry

I1 - Car Manufacturer (metal, chemicals)

I2 - Electronics (

I3 – Construction

I4 - Primary

Farming; organic

Mining

Fishing

# As a player

1. I want to drive my truck around the city
2. I want to upgrade my truck
3. I want to see trade-offs for upgrades such as if I upgrade their carry weight the truck will use more fuel
4. I want to have a variety of garbage types (The town has homes, shops, offices a farm and a factory)
5. There are other businesses picking up garbage
6. I want to be able to do time trails for bonuses if I get bored of the regular game
7. The town has roadwork, crossings, schools and a roundabout which all have obstacles
8. I have reputation as a company and if I deliver good service then I can charge
9. If I reach a certain reputation with a couple of houses I can schedule with them when they put their bins outside, otherwise it’s random.
10. I can provide my own bins but then I need to buy them, this means I can benefit from pre-sorted garbage which creates a revenue stream for me, as I can sell aluminium by the kg(example)
11. However now my generic trucks don’t work anymore because the don’t have separation for different types of garbage.
12. I can upgrade my trucks with compressing capabilities for single use plastics and papers
13. For houses with scheduled pickups I need to pickup the garbage within the timeframe otherwise my reputation does down and the houses will revert back to randomly putting their garbage outside.
14. I can upgrade my landfill with specialization units such as for glass recycling or cardboard or industrial waste.
15. If I load my truck over 100% load limit then garbage may fall off if I drive too fast and if someone finds this garbage within a timeframe then I get a bad reputation
16. At first I can’t see the makeup of garbage as I don’t know that garbage can be separated
17. Most people don’t sort their garbage even if you provide the correct bin so I need to deal with that at the landfill which means I need to employ people or robots.
18. Offices produce a lot of paper waste which is very heavy
19. Missing out on a contract also cause a penalty payment on top of reputation
20. I can go without permits but there is a chance that I get shut down if I don’t remediate the issue within a certain period of time when big brother discovers it
21. The newspaper is used to look for new contracts with businesses
22. You can also use the newspaper for acquiring new research.
23. With our news bins we monitor the amount of garbage you create and charge you accordingly. Each bin is weighed when lifted by a special truck and
24. Industrial waste requires special trucks and facilities to expose of the waste.
25. Bins can also be placed at industries which allow for trucks to be generic as they fit different skips containing its relative specialised function.
26. Campaigns can be run in order to reduce waste for specific weeks , if you know you don’t have enough trucks to get all garbage and don’t want to risk reputation damage you can do a media campaign which will cause a reduction in garbage but at the same you will get paid the same amount
27. If you spam campaigns they cost the same but their effectivity is reduced by the more frequent you use them
28. You can also invested in patents to reduce technology but there is a chance that they don’t work but if they do you can get a steady income from the patents
29. One ways, some road a one ways and other roads may get random road blocks, or old lady crossing the road or cat and fire engine. This means your garbage truck will be blocked; you can wait and watch your time reduce or you can try a detour, this is for occasional time trails.
30. Research in newspapers will allow you to discover news way to recycle certain materials such as plants absorbing metals etc.
31. You can also turn organic material into composts
32. You can turn plastics into raw plastic for selling
33. You can turn glass into raw product

Beat yourself challenges

Instead of building extensive scenarios the system will tailor itself to the player’s capability. Typically a challenge (scenario) has to be play tested. If the players’ time and the kg value of garbage are recorded then the player can challenge himself to do better each time. A minimum time has to be calculated based on the kg, # bags (distance), and the day timer. This should give a collection rate value.

# Other Notes

Drones

No-fly zones

Permits

Upgrades

Maintenance.

Malfunction

Collection Stations

Capacity

Malfunction

Recycling Station

Rent.

Buy lot.

Buy existing.

Land Acquisition

Buy land (new landfill)