

**Disclaimer:**

Alongside my duties as lead level and camera designer, being the lead overall designer for Scrap Forge meant that I was in charge of all design documentation and organising that documentation, however I did not write all of it. For that reason **I can only show the work that I completed** within this document as to prevent infringing upon the rights of the other students' work. All documentation was originally completed on Microsoft Loops however in order to present it to you I have had to move it all into this google document. **All work shown within this document is my own.**

<b>Level Design:</b>	<b>1</b>
Overview:	1
Level Layouts:	3
<b>Level name: Junkyard</b>	<b>3</b>
Pre-production:	3
Level layout:	6
Pacing:	12
Navigation:	14
Combat Spaces:	18
<b>Level Name: Factory</b>	<b>19</b>
Pre-production:	19
Level layout:	20
Pacing:	27
Navigation:	32
Combat Spaces:	34
<b>Camera overview:</b>	<b>36</b>
Design Pillars	36
Design Philosophy	37
<b>Camera Design:</b>	<b>37</b>
Angle and distance:	37
Movement:	38
Camera and environment interactions:	39
Combat:	40
Outside of the play space:	40

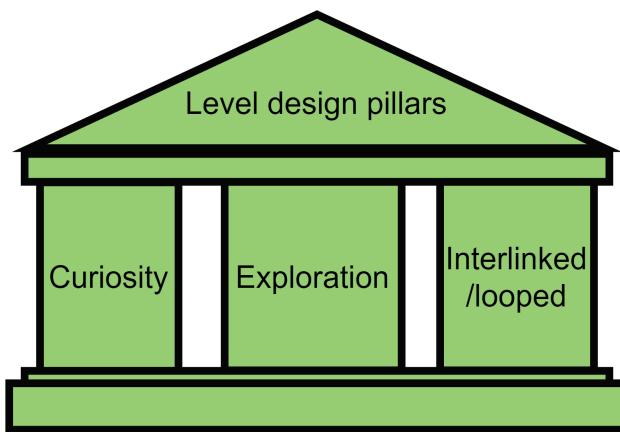
# Level Design:

## Overview:

### Design Principles/Vision:

Our goal in level design is to create levels that simulate an interconnected world in a similar vein to Dark Souls and Tunic. We want to prevent levels feeling like levels by abandoning the standard level by level structure many games adopt. The player should be able to explore everywhere with little restriction unless critical to their experience and the completion of the game's objectives, in this regard we follow a similar world design structure to Breath of the Wild. The player should be guided in the correct direction to ensure players can progress through the experience however this guidance should be minimal to avoid creating an overbearing experience which would negatively affect the exploration and curiosity pillars below. Giving players the freedom to create their own experience via the level design and its reaction to the players navigational decisions is foundational to the experience we want to provide.

### Level Design Pillars:

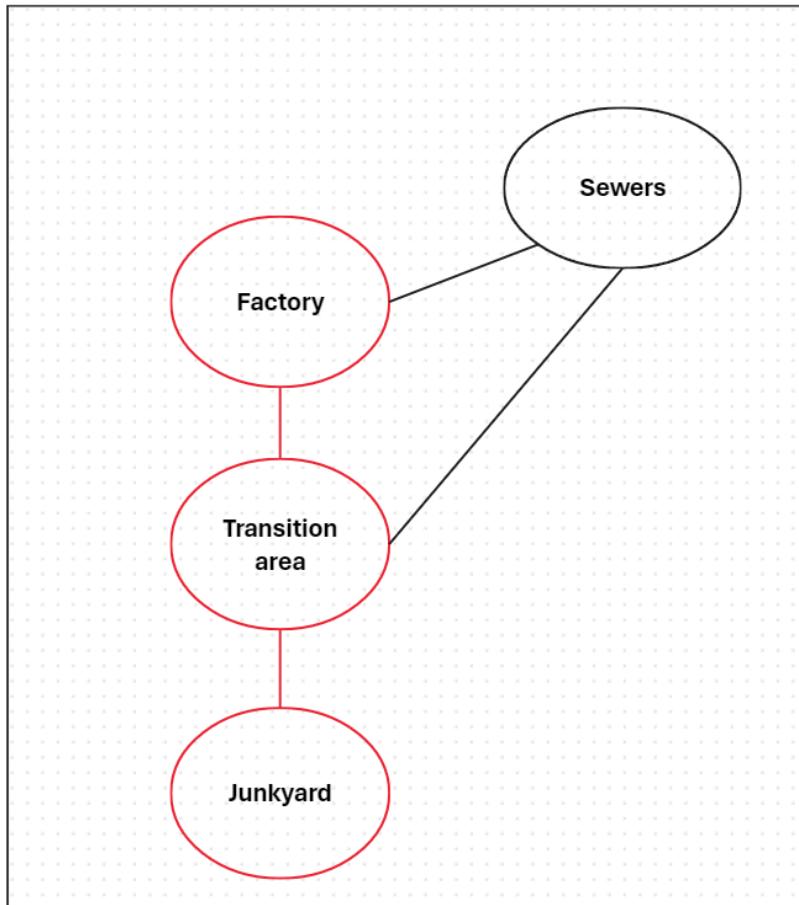


Players should always be given a choice between the paths that they choose to go down whether they lead to a secret area or a dead end, the player should have the freedom to choose but it should be their curiosity which encourages them to explore the environment and these paths not a designer's overbearing hand. Through the power of the player's choices, and the level design's reaction to them, we can create a sense of exploration and adventure aiding in immersing and engaging players in our world. The levels should also be interlinked together to ensure that the player feels as though they are in a world connected via intricate paths instead of two levels linked via a single linear path. Additionally, the interlinked nature of the levels ensures players can reach areas they have been previously in a new and more interesting way helping to keep the game fresh.

### The Critical Path:

The critical path diagram below shows the critical areas the player needs to interact with to complete the game in red. The areas in black are optional paths and levels the player can

choose to complete; they are unessential and do not affect the players ability to reach the end of the game. The junkyard segment acts as a more linear tutorial section. Each area within the critical path will have its own level layout which can be seen further in this document. Some levels within the critical path can only be accessed from one side. For example, the link between the sewers and the factory can only be accessed from the sewers.



## Level Layouts:

This section of the document will cover the design of individual levels across the game. The level layouts can be found here:

[https://drive.google.com/file/d/1NVQzcOgv3QUEUlgTN0DafuRtWOp\\_FcAe/view?usp=sharing](https://drive.google.com/file/d/1NVQzcOgv3QUEUlgTN0DafuRtWOp_FcAe/view?usp=sharing) (Download the file and open it via draw.io)

# Level name: Junkyard

## Pre-production:

### **Asset table:**

[https://docs.google.com/spreadsheets/d/1eq\\_MFhEuqEmBZcUi\\_ShrWk4ptdYWAQUi28o77PD9RZY/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1eq_MFhEuqEmBZcUi_ShrWk4ptdYWAQUi28o77PD9RZY/edit?usp=sharing) (asset table can be found by following the link)

### **Mechanics list:**

#### Movement:

- Walk
- Dash
- Backstep

#### Combat:

- Attacking
- Parrying
- Blocking
- Weapon weight
- Combo mechanic
- Player healing
- Offhand
- Poise
- Multiplier

#### Environment:

- Respawn/bonfire system
- Scrap drop mechanic
- Item pickups
- Environment interaction (doors, keys, breakable walls, elevators etc)
- Viewpoint

#### **Experience goals:**

In this level the player should:

- Feel lost, curious, and adventurous, as though they have also crash landed on a mysterious planet like Scrappy.
- Learn the basic/core game mechanics: combat, movement, checkpoint and respawning. They should understand and be provided with opportunities to practise these mechanics throughout the level in preparation for the next level (factory)
- Defeat the first critical boss

#### **Main goal:**

##### Teach the player basic mechanics:

- Movement
- Combat
- Interactable (scrap pickups etc)
- Checkpoints and respawning

##### Secondary goal:

- Provide the player with combat practise
- Encourage and facilitate exploration
- Collect items/materials for second section
- Find key in the junkyard and unlock secret area in factory

##### Primary player objectives:

- Player must pick up a weapon
- Must kill critical boss
- Must repair elevator

##### Secondary player objectives:

- Collect items for crafting

#### **Set pieces:**

Combat tutorial. Door locks behind player, enemy spawns, cannot leave room until enemy is defeated.

#### **Length estimates:**

Critical path expectation: **4 minutes**

Golden path expectation: **8 minutes**

Average playthrough expectations: **10 minutes**

#### **How do we teach the player mechanics?**

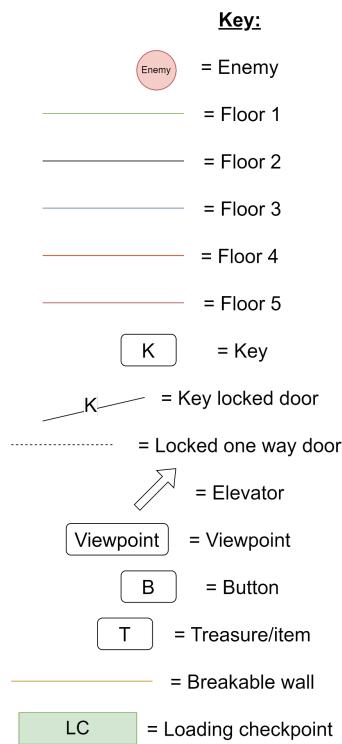
We take a more invisible approach to tutorial design and teaching the player new concepts in general. We favour a player-based discovery system over an explicit explanation of game mechanics. Our goal is to have players feel as though they have learnt the mechanic themselves through experimentation and their own freedom with the level design only nudging them towards learning. We believe that this creates a far more interesting feedback loop between the player and the game, through their experimentation they are rewarded with

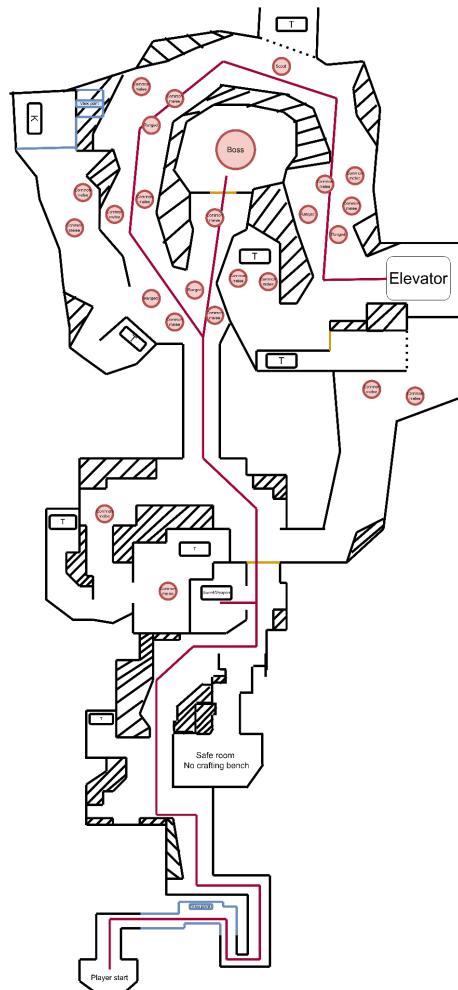
understanding, and this encourages the player to remain creative in their approach to Scrap Forge. Furthermore, one of our goals is to decrease the amount of slowdown and hand holding which can be found in other games. We want the player to be constantly moving and actively interacting with the game not passively through a text box. Additionally, removing hand holding in the tutorial ensures that players do not come to expect it later, reinforcing our narrative themes whilst also subtly ensuring the perceived difficulty of our game is increased. We spray paint control scheme buttons onto walls within the environment in the form of graffiti to prompt players into learning the control scheme for certain actions. For example, we will spray paint "R1" onto a wall with the hopes that the player will see this, realise it is a button on their controller and press it. As a result, the player teaches themselves the mechanic without any artificial slowdown in the games pace or lengthy mechanic explanation through a bland text box.

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## Level layout:

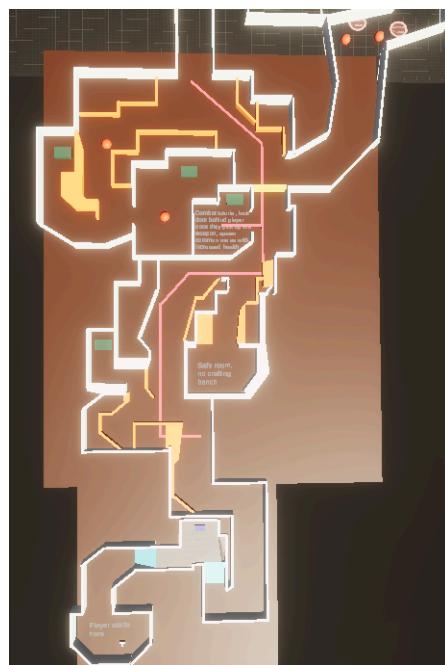
This section will contain the level layout for the junkyard/tutoria (a more in depth view of the level layouts can be found via the link above):



