

Game Design Document



Winter Cabin



Alexandre Teixeira, nº 22005142

Rodrigo Pires, nº 22103008

André Sebastião, nº 22008519

Daniela Peixoto, nº 22305364

Vitor Daniel, nº 22204782

Table of contents

1. Version History.....	3
2. Game Overview.....	5
2.1. Pitch.....	5
2.2. Synopsys.....	5
3. Gameplay.....	6
3.1. Camera.....	6
3.2. Controls.....	6
3.2.1. Character movement.....	6
3.2.2. Camera movement.....	6
3.2.3. Interactions.....	6
3.3. Mechanics.....	7
3.3.1. Base actions.....	7
3.3.2. Cabin specific actions.....	7
3.3.3. Book mechanics.....	8
3.3.4. Radio table mechanics.....	8
3.3.5. Map mechanics.....	9
3.3.6. Board mechanics.....	9
4. Room Layout.....	10
4.1. Ambient.....	10
4.1.1. Description of the Ambient.....	12
4.1.2. Color palette.....	13
4.2. 3D Room Mockups.....	14
5. Level Design.....	16
5.1. Puzzle design rules.....	16
5.2. Moles characteristics.....	16
5.3. Space characteristics.....	16
5.4. Item characteristics.....	17
5.5. Dependency Chart.....	17
5.6. Puzzle 1.....	18
5.7. Puzzle 2.....	22
5.8. Puzzle 3.....	23
5.9. Puzzle 4.....	24
6. UI.....	25

7. Menu Flow.....	27
7.1. Main Menu.....	27
7.2. Options Menu.....	27
8. Art Assets.....	28
8.1. Art Styles.....	28
8.2. Assets list.....	28
9. Sound.....	42
9.1. Sound Vision.....	42
9.2. Sound Effects.....	42
9.2.1. UI Sounds.....	42
Player Actions.....	42
9.3. Music and Ambient Sounds.....	43
Style and Ambients.....	43
Mood.....	43
Rhythms and Transitions.....	44
9.4. Voice acting.....	44
10. Extra Links.....	44

1. Version History

Date	Version Number	Content	Name
20/10/2024	1.10	Added and finalized sections and subsections Mechanics; Base actions; Cabin specific actions; Book mechanics; Radio table mechanics; Map mechanics; Board Mechanics Added and included links in the Extra Links Section	Rodrigo
20/10/2024	1.9	Added more items to the sound asset list Rewrote the sound asset descriptions with more detail Better structuring of version numbers	Alex
20/10/2024	1.8.2	Formatting Asset list to match document	Alex
20/10/2024	1.8.1	Helped format sections filled by Andre and Alexandre	Vitor
20/10/2024	1.8.	Finishing Room Layout with descriptions and more references Adding references to UI and detailing the section Adding references to Menu Flow and detailing the section Added a pitch to the game	André
19/10/2024	1.7.	Added the art asset list with examples and descriptions Added the sound Asset list	Alex
19/10/2024	1.6.	Helped create and edit the dependency chart with Daniela; Corrected formatting issues on both assets sections;	Vitor
19/10/2024	1.5.	Reworked gameplay section (added images and improved descriptions); Wrote art type and additional formatting to that section;	Vitor
18/10/2024	1.4.1	Further corrections in formatting after more feedback; Reworked Gameplay section and added illustrations; Added more comments for remaining sections of document to finish; Added images to illustrate game overview and formatted text;	Vitor
18/10/2024	1.4	Finished Space characteristics and added Item characteristics	Rodrigo
16/10/2024	1.3.	Added references to Room Layout and 3D images of the blockout Imported the excel of Art Assets made by Daniela and Alexandre	André

16/10/2024	1.2.2	Corrected formatting of document	Vitor
16/10/2024	1.2.1	Added Puzzle Design rules, moles characteristics and space characteristics.	Rodrigo
16/10/2024	1.2.	Added the design of the puzzles.	Daniela
15/10/2024	1.1.1	Added the sketches of the room and added the university logo.	Daniela
15/10/2024	1.1.	Added more content to GDD structure: game overview and camera, controls and mechanics chapter not yet defined	Vitor
07/10/2024	1.0.	Created basic structure of GDD	Vitor

2. Game Overview

The game is set in first-person, 3D and played as single-player in an Escape Room. The target platform is PC.

2.1. Pitch

What was once an exploration mission to abandoned ruins is now a rescue mission due to a severe snowstorm. While you have the knowledge, they have the means so it's up to how well you can coordinate your team through this old transceiver and attempt to escape this forest.

2.2. Synopsys

During a snowstorm, in the middle of the forest, you are trapped in an old wooden hut with basic items such as food, water and heat from an old stove. This rustic, worn-out cabin, once used as a simple storage room, has now been used as a base of operations for the team you guide deep into the ruins, filling the empty spaces in the room with communication devices, maps, books and sketches to help with the exploration. This storm has trapped us inside the cabin, preventing us from getting out and cutting off our connection with the outside world so that only the radio will work, so we're going to help our friends out of the cave to help us escape and for us all to survive.



3. Gameplay

3.1. Camera

First person view with restringed camera rotation vertically (on Y axis). The player won't be able to see any part of the body even when picking up various objects or interacting with the cabin.



Example of a first person camera view from an small game project meant
to teach people about firefighting and evacuation

3.2. Controls

3.2.1. Character movement

Move front and backwards with W and S keys, and strafe to left and right with A and D keys



3.2.2. Camera movement

Move the camera by waving around the mouse.



3.2.3. Interactions

To interact with objects in the room use the left mouse button click to pick or place them and to scroll through the inventory use the mouse scroll wheel.

3.3. Mechanics

3.3.1. Base actions

The player is capable of doing the following basic actions: Move; Interact with objects; Carry Books.

The player's movement has a constant speed once any movement key is pressed and has no start up, stops instantly once the same movement key stops being pressed or when a movement key is pressed that provides speed in the opposite direction. The player can't not jump, leave the ground or fall.

The player is able to interact with a few objects inside the cabin. Any object that can be interacted with will have its texture turn lighter once the player looks in its direction while the object in question is inside the players interaction range.

There are certain objects that can be carried by the player, when they are, they will show up on the bottom right corner of the screen as the player holds them. The player may only carry 1 item at a time. Every item that can be carried can be switched with another if said item can also be carried.

3.3.2. Cabin specific actions

There are extra mechanics inside the cabin that the player has to interact with throughout the game, mainly: Radio mechanics; Book mechanics; Map mechanics; Board mechanics.

3.3.3. Book mechanics

Books are carriable items that are all located initially in the bookshelf upstairs. Books can be of 2 types: Image books and Command books. Both types of books have a certain amount of navegable that the player can browse through in the display on the radio table.

Image books contain images only and are meant to be used as sources of information for the player. Specifically containing flora, fauna and geology of the mine. They function as a way to identify every section of the mine due to its specific flora, fauna and geology.

Command books are like image books but have another function, they can be used in the book display on the radio table to give commands to the moles below. These commands can involve use of items or paths to take.

3.3.4. Radio table mechanics

The radio table, located right in front of the players spawn. The radio table contains 3 important interable areas: Book Display; Book Storage; Call Button.

The book display is used as the place where books can be browsed and viewed on the radio table. Books can be placed on it and will automatically open on the first browsable page. A book being displayed can be clicked on the right and left corner of the page to go to the next page according to the page clicked. When a book is displayed some of its contents, specifically on Command book, can be highlighted.

Like the bookcase, the book storage located right under the radio table functions like it. It is used to store books that get used multiple times by the player. It has a storage space of 20 books.

The call button is used as the way to communicate to the mines. Can only be pressed when something is highlighted and only advances the game if the highlighted item is the correct answer.

3.3.5. Map mechanics

The map area is located on the wall right beside the radio table. It's there that all the maps are stored of every level of the mine. Each map is properly identified on the top right of the board and has each section identified by a big number on the center of the section. It also contains some scientific wording about what each level and section contains.

On the button left there's some indicators that can be clicked on to browse through all the available maps.

The other possible interaction with the map is to highlight certain sections of a level by clicking on the big number of the section intended to highlight. This is used on puzzle 1 and 2.

3.3.6. Board mechanics

The board is relatively simple, only containing 2 main elements: The note taking and the highlight of said notes.