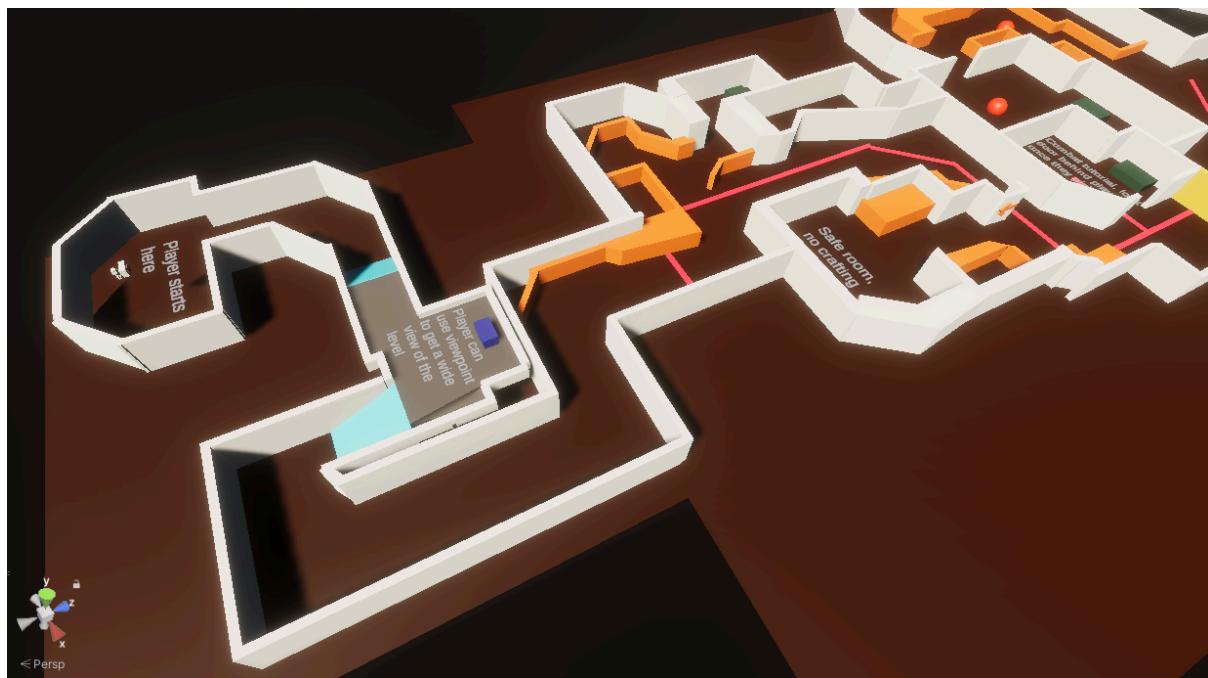


### Blockouts/blockmesh:

Images of the blockout can be seen below accompanied by annotations:



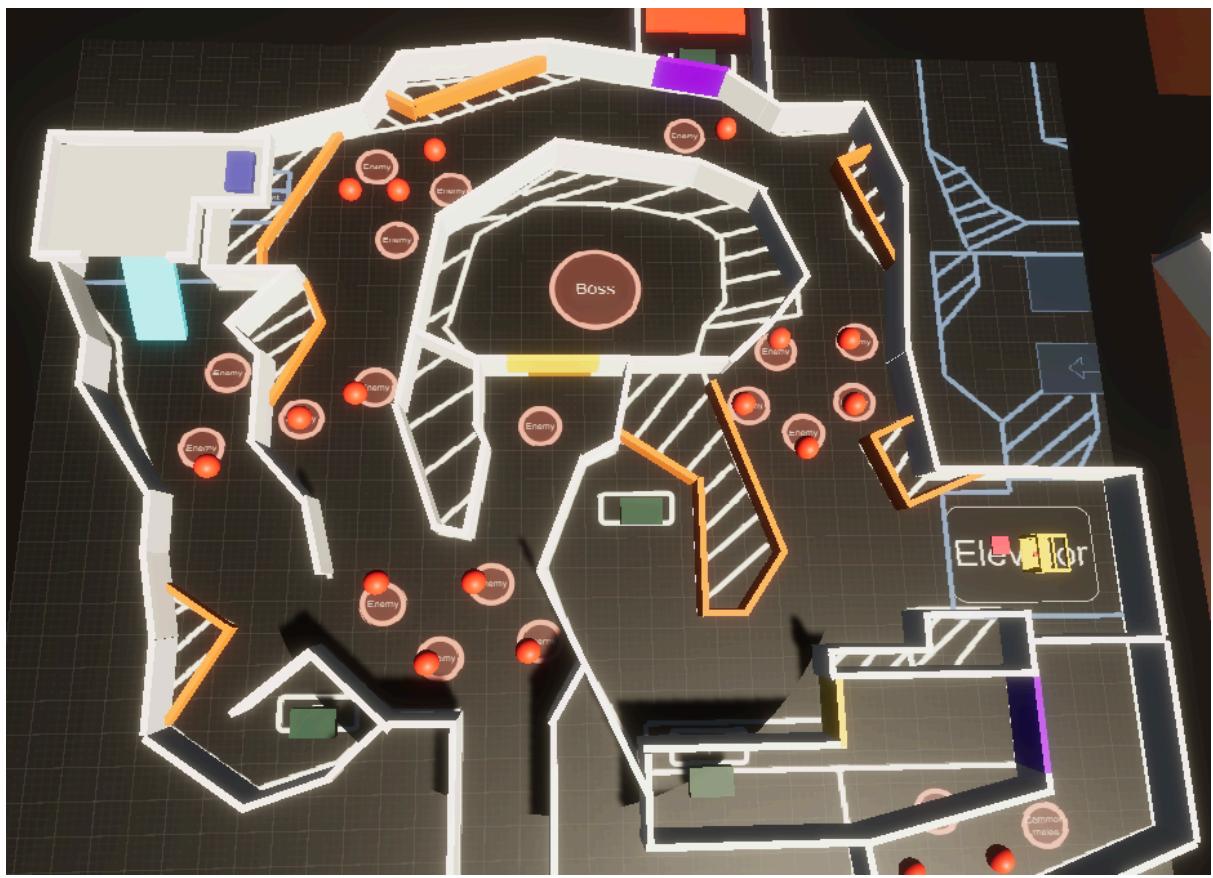
*Junkyard first section overall blockout image*



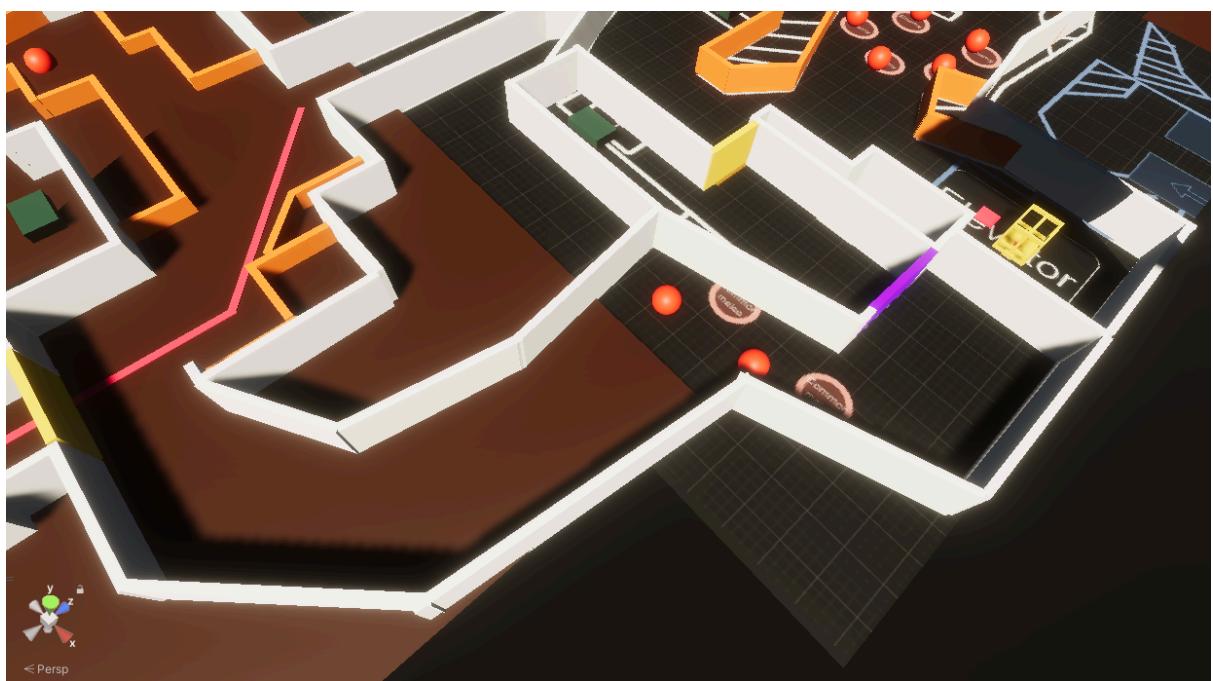
*Player start, safe room and combat tutorial room blockouts*



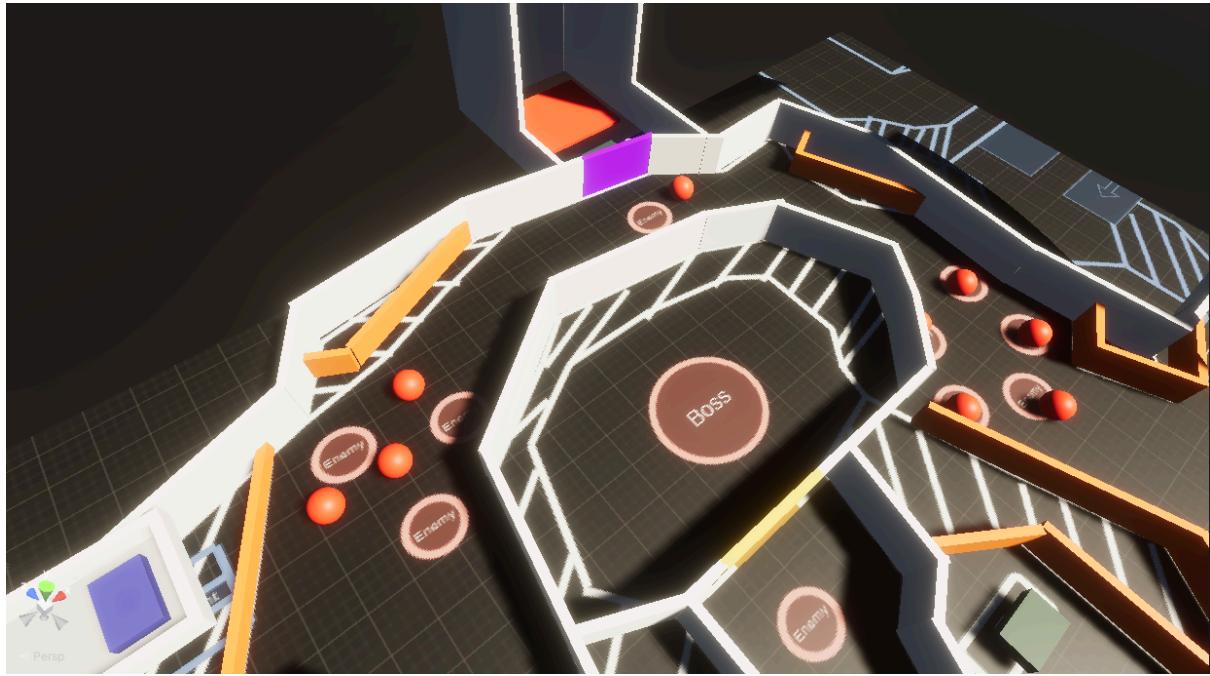
*Image of the combat tutorial, treasure room and hidden item blockout*



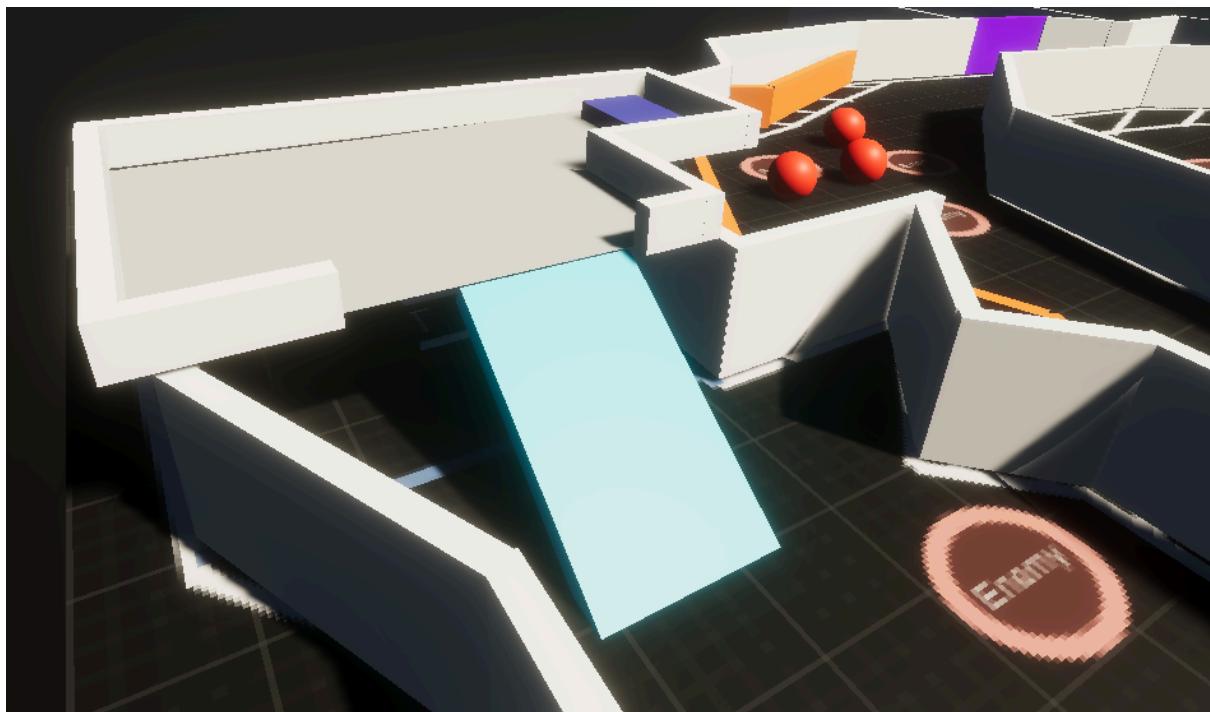
*Image of the overall blockout for the second junkyard area*



*Image of the shortcut/level loop and elevator blockouts. The crane signpost that is mentioned later in the design doc would also appear here*



*Image of the boss arena, factory elevator/level loop and the viewpoint*

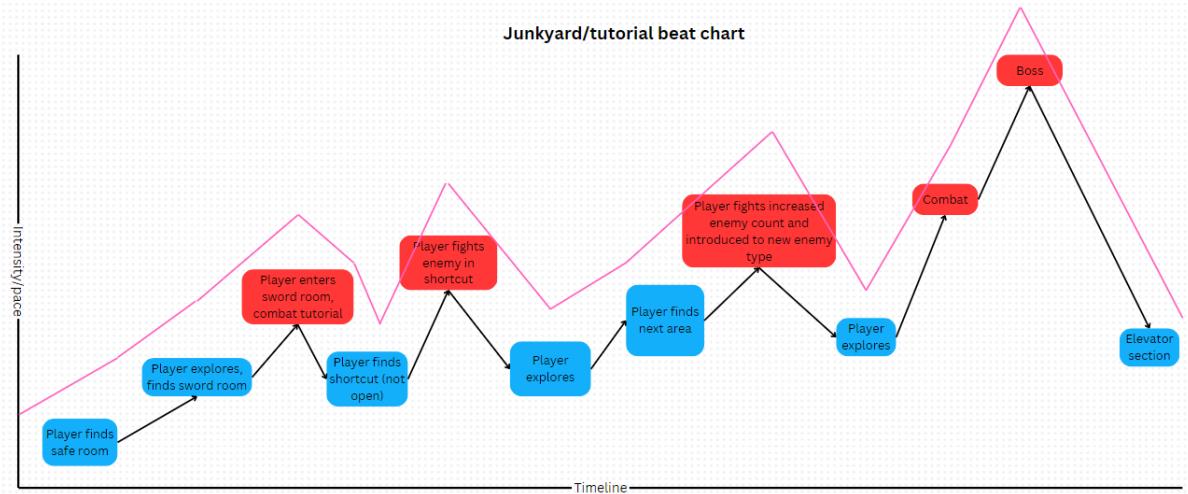


*Image of the viewpoint platform and the hidden treasure underneath*

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## Pacing:

### Beat chart:



The beat chart above shows how we want to control pace/intensity as the player progresses through the level. The instances in blue are explorative segments and the instances in red are combat segments.