Throughout the puzzles and dialogue, this board will be updated with useful information both said by the moles or discovered by the player. It will show the main question of each puzzle and is used to solve some of those puzzles by highlighting important information before using the call button.

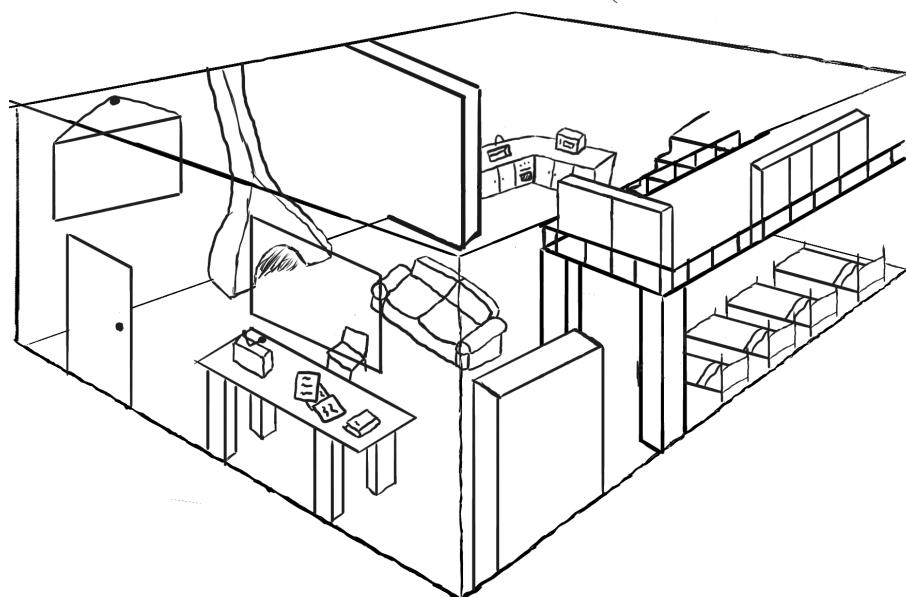
4. Room Layout

4.1. Ambient

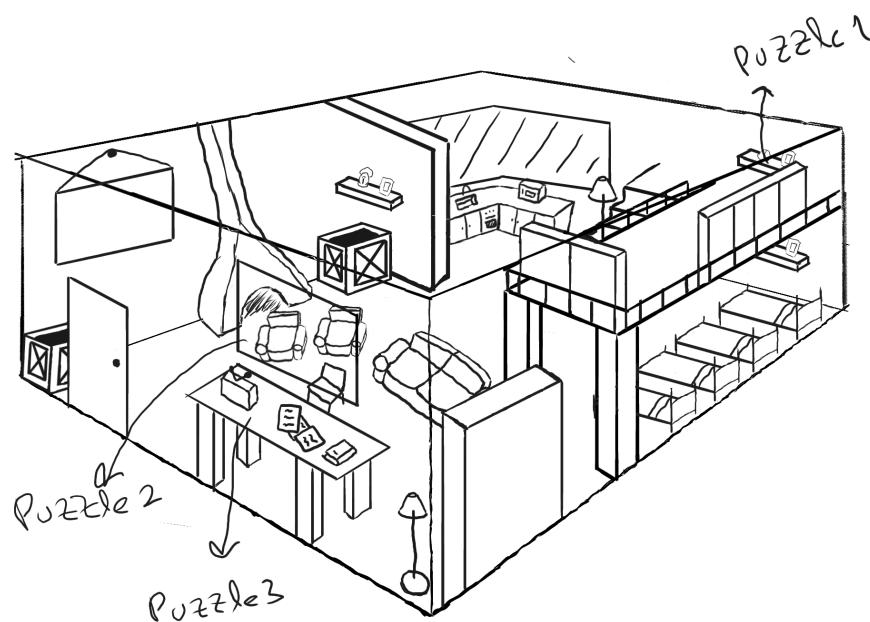
As previously mentioned in the synopsis, the game occurs during a heavy snowstorm, in the middle of a forest, during the late 90's. As such, the cabin will be isolated from civilization and will also have a vintage look, although the game will be set in the late 90's, the interior of this cabin will be populated by mostly vintage items from the 70's.



Second draft. We ended up adding more furniture and a small second floor for a small library.



Third draft. We've added more furniture and detailed it to make it look more like a miner's base.



Final draft. We've added more decorations and where the puzzles will be located.

4.1.1. Description of the Ambient

During a snowstorm, in the middle of the woods, you are stuck in an old log cabin with the basic necessities such as food, water and warmth from an old stove. This rustic and worn-out cabin once used as a simple storage and makeshift house has now been repurposed as an operation base for the team you are guiding deep in the ruins, filling the empty spaces in the room with communication devices, maps, books and sketches to aid the exploration.

An apparent mix of various objects can be seen in this cabin, old furniture made out of wood and utensils that have been worn-out through the time with new equipment from the exploration team.

Against a wall of the cabin, a workstation has been laid out, with multiple files, books, drawings, lamps and maps scattered on top of this table, some that have fallen can be found on the ground. At a corner of this table, an old radio station sits there, a way for the underground team to communicate with the outside world and vice-versa.

This radio has cables stretching from the table, up a wall to a window and goes until the roof where an antenna stands there, stuck to the roof.

To the right of this table, an old metal stove is burning some wood, keeping the room warm to combat the severe snow storm that is going rampant outside. From the top of this stove, one main metallic tube goes up to release the smoke outside but not before branching out through the room into a smaller room that goes into a farther way area of the house, still maintaining the whole house warm through the storm.

On the right of this stove, a small wall breaks the room in two, not completely closing off the section, but separating the kitchen from the living room. In this wall on the side of the living room there is a cork board propped against the wall, now used by the exploration team as a way to prop maps and important information on this wall so that everyone has a clear sight to it.

The wall opposite the stove, there is a window, the same window that the cable passes through. This window is heavily fogged by the heat from the inside against the cold outside, only letting light come through.

The wall to the left also has a window in the same conditions, close to the corner, while on the other corner of this wall the door to the outside is present, with a doormat at the feet of the door.

Across the wall that is dividing the room into two, there is a kitchen at the corner, having only the essentials to be recognized as a kitchen, a metallic oven against a wall and some cupboards with a sink on the right of this oven with multiple utensils on top. Inside the cupboards can be seen some food and water supplies such as canned goods and rice.

To the right of the kitchen a set of stairs can be found, leading the people to a small second story, where the study resides.

This study has the walls adorned with shelves, some filled with books while others have an assortment of objects. Closer to the rail of this second story, a small table with a lamp and a small wooden chair sit there, with a view from the rest of the cabin.

Under this second story is the bedroom, with multiple small sized beds against the wall and a nightstands on each side with some lamps next to it. These nightstands have a few books for some small reading.

A warm orange source of light brings brightness to the room while there is a bit of a contrast from a faint blue light coming through the windows, highlighting some red velvet and beige furniture.