### Hard gates, soft gates and valves:

This section of the design doc will cover all the hard gates, soft gates and valves that are used across the junkyard/tutorial level as well as the effect they create on the player both pacing and feeling wise.

#### Valves:

In the tutorial level there are no valves, the player should not be unable to go backwards as this damages our exploration pillar and the overall adventurous experience we want to provide players with.

#### Hard gates:

We use hard gates extensively throughout the tutorial level to nudge the player towards objectives and mechanics we want to teach them. For example, the player cannot leave the first area without breaking down a wall with the sword they find in a nearby room/the combat tutorial room. This ensures that the player finds the sword and is taught the combat mechanics in an organic and invisible way keeping in line with our tutorial design philosophy and the experience we want players to have. This hard gate also ensures we slow the pace down slightly, easing the player into the experience and giving them ample time to understand the very basics of movement before introducing them to combat and its systems.

We also use elevators as hard gates to ensure that the player interacts with the boss fight. Preventing the players progress through the game via this elevator key ensures that we can properly test the players combat skills via the higher intensity and difficulty boss fight. Additionally, this hard gate prompts the player to explore the level more, strengthening our exploration pillar and the overall experience we want to provide. Furthermore, we use this hard gate to prevent players from accidentally walking past essential content, aiding in creating and delivering a more focused and full experience to the player.

#### **Soft gates:**

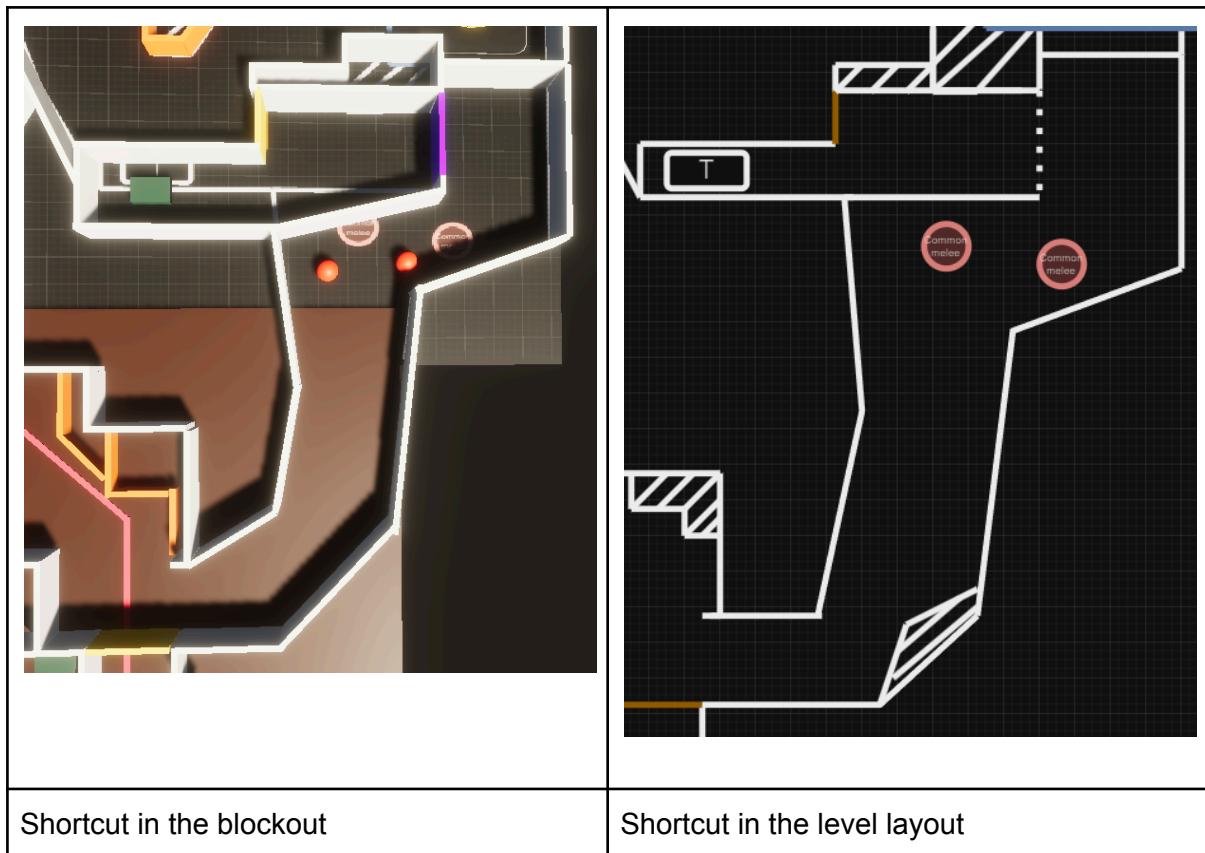
In the second half of the tutorial level the previous hard gates (breakable walls) become soft gates. These soft gates/breakable walls are used to slow the pace down slightly and to encourage exploration. They allow us to hide secret rewards behind walls ensuring that players remain vigilant. These soft gates/breakable walls can be observed as the yellow lines/walls in the level layout and blockouts above. We also use small elevators as a form of soft gate. The elevators allow players to reach higher ground to progress through the level, find a secret or unlock a shortcut. The elevators again help us slow the pace down slightly giving the player a short time to breath before we increase the pace again.

#### **Compulsion loops:**

The primary compulsion loop is the collection of scrap (the currency in Scrap Forge). Players can find scrap throughout the environment within chests and simply on the ground. The player can use this scrap to upgrade their character in avenues such as health and damage. This creates quite a nice compulsion loop where the player is prompted to explore the environment for pieces of scrap which can then be used to purchase an upgrade. This creates a decent minute to minute and hour to hour gameplay loop where the player is exploring and being rewarded with scrap in the minute-to-minute gameplay and an upgrade in the hour-to-hour gameplay aiding in creating a sense of progression and in giving players a long-term goal besides beating the game. The level design accommodates this compulsion loop through its focus on exploration and hiding scrap/items throughout the level.

#### **Loops:**

Loops help us to prevent the player from needlessly backtracking through the environments/levels they have already been through. We do this to ensure that the pace is not slowed down and players are not moving through the exact same environment. Backtracking through the environment, especially once it has been emptied of items and enemies, creates an unsurprising and boring gameplay loop which severely and negatively contrasts the explorative and adventurous experience we want to provide. We also use these loops to reward the player in a more intrinsic way. The loop/shortcut will ensure players can avoid difficult combat encounters as a reward for their exploration and getting through the combat section at least once. Rewarding players with an intrinsic feeling of efficiency is a good way to break up the extrinsic action and item reward loop making the shortcut feel unique. The shortcut prevents players from getting frustrated with the combat and long run back times, making the loop/shortcut reward feel more valuable. The long-lasting effect of the shortcut also creates a better sense of reward and accomplishment in the player making them likely to explore the levels more thoroughly in the hopes of finding a similar reward later. The shortcut/loop in the level layout and blockout can be seen below:



### Pacing set pieces:

We use specific set pieces to provide the player with an extended period to relax, breaking up the fast-paced combat they were just in with a slower and linear set piece. This set piece is in the form of the elevator in the second half of the level. The elevator is the players objective and once they reach it, we slow them down signalling that they have achieved their goal and have time to rest before they reach the factory and are shown their next objective. The elevator will provide players with a moment to breath and relax after the high intensity boss and large groups of enemies. We slow the pace down here to ensure that players are not constantly within a state of stress which would damage their enjoyment of the game and pacing overall. A consistent high intensity pacing creates an experience that feels overwhelming, placing too much stress on the player and leaving them far more likely to have a negative experience or overlook other aspects of the game.

### Navigation:

This section of the design doc will cover all the navigational techniques we use to guide players through levels in major and subtle ways via signposting, visual language and

breadcrumbs simultaneously examining the feeling each aspect has on players and their experience.

### **Landmarks/weenies/signposting:**

We use landmarks in the tutorial level to ensure that players have a clear object/landmark they can use as an anchor to help them in navigating the environment. We use the safe room, boss room and the elevator/crane as our three landmarks due to their importance to the player and their objectives. Using this essentiality as a base we can ensure that players have a clear understanding of how these essential aspects link to other areas of the level. For example, we place the safe room in the first section, the safe room then has 3 paths leading off it those being the critical path forward, sword room and the shortcut. Placing the safe room here ensures that once/if the player interacts with each path, they are either propelled further into the level or sent back to the safe room which in turn allows them to orient themselves and find another way forward/path to take. We also use the elevator as a landmark however it is more accurately used as a signpost. The player's goal is to reach the elevator/crane and then the factory, by making it essential we are yet again ensuring that players understand where the landmark is in relation to the rest of the level whilst also ensuring they are subtly guided towards it. We also use the boss arena as a landmark, being a central area of the level players can use it to orient themselves in the junkyard and in relation to the other two landmarks. However, this idea will be covered in more detail in the guidance section of the document.

A major weenie/signpost that we use is the crane. The player can see the crane from the very beginning of the level with it acting as the players primary form of guidance. Here they will be able to activate the elevator and enter the next level. We use a crane as the weenie/signpost for multiple reasons. The first is its adherence to the setting. The crane's presence in the junkyard makes sense within the game's world allowing us to keep the player immersed. Furthermore, we use a crane due to how much it stands out against the environment. A large, yellow crane off in the distance will immediately catch the players eye regardless of camera framing due to its visual prominence and contrast. We also use a crane due to the way that players eyes function. The players eye will be naturally guided up the crane until it reaches the top. Through this natural guidance and the cranes height we can lead the players eye towards the factory level which will be framed just behind the crane allowing us to tease a future level as well as guide the player in that direction.



*Players' eyes will be guided upwards naturally due to how cranes are built, their effect on the environment around them and how we perceive/understand them.*

## **Visual Language:**

We use our own visual language to subtly guide players towards items and their objectives. As mentioned prior in the document, it is our goal to not hold the players hand giving them more freedom over how they want to interact with the experience. As a result, visual language was an extremely important aspect of the level design and players experience. The primary example of visual language we employ is the graffiti control scheme. As explained prior, controller buttons/schemes will be spray painted onto specific walls across the level. We use this visual language to subtly teach the player basic and advanced controls in a way that reduces slow down and prevents a hand holding feeling. There are many other examples and techniques we can use as visual language to help guide the player such as signs, graffiti, traffic lights, broken paths/wood planks, cars, storage boxes and other environment props are used to guide the player subtly towards their objective.

To prevent players from attempting to get into areas they cannot we will use different lighting and environment details. Due to the nature of the isometric camera, it may find itself outside of the play area. To prevent players from thinking they can go into the out of bounds areas they are being shown we will place those areas in a darker lighting or simply a void to ensure that players understand there is nothing outside of the level that they can find/explore. The player will also be able to pick up items across the level. These items also have their own visual language to ensure players understand that they can pick them up. We will place a small glint texture over the item, making it appear as though it flashes briefly to catch the player's eye as well as a simple bobbing animation making the item stand out from the other static props.

## **Guidance:**

Whilst we want to remain hands off with our approach to level design and its interaction with the player, we still need to guide them in the right direction. To do this we use quite simple guidance systems, anything too complex might cause the player to be guided in a linear and forced way, going against our "hands off" philosophy.

We use light consistently to nudge the player forward and provide them with important information. We use light in two distinct ways: to guide the player and to signal safe areas. Starting with guiding the player, we use quite harsh and clear lighting to grab the players attention and encourage them to move in its direction. Areas we want the player to move down will appear lighter than other paths we are trying to hide, encouraging exploration and signalling to the player that they are about to leave the critical path. For example, the player will be able to enter a tunnel beneath a raised platform to find treasure. To try and hide this tunnel from the player we will place it in much darker lighting and the areas around it in much lighter lighting. The second way we use light is to signal a specific piece of information to the player. We use a blue light to guide the player towards safe rooms. The clear contrast between lighting ensures that players are more likely to enter the safe room whilst also clearly establishing the room/state change they are in as being safe/different to the one they just left.

The geometric shape of objects like walls will be altered slightly to guide player. Players are more likely to go down a path that features a round and soft bend rather than around a harsh

corner. As can be seen throughout the blockout images prior, many of the corners and walls on the critical path are curved to subtly guide the player along the critical path. We will also use objects/props in a similar way to nudge players into going towards a certain area. For example, we can place a destroyed car at a 45-degree angle which will naturally guide the player along that line and into a specific area. To further emphasise the direction, we want the player to go into the visual language techniques mentioned prior can be used, such as a sign to indicate that we want the player to take a left turn.

#### **Teasing/breadcrumbs:**

We tease players extensively throughout the level with treasure, shortcuts and enemies via our usage of the camera. Due to the nature of our isometric camera and its controls the player will be able to see or move the camera slightly over a wall. We purposely place treasure on the other side of low walls in the hopes that players will see a glimpse of them, becoming intrigued and thus leading to them exploring the level in hopes of finding a way to the item. This helps strengthen the exploration pillar of the experience whilst also ensuring that players are rewarded for their exploration making them far more likely to interact with the game in the way that we desire and further integrating our compulsion loop into the experience. We also use the camera to tease essential objectives like the elevator to the player. By teasing this to the player they are shown where to go in a way that is not overly hand holding whilst also furthering the feelings of adventure and discovery we wish to provide.



*An example of this concept can be seen above. The player is teased with an item on the other side of the wall due to the cameras position encouraging the player to explore and find a way to it*

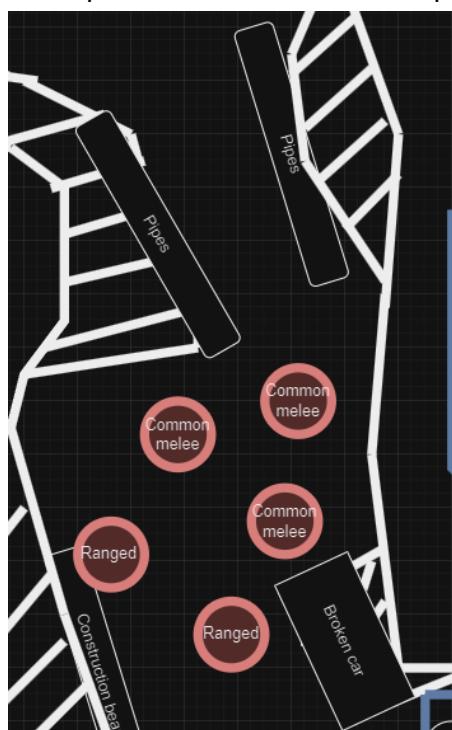
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## Combat Spaces:

Within the junkyard level we use a single combat space to ensure that players have a smooth and consistent combat experience. With the combat being difficult and movement based we needed a combat space that could facilitate both factors to provide a gameplay loop that feels consistent whilst also being low intensity so that players can steadily learn how the combat mechanics in Scrap Forge work. We call this a continued combat space.

### **Continued:**

The continued combat space is quite complex in comparison to later ones. When exploring the level players will encounter enemies, once they encounter the enemies, the level layout will expand slightly giving them more room for combat. This expansion creates an arena like feeling emphasising the state change from exploration into combat. After the combat space the level will then return to its "normal" size for the next exploration segment. The main philosophy surrounding this combat space ideology is to strengthen the exploration pillar of the level design and the players immersion. The player should feel as though they are exploring the environment of a world not rooms and arenas linked by corridors. We take this "continued" approach to ensure that the world and thus the players experience feels continued and consistent. An example of this continued concept can be seen below:



# Level Name: Factory

## Pre-production:

### **Asset table:**

[https://docs.google.com/spreadsheets/d/1eq\\_MFhEuqEmBZcUi\\_ShrWk4ptdYWAQUi28o77PD9RZY/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1eq_MFhEuqEmBZcUi_ShrWk4ptdYWAQUi28o77PD9RZY/edit?usp=sharing) (asset table can be found by following the link)

### **Mechanics list:**

#### Movement:

- Walk
- Dash
- Backstep

#### Combat:

- Attacking
- Parrying
- Blocking
- Weapon weight
- Combo mechanic
- Player healing
- Offhand
- Poise
- Multiplier

#### Environment:

- Respawn/bonfire system
- Scrap drop mechanic
- Item pickups
- Environment interaction (doors, keys, breakable walls, elevators etc)
- Viewpoint

### **Experience goals:**

#### In this level the player should:

- Feel challenged and overwhelmed through increased combat and navigational difficulty

- Be taught how to craft
- Be tested on all the core mechanics they have learnt and practised
- Defeat the second critical boss

#### Primary Player Objectives:

- Player must find key to the boss room
- Player must defeat the second critical boss
- Player must be taught how to craft

#### Secondary Player Objectives:

- Player should collect items/resources for crafting and upgrading
- Unlock the shortcut back to the junkyard
- Find the sewer entrance
- Find key in the junkyard and unlock secret area in the factory

#### Set pieces:

- Transition area between junkyard and factory levels

#### **Length estimates:**

Critical path expectation: **6 minutes**

Golden path expectation: **10 minutes**

Average playthrough expectations: **12 minutes**

#### **How do we teach the player how to craft:**

Teaching the player how to craft is an extremely essential aspect of the factory level, being the last mechanic we teach players, it was important to ensure that they cannot miss it. To ensure players do not miss it, we place the crafting tutorial inside of the safe room for two reasons. The first is to decrease the chance that players will miss it, due to how far away the first checkpoint is players will be searching for another one. This desire combined with the visual language we use to guide players towards a safe room almost guarantees the player will find it and thus the crafting tutorial. We also place the crafting tutorial inside of a safe room to create a link between the two. The player can only craft when in a safe room so introducing the mechanic to them in the safe room ensures that they understand where they can craft and where they cannot. This also increases how important the safe room is to the player encouraging and nudging them more heavily into finding them across the levels.

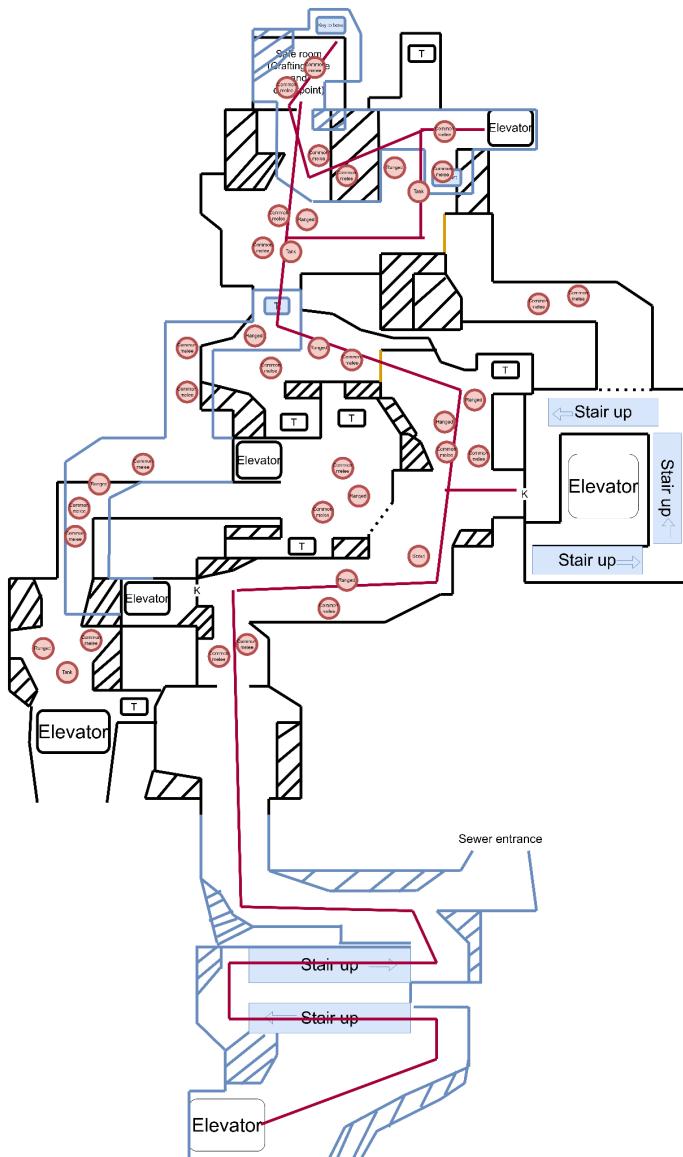
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#### **Level layout:**

This section will contain the level layout for the factory:

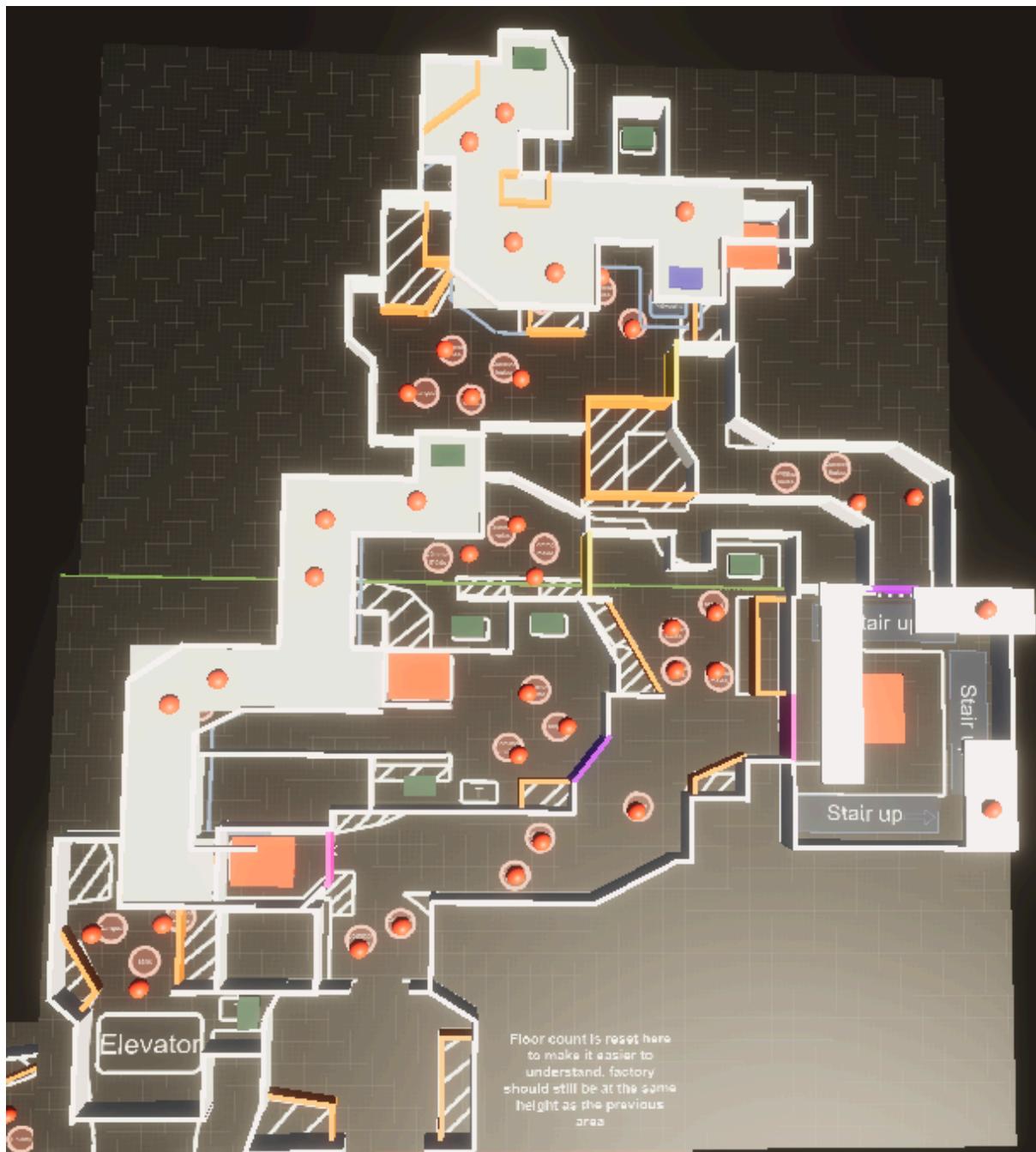
**Key:**

- Enemy = Enemy
- = Floor 1
- = Floor 2
- = Floor 3
- = Floor 4
- = Floor 5
- [K] = Key
- K— = Key locked door
- ..... = Locked one way door
- ↗ = Elevator
- [Viewpoint] = Viewpoint
- [B] = Button
- [T] = Treasure/item
- = Breakable wall
- [LC] = Loading checkpoint