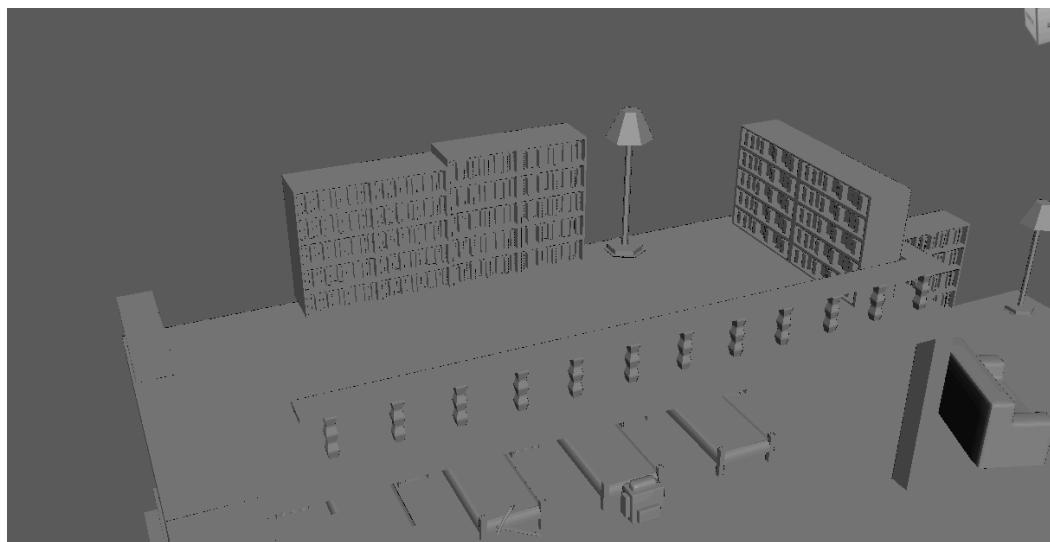
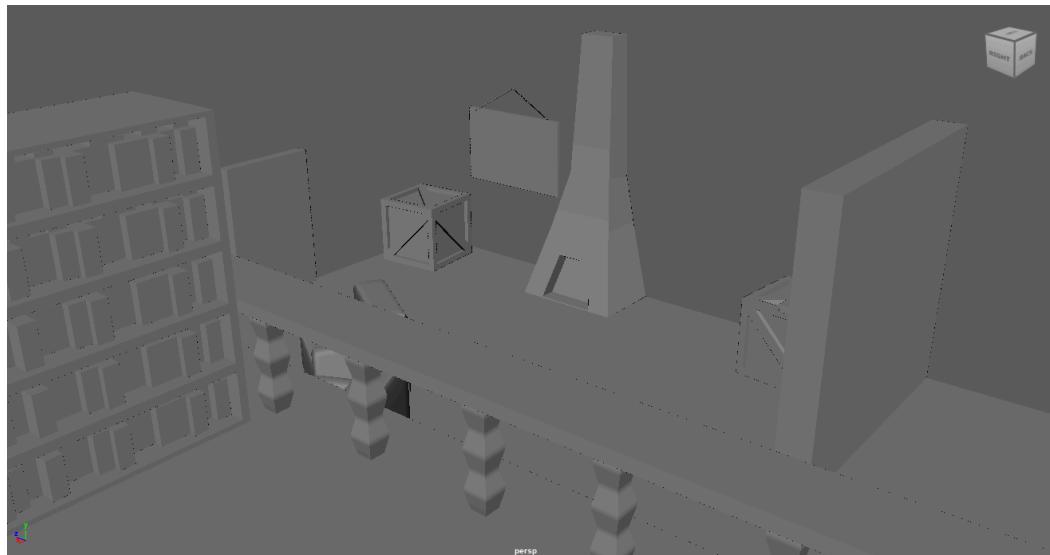
4.1.2. Color palette

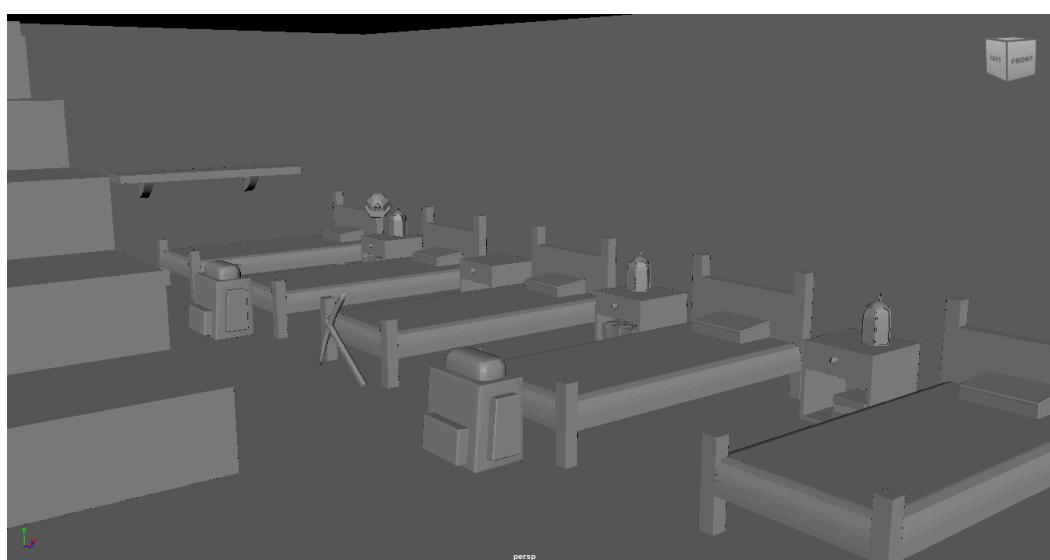