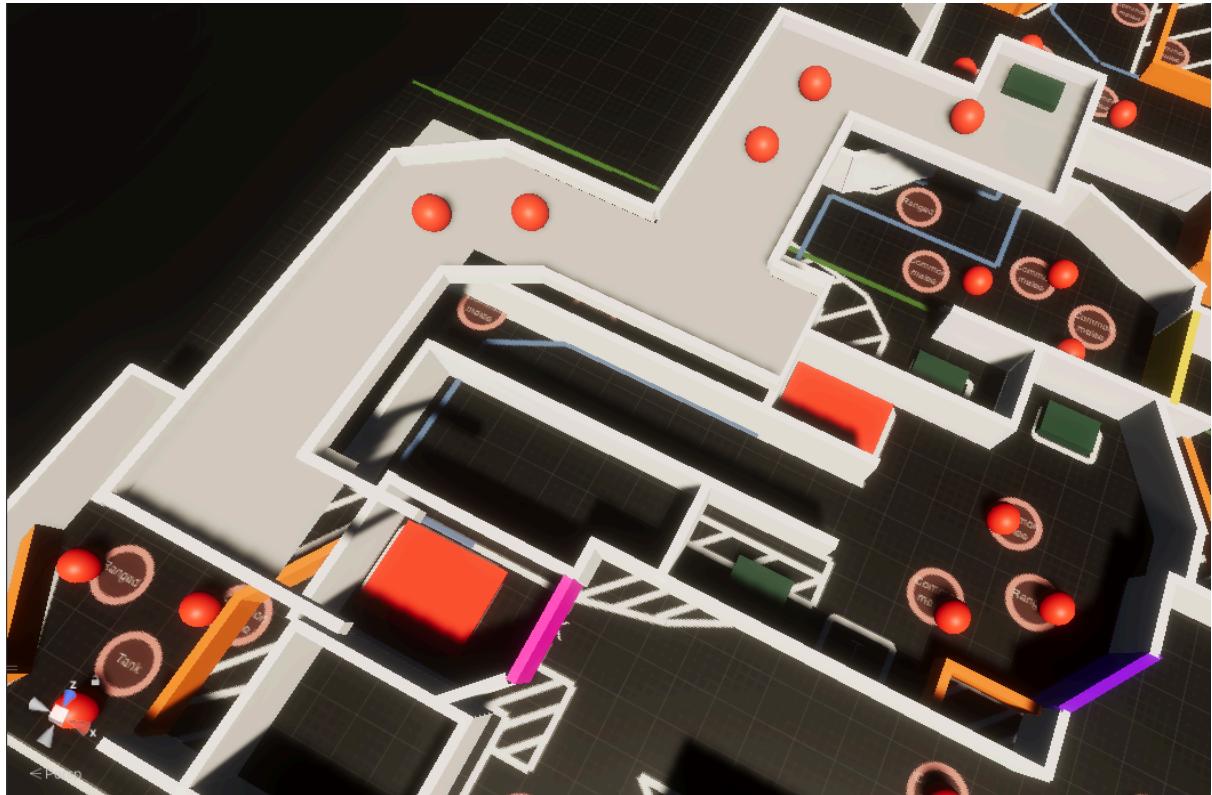


### Blockout/blockmesh

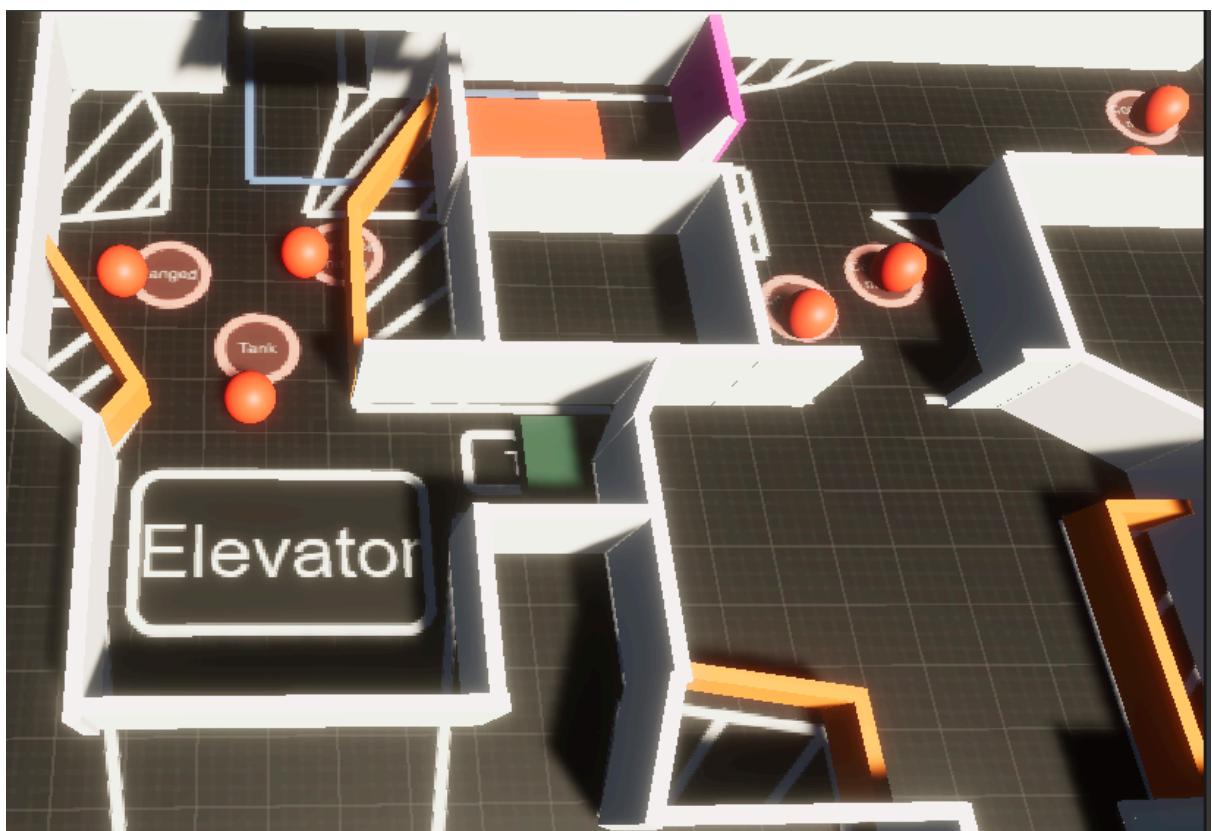
Images of the blockout can be seen below with short explanation annotations:



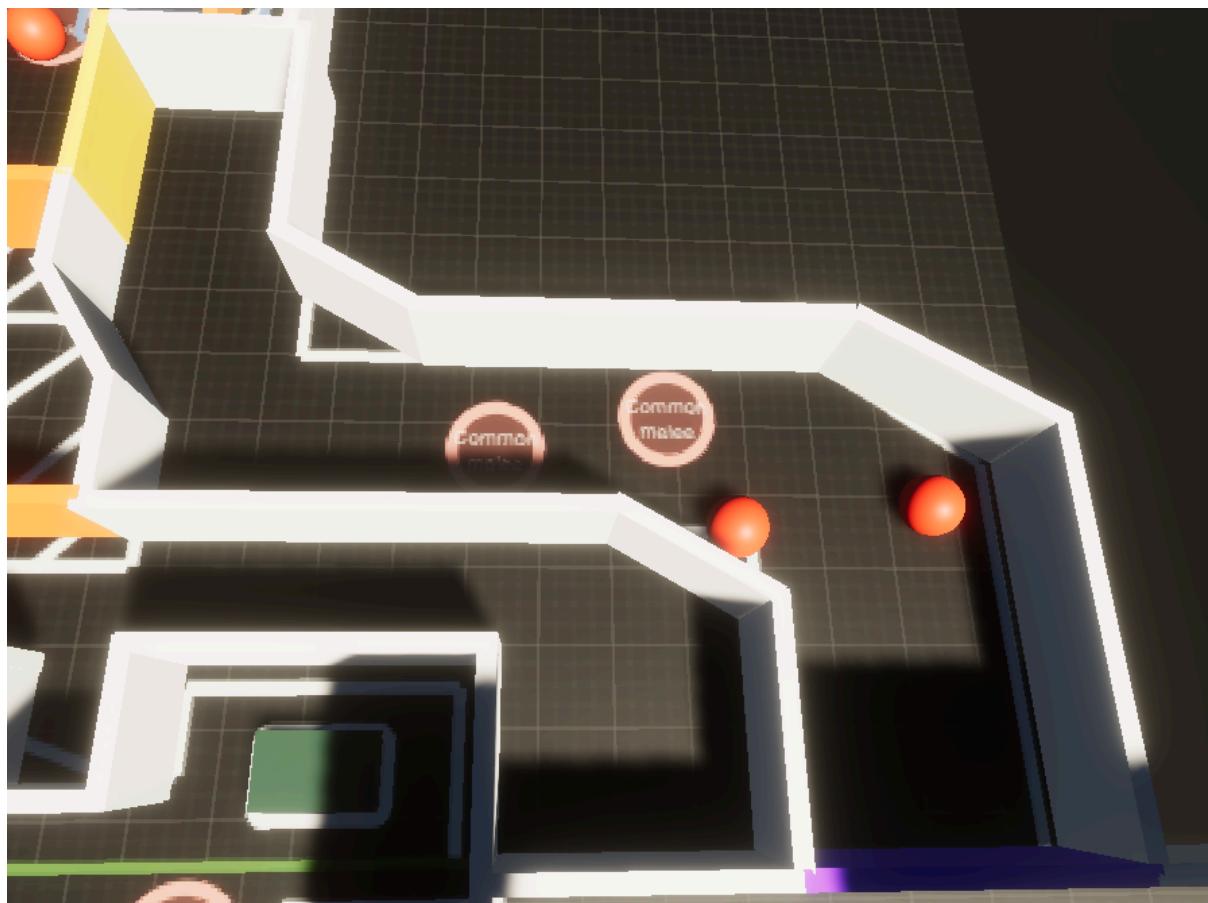
*Image of the overall factory blockout*



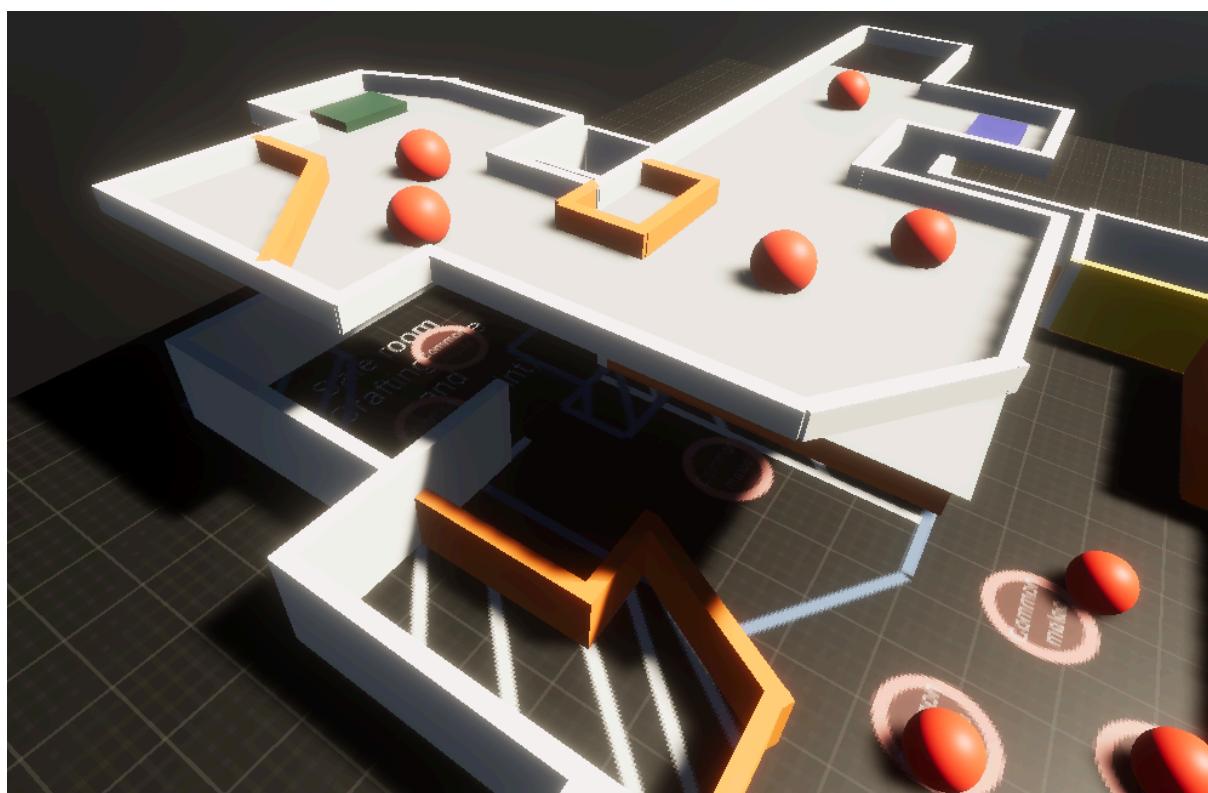
*Image of the secret area, the unlockable second level*



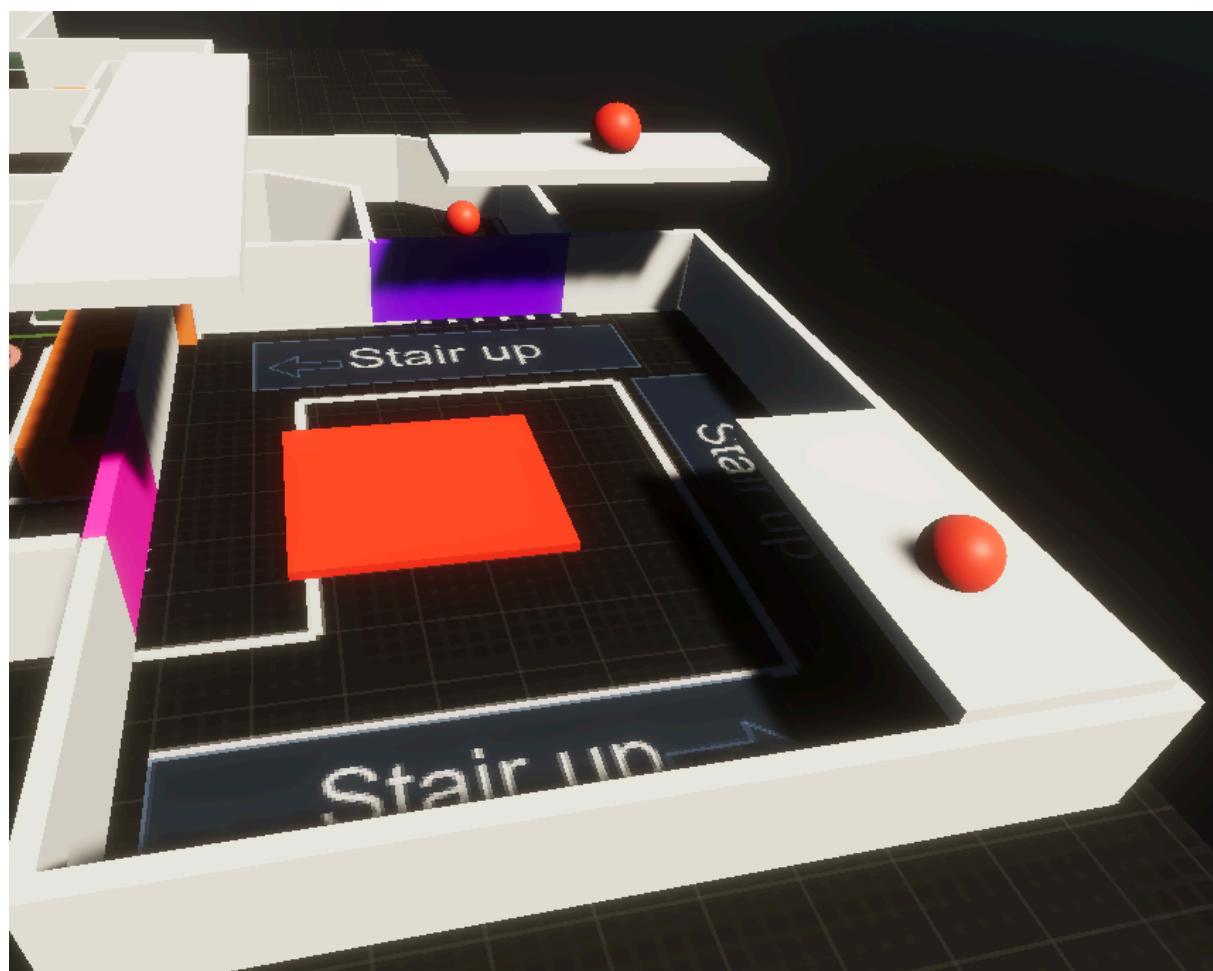
*Image of the factory entrance and level loop back to the junkyard blockout*



*Image of the shortcut into the boss arena and the hidden treasure blockout*



*Image of the safe room blockout, second floor where the boss key can be found and the breakable wall blocking the entrance to the shortcut*



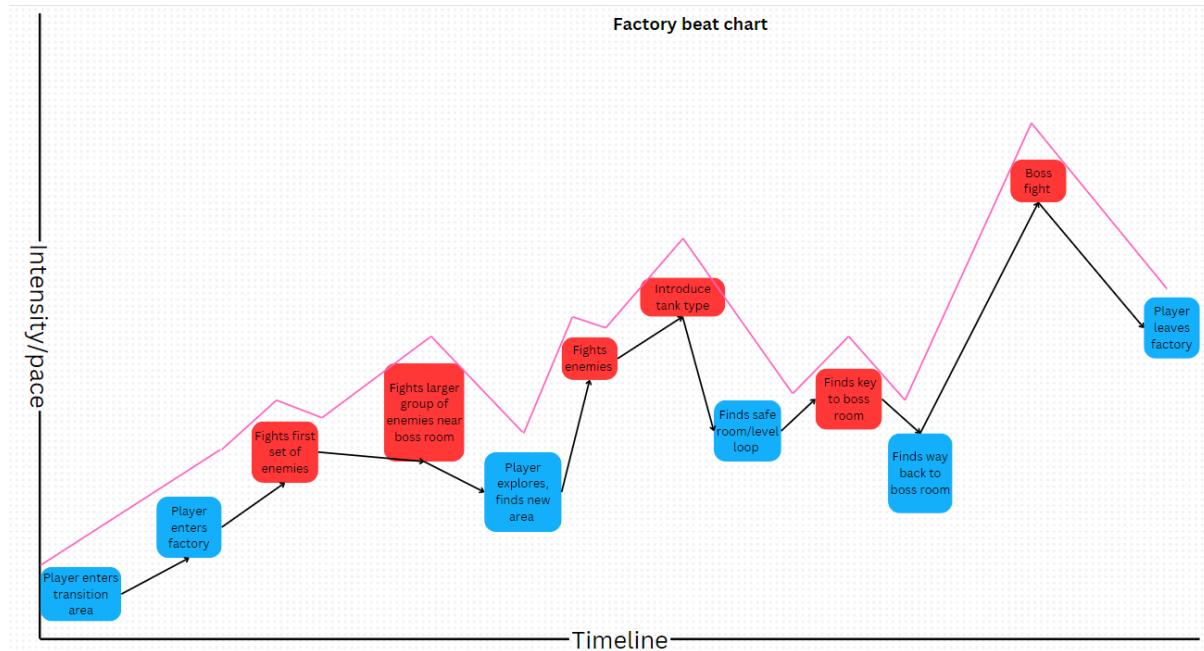
*Image of the boss tower blockout, the stairs are to be added later*



*Image of the transition area blockout which links the factory, junkyard and sewers together,  
also acts as out pacing set piece location*

## Pacing:

### Beat chart:



The beat chart above shows how we want to increase pace/intensity as the player progresses through the level. The instances in blue are explorative segments and the instances in red are combat segments.

### Hard gates, soft gates and valves:

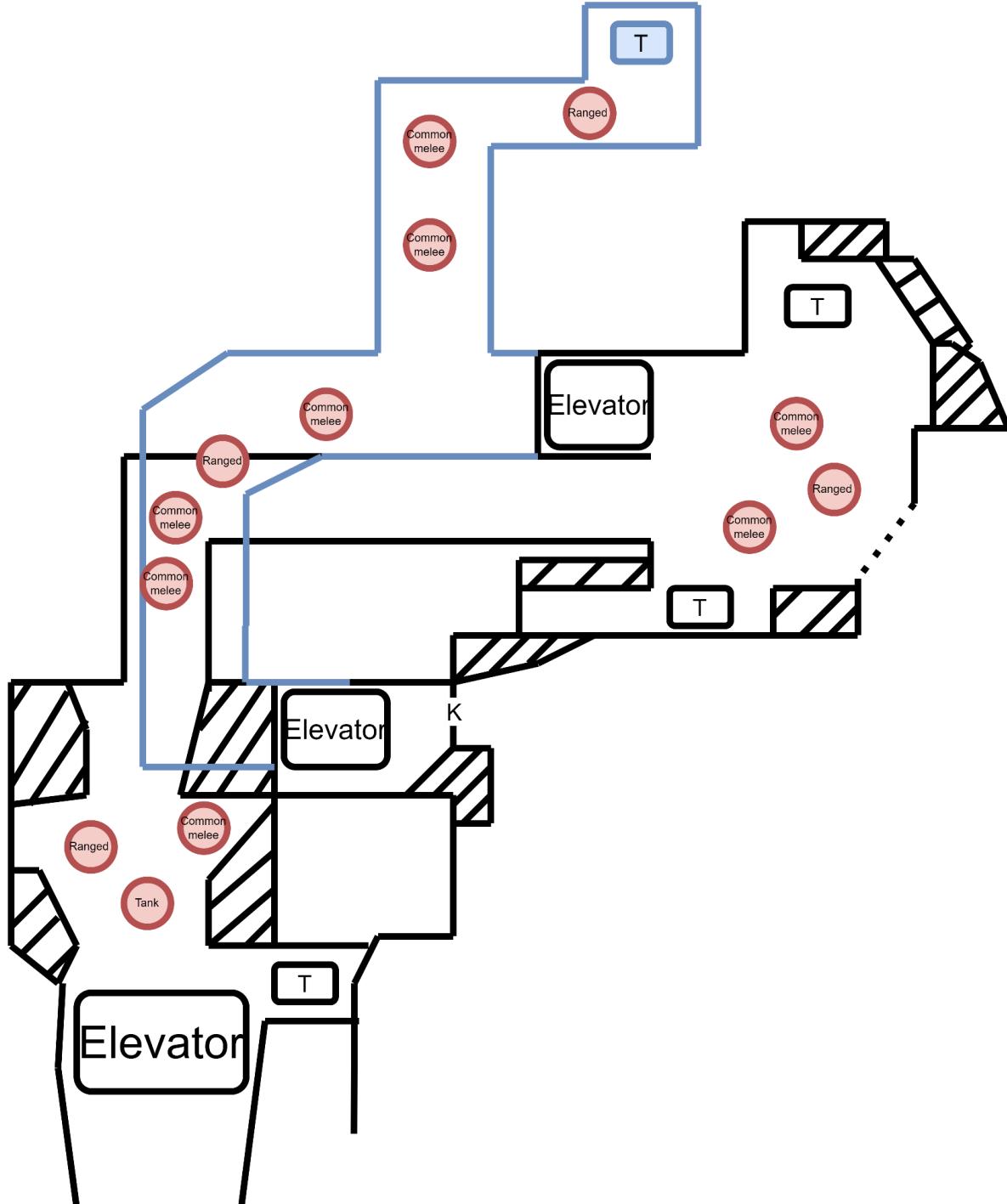
#### Valves:

Like the junkyard level prior there are no valves, the player should not be unable to go backwards as this damages our exploration pillar and the overall adventurous experience we want to provide players with. Furthermore, introducing valves would undermine the navigational challenges of the level, preventing us from achieving one of our core experience goals.

#### Hard gates:

Yet again we use hard gates extensively throughout the factory level, more so than in the junkyard section. However, we use hard gates in two different ways during the factory level to create a different effect and elicit a unique emotion from the player. The two types of hard gate examples we use are critical and non-critical. A non-critical hard gate is one the player wants to get around to fulfil an objective of their own making, for example, players may want to explore an area because they want to find an item to upgrade their character, kill a side boss or simply just to explore the environment. A critical hard gate is one the player needs to get around to achieve a game critical objective such as defeating a boss or unlocking the next location

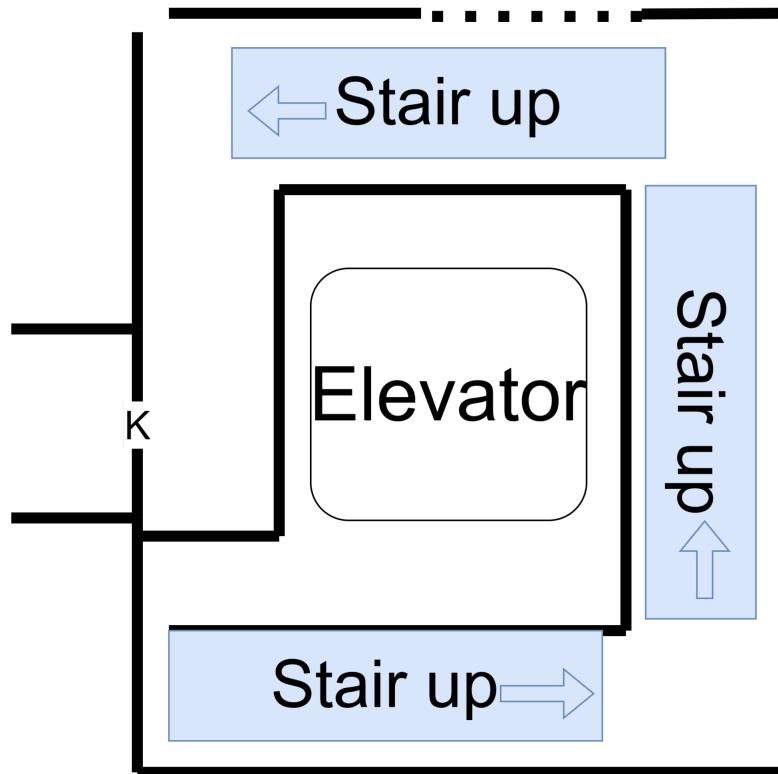
We use noncritical hard gates to incentivise and encourage exploration in a way that feels less required of the player. This ensures that if the player does not want to explore and would rather play the game in a more linear fashion the level design accommodates that desire and playstyle. We make the non-critical hard gates slightly more challenging yet still worthwhile. This ensures that players feel adequately rewarded for going out of their way to explore and get past the hard gate. The example we use in the factory level can be seen below:



*Image of the non-critical area in the factory level layout*

The player can only gain access to the upper level (blue outline) via a key found in the previous junkyard section aiding us in creating a level that feels connected and more akin to a world whilst also rewarding the player for doing prior explorative actions. Once they have this key the player can reach the second level and gain access to their rewards. Whilst we reward the player for exploring, we also place some enemies in the reward room to ensure that the overwhelming pace/theme we desire for the factory is kept consistent. The player is also rewarded with a shortcut back to the junkyard here aiding in creating that same intrinsic rewarding feeling we mentioned in the design for the junkyard and its shortcuts.

As mentioned, we also use critical hard gates. The critical hard gates require the player to explore the environment to find a way past however this key/way past is nearby the hard gate. This ensures that the player is still encouraged to explore the environment whilst having the freedom to stick to the critical path and simply unlock the gate without interacting with much of the environment through an explorative lens due to many players who may have a more straight forward playstyle and wish to only interact with the critical aspects of the game. However, by nudging the player very heavily into exploring for the key we can try to subtly lead them off the critical path hereby increasing the navigational difficulty of the level whilst also showing to the player that exploration can be fun and they will be rewarded for it. Below you can see the critical hard gate we use in the factory level:



*Players must find the key hidden in the factory to unlock the boss tower. Once the boss tower is unlocked, the player can fight the second critical boss and complete the factory level.*

### **Soft gates:**

Much like in the junkyard, the soft gates/breakable walls are used to slow the pace down slightly and to encourage exploration. They allow us to hide secret rewards behind walls ensuring that players remain vigilant. We also use elevators as a form of soft gate. The elevators allow players to reach higher ground to progress through the level, find a secret or unlock a shortcut. The elevators again help us slow the pace down slightly giving the player some time to breath before we increase the pace again which is an especially important paradigm in the factory level which relies on creating an overwhelming experience. Whilst we want players to be overwhelmed there needs to be a balance between the fast-paced action and the slow-paced sections to ensure players do not become too overwhelmed and stop finding enjoyment in the level due to the stress caused by its fast pace.

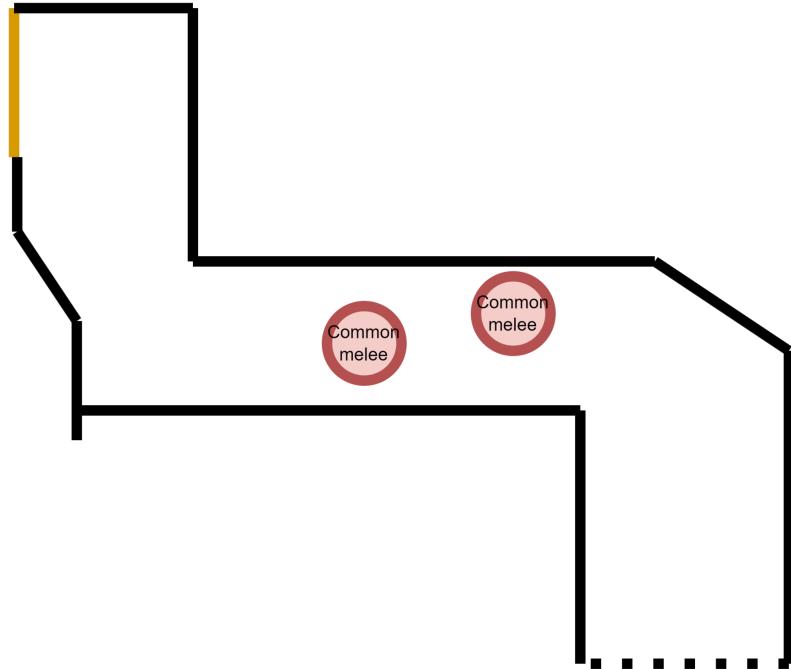
### **Compulsion loops:**

The primary compulsion loop is the collection of scrap (the currency in Scrap Forge). Players can find scrap throughout the environment within chests, enemy drops and simply scattered around the environment. The player can use this scrap to upgrade their character in avenues such as health and damage. This creates quite a nice compulsion loop where the player is prompted to explore the environment for pieces of scrap which can then be used to purchase an upgrade. This creates a tight minute to minute and hour to hour gameplay loop where the player is exploring and being rewarded with scrap in the minute-to-minute gameplay and an upgrade in the hour-to-hour gameplay aiding in creating a sense of progression and in giving players a long-term goal besides beating the game. The level design accommodates this compulsion loop through its focus on exploration and hiding scrap/items throughout the level. Within the factory level players will have the chance to gain rewards from interacting with the compulsion loop in the form of crafting. As a reward for collecting items the player can use them to craft new weapons which is a mechanic that we introduce during the midway point of the factory level.

### **Loops:**

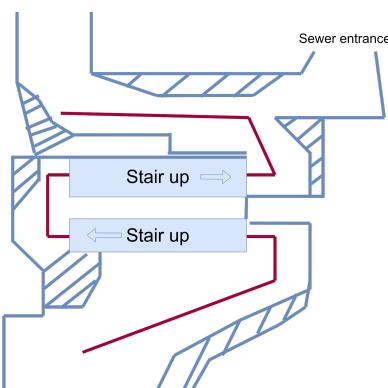
Much like in the junkyard level we use loops in our level design to ensure that players are not forced to traverse areas they have already explored. Forcing players to do this would create a very repetitive and stale experience damaging the levels pacing and the players overall enjoyment greatly. We also use loops in the level to reward players for exploring and reaching a certain point within it. The loops also act as shortcuts allowing players to reach critical areas faster which also keeps the game fast paced, players can respawn at the checkpoint and get back to the action far faster removing the slow down and tediousness of players running across an entire level to obtain their dropped scrap and retry a boss fight. We also use these loops to reward the player in a more intrinsic way. The loop/shortcut will ensure players can avoid difficult combat encounters as a reward for their exploration and completing the combat section at least once. Rewarding players with an intrinsic feeling of efficiency is a good way to break up the extrinsic action and item reward loop making the shortcut feel unique. The shortcut prevents players from getting frustrated with the combat and long run back times, making the loop/shortcut reward feel more valuable. The long-lasting effect of the shortcut also creates a better sense of reward and accomplishment

in the player making them more likely to explore the levels more in the hopes of finding a similar reward later. The shortcut/loop in the level layout can be seen below:



### Pacing set pieces:

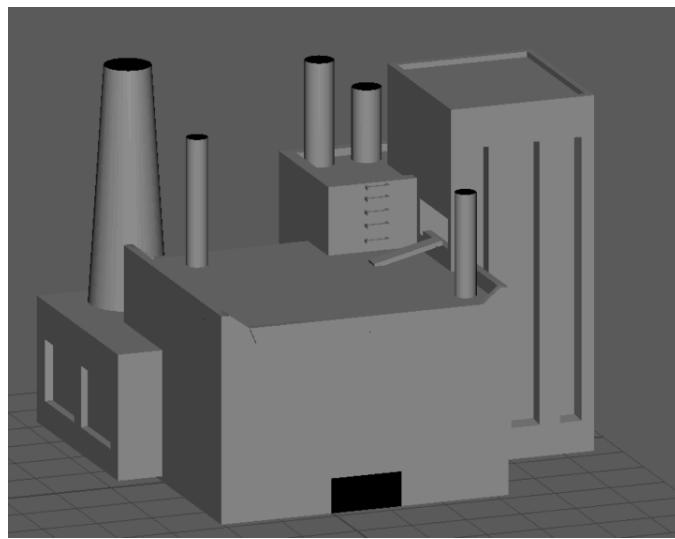
Much like the junkyard level prior, we use a specific set piece in the factory level to set pacing and give the player a break before any high intensity segments begin. This set piece can be found at the beginning of the factory level. Here we give the player a small environment to traverse before reaching the factory. The purpose of this area is to calm the player, decreasing the pacing greatly and giving them a chance to explore without much fear of encountering enemies. Pacing slowdowns like this are extremely important as they prevent the player from becoming overwhelmed and thus too stressed to continue playing. This set piece also ensures players are ready to traverse the high intensity factory level with a relaxed and less stressed mindset. This section of the level can be seen below:



## Navigation:

### Landmarks/weenies/signposting:

In contrast to the tutorial level, we only use two signposts to guide the player in the factory level. These signposts are the boss tower found on the right side of the level layout and the safe room. We decrease the number of signposts here to create an environment that should feel harder to navigate, providing the player with another challenge besides combat. This navigational challenge also comes as a way to test and develop the players spatial awareness which will be tested far more vigorously in later levels. Starting with the boss tower, we yet again use the locations essentiality to ensure that players remember it. Due to its essentiality the player will use it as a base to explore the level, constantly referring to it thus ensuring they do not become too lost. Having this landmark here also allows us to develop the players spatial awareness, teaching them to use landmarks to anchor themselves and navigate the level in a way that is more efficient than simply walking down whichever corridor is closest. We emphasise this idea by placing the tower on the right side of the factory layout. The factory has a vertical layout with the player moving upwards throughout it. by placing the tower on the right players are more likely to remember it since it breaks that vertical layout convention. Furthermore, we force the player to pass the tower early in the level ensuring that they are explicitly shown where the boss and their final objective is.



*Image of Abida's factory blockout, the tower being on the right and its height draws attention to it allowing players to use it as an effective anchor.*

We also use the safe room and its essentiality to the player as a landmark. Players are likely to die and thus will respawn at the safe room. Through this respawning and the players desire to get their scrap back they can learn the level layout and how to navigate it in the most efficient way possible allowing us to reward players who have good spatial awareness with a much easier time when they try and get their scrap back. The safe room also acts as another anchor allowing players to choose between which one they want to use as a guide to explore the environment.

### Visual Language:

We use the same visual language in the factory level as we do in the junkyard level.  
We use our own visual language to subtly guide players towards items and their objectives.

As mentioned prior in the document, it is our goal to not hold the players hand giving them more freedom over how they want to interact with the experience. As a result, visual language was an extremely important aspect of the level design and final player experience.

The primary example of visual language we employ is the graffiti control scheme. As explained prior, controller buttons/schemes will be spray painted onto walls. We use this visual language to subtly teach the player basic and advanced controls as well as how to craft items in a way that reduces the typical tutorial slow down and prevents a hand holding feeling.

There are many other examples and techniques we can use as visual language to help guide the player such as signs, metal bent into an arrow, graffiti, traffic lights, broken paths/wood planks, cars, storage boxes and other environment props as well as harsher and contrasting lighting can be used to guide the player in a subtle way towards their objective.

To prevent players from attempting to get into areas they cannot we will use different lighting and environment details. Due to the nature of the isometric camera, it may find itself out of the scene. To prevent players from thinking they can go into the areas they are falsely being shown we will place those areas in a darker lighting or simply a void to ensure that players understand there is nothing outside of the level that they can find/explore.

The player will also be able to pick up items across the level. These items also need their own visual language to ensure players understand that they can pick them up. We will place a small glint texture over the item, making it appear as though it flashes briefly to catch the player's eye.

### **Guidance:**

We also use the same guidance techniques we used in the junkyard level prior within the factory level.

Whilst we want to remain hands off with our approach to level design and its interaction with the player, we still need to guide them in the right direction. To do this we use quite simple guidance systems, anything too complex might cause the player to be guided in a linear and forced way damaging the free and non-hand holding experience we want to provide.

We use light consistently to nudge the player forward and provide them with important information. We use light in two distinct ways: to guide the player and to signal safe areas. Starting with guiding the player, we use quite harsh and clear lighting to grab the players attention and encourage them to move in its direction. Areas we want the player to explore will appear lighter than the areas we do not want them to explore. For example, the hidden treasures scattered around the factory will be in a darker lighting to ensure that players have a harder time finding them and are encouraged to explore. The second way we use light is to signal a specific piece of information to the player. We use a blue light to guide the player

towards safe rooms. The clear contrast between lighting ensures that players are more likely to enter the safe room whilst also clearly establishing the room they are in as being safe/different to the one they just left.

The geometric shape of objects like walls will be altered slightly to guide the player subtly. Players are more likely to go down a path that features a round and soft bend rather than around a harsh corner. As can be seen throughout the blockout images prior, many of the corners and walls on the critical path are curved to subtly guide the player along the critical path. We will also use objects/props in a similar way to nudge players into going towards a certain area. For example, we can place a metal pipe or conveyor belt at a 45-degree angle which will naturally guide the player along that line and into a specific area. To further emphasise the direction, we want the player to go into, the visual language techniques mentioned prior can be used, such as a sign.

#### **Teasing/breadcrumbs:**

We tease players extensively throughout the level with treasure, shortcuts and enemies using the camera. Due to the nature of our isometric camera and its controls the player will be able to see or move the camera slightly over a wall. We purposely place treasure on the other side of low walls in the hopes that players will see a glimpse of them, becoming intrigued and begin exploring the level in the hopes of finding a way to it. This helps strengthen the exploration pillar of the experience whilst also ensuring that players are rewarded for their exploration. Furthermore, we use the camera to tease essential objectives like the boss tower to the player. By teasing this to the player they are shown where to go in a way that is not overly hand holding whilst also furthering the feelings of adventure and exploration we want to provide.

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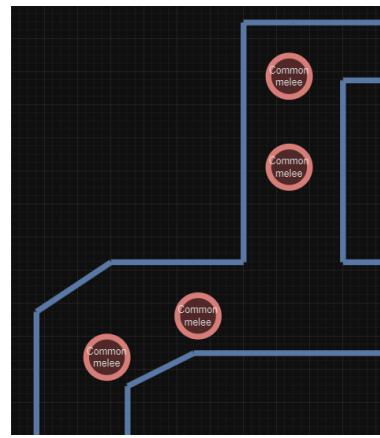
## **Combat Spaces:**

Within the factory level we use two types of combat space to provide the player with a varied combat experience through the environment. We called these combat spaces tight and continued respectively. This helps us control pacing through the level design, giving players short bursts of intense combat and more relaxed combat. We also use the two combat spaces in tandem in the factory level to provide an experience that feels more varied than the previous levels whilst also acting as a test of the players adaptability and understanding of mechanics.

#### **Tight:**

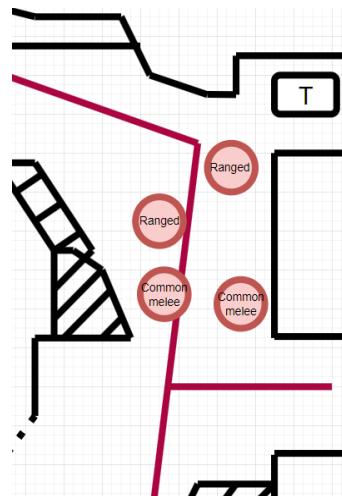
The tight combat space is quite self-explanatory. The tight combat space forces the player into a small, enclosed area that limits how much the player can move. This limitation on movement ensures that players' combat ability is tested in an environment that is far more difficult to fight in. Furthermore, the change in combat space from the junkyard and into the factory ensures that players' experience is constantly being changed, requiring them to adapt throughout the game aiding in keeping gameplay enjoyable, unique and fresh. The

change in combat space also aids pacing. By putting the player in a smaller environment for combat encounters the combat will feel more intense and fast paced which allows us to achieve the more difficult experience we want to provide within the factory level. Below is an example of the tight combat space found within the factory level:



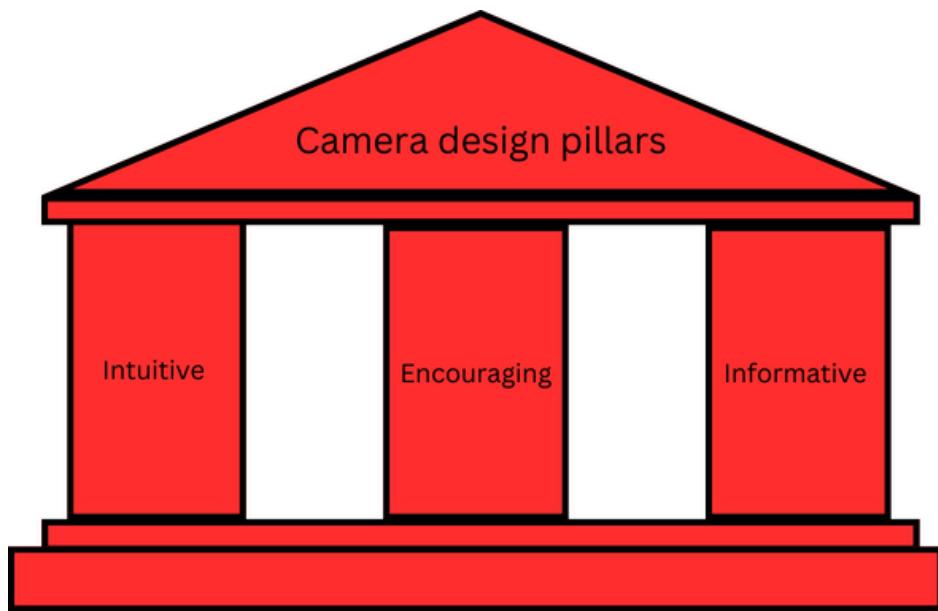
#### **Continued:**

Much like the junkyard level we use the continued combat space in the factory level to create a similar experience for players. When exploring the level players will encounter enemies. Once the player encounters enemies the level layout will expand slightly giving them more room for combat. This expansion creates an arena like feeling emphasising the state change from exploration into combat. After the combat space the level will then return to its "normal" size for the next exploration segment. The main objective surrounding this combat space ideology is to strengthen the exploration pillar of the level design and the players immersion. The player should feel as though they are exploring the environment of a world not rooms and arenas linked by corridors. We take this "continued" approach to ensure that the world and thus the players experience feels continued and consistent. Much like the tight combat space, the continued combat space allows us to control the pacing and intensity of combat and the overall experience through the level design. An example of this continued concept can be seen below:



# Camera overview:

## Design Pillars



## Design Philosophy

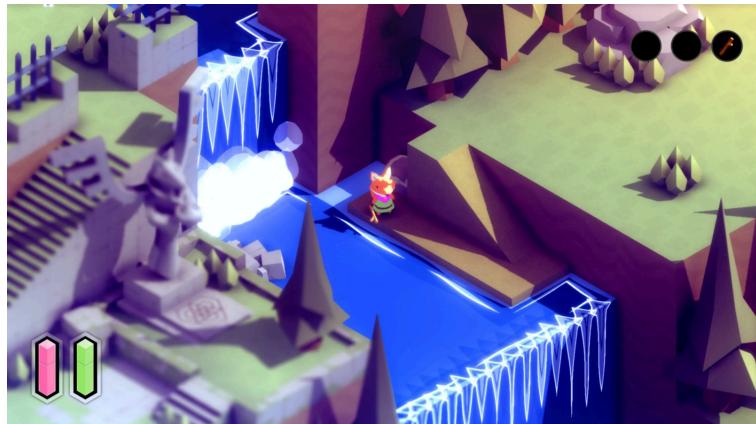
Our goal is to provide players with an intuitive and easily controllable camera that does not conflict with them or their intentions. It should be non-obtrusive, serving to enable the players exploration and combat in an enjoyable and invisible manner. The camera should serve as a facilitator of the players curiosity via its positioning and framing of in game elements, teasing players with items, enemies, objectives and secret areas hidden within the environment and thus encouraging them to explore levels and interact with the overall experience in a deeper and more involved manner.

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# Camera Design:

## Angle and distance:

In terms of the cameras distance and angle, we use similar variables and design to Tunic. We strike a middle ground between standard isometric experiences like Age of Empires and the 3D over the shoulder view of the Dark Souls trilogy via an orthographic perspective. We operate in this middle ground to take advantage of the positives of both designs. The over the shoulder view of Dark Souls allows the player to feel more connected to their character through the more intimate framing whilst the isometric view of games like Age of Empires allows players to gain a wide and strategic view of the environment. Hitting this middle ground allows us to create an attachment between the player and their character whilst providing players with that strategic view mentioned through the camera's distance. Zooming the camera out like this gives the player a wider overview of the environment encouraging them to play more strategically and explore the environment more thoroughly. In addition, the camera angle enables us to hide items and scrap behind props prompting players to explore which links to our overall experience goals in level design/exploration. Furthermore, the isometric angle our camera is placed in ensures that we do not need to create horizons/skyboxes for the game, saving time during production whilst also enabling other aspects of the games art to take priority.

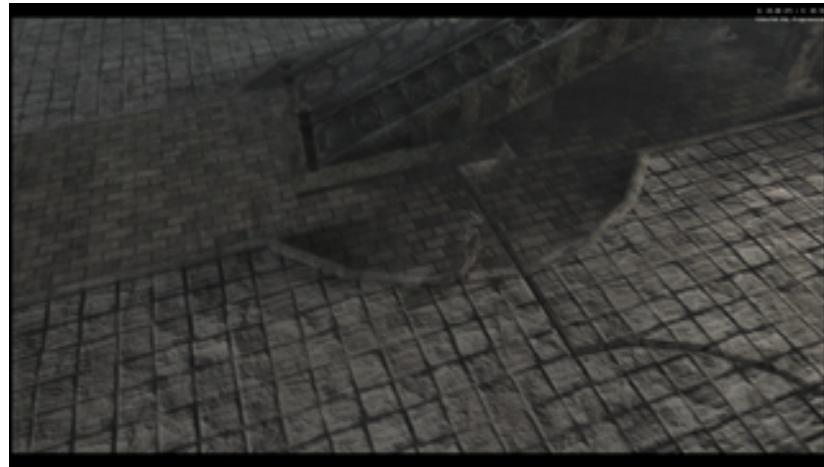


*Image of Tunic's camera which acted as a base and heavy inspiration for the camera in Scrap Forge. We use an angle and camera distance similar*

## Movement:

To limit player annoyance the camera remains mostly stationary, staying isometric and non-dynamic for almost the entire experience. The camera moves in tandem with the player, keeping their character in the centre of the screen to ensure players have an anchor point they can use to prevent themselves from becoming confused or lost during the experience. We keep the camera stationary to limit player annoyance. Cameras with a wide variability and full 3D control are more difficult to balance and take advantage of, if done poorly these cameras only serve to limit players contrasting our invisible camera philosophy.

However, the player can move the camera slightly in a panning motion. When doing this the camera will remain at the same angle and distance but the player can move it left, right, up or down before it reverts to the standard view again. This movement is an extremely important aspect of the camera which aids us in encouraging players to explore the environments and plan their approach ahead of difficult encounters. The camera movement gives the player a chance to see items and enemies over walls and/or before they reach them creating an experience that feels more strategic and thoughtful.



*GIF demonstrating Ico's camera movement which served as an inspiration for our design*

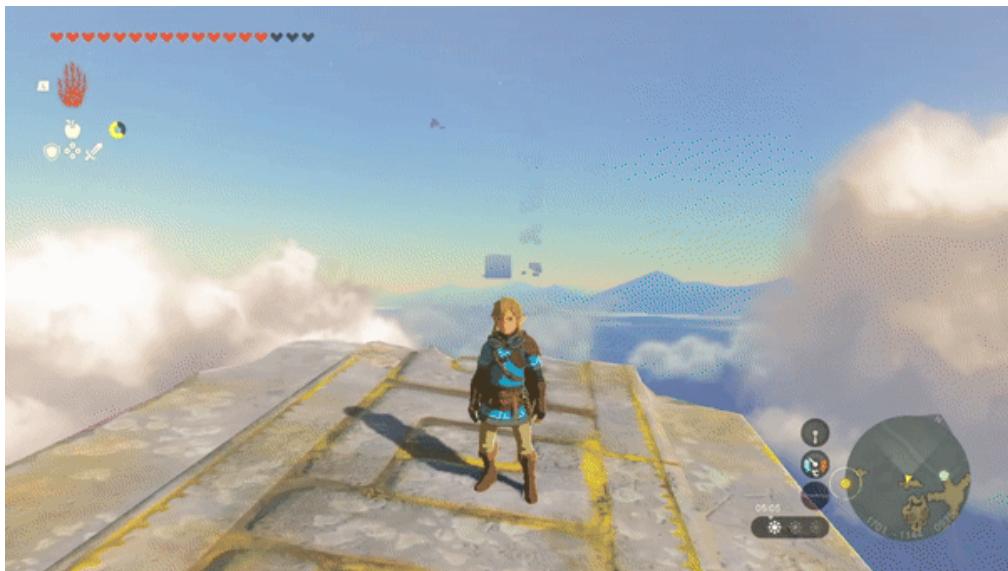
On top of being able to move the camera, players can interact with the viewpoints around the levels to gain a wide and informative view of the environment. The viewpoints take control of the camera from the player temporarily. The camera then moves into a predefined location and angle, displaying the level and other important pieces of information for the player to see. Yet again this allows us to provide the player with a more strategic experience, enabling them to plan their path through the level accordingly. Furthermore, the viewpoint allows us to guide the player through the levels via its framing of certain signposts and its overall distant/wide view removing the need for more explicit guidance systems which damage other areas of the game.



*GIF showcasing the telescope mechanic in Tunic which served as inspiration for our design*

## Camera and environment interactions:

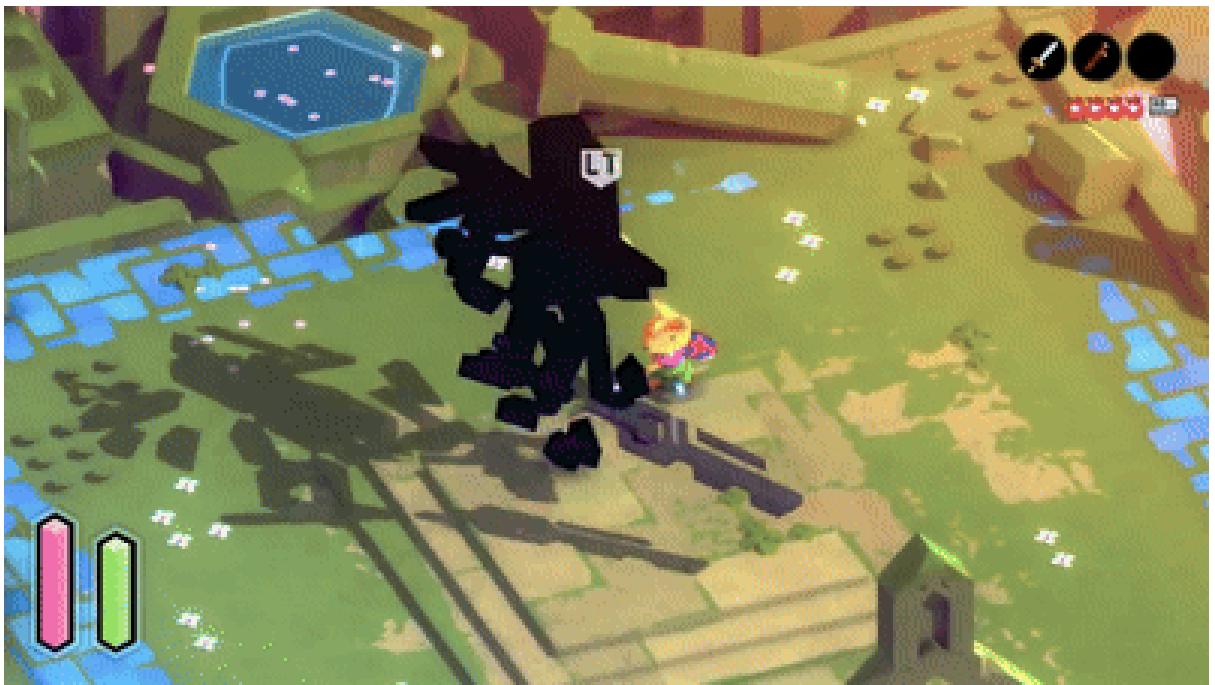
The cameras interaction with the environment was an extremely important aspect of its design. Due to the wide angle and distance, we place the camera at, it will inevitably cause some interaction with the environment. Ensuring this interaction is smooth and non-obtrusive to the experience was essential. To prevent camera annoyance and poor interactions with the environment, we use a dithering effect. If a piece of the environment blocks the players line of sight the wall will become slightly faded, allowing players to see through it. This ensures that players do not become disorientated or begin fighting the camera providing them with a clear view of their character, an objective or an enemy at all times.



*GIF showcasing the dithering effect found in The Legend of Zelda: Tears of the Kingdom which served as inspiration for our wall dithering function*

## Combat:

The camera and its usage during combat segments was another crucial aspect of its design. To stay aligned with our non-obtrusive and invisible approach we had to ensure that the combat camera remains like the exploration/standard camera whilst also providing the player with benefits in combat to incentivize players to use the lock on function. Once the player locks onto an enemy two distinct camera movements take place. The first is quite self-explanatory. Once the player locks onto an enemy, that enemy character becomes the focus of the cameras framing, centring the enemy over the player. This ensures that players focus is placed solely on the enemy they are fighting aiding in clarity whilst also ensuring the combat is understandable and clear. The second movement the camera does is slightly more complex. Once the player has locked on the camera will move upwards and pan downwards providing players with a view that operates between a top down/bird's eye perspective and our standard camera angle. We do this move up and pan down movement to create a camera that is more viable for combat via placing more emphasis on the enemy players have locked onto whilst also providing players with a wider view of the environment around them, allowing them to notice other incoming enemies and act accordingly. The move and pan motions also clearly signal a state change from exploration to combat for the player ensuring that the experience is easily understood and predictable/learnable.



*The GIF above shows the combat camera movement found in Tunic which served as inspiration for our design*

## Outside of the play space:

Keeping our camera angle consistent during gameplay is extremely important in creating a cohesive and understandable experience. A camera with a constantly changing angle or major line of sight blocks which prevent the player from seeing their character damages the experience greatly, creating one that feels disorientating and wholly unenjoyable. Due to the

nature of isometric cameras and their interactions with level design/environments there are many instances where a line-of-sight block may occur, preventing this was a major hurdle in our camera design. To combat the camera leaving the play space and creating a poor experience for players we use two different methods. The first method is the dithering technique mentioned prior. To avoid a line-of-sight block when the camera is behind a wall that wall is faded out slightly so that players can see through it and thus can still see their character. The second method we use is slightly more complex. On some occasions the player may be able to position the camera to see over a wall and into the environment beyond. Many games simply use a void technique here as shown by the image below. However, it was one of our goals in level design to create the feeling that players are in a world and not levels. To further this experience goal, we do not use a void technique which has an inherently video game feel but instead we allow the player to see the environment beyond. This outer environment cannot be accessed by players, to signal this to players we place the outer environment in a darker lighting than the playable environment whilst also placing far less props within it. This ensures that the player gains the feeling that there is more out there than the playable environment space aiding in immersing them in the experience.



*Above is an image showcasing the void technique many isometric games adopt to display outer/unplayable game spaces/environments*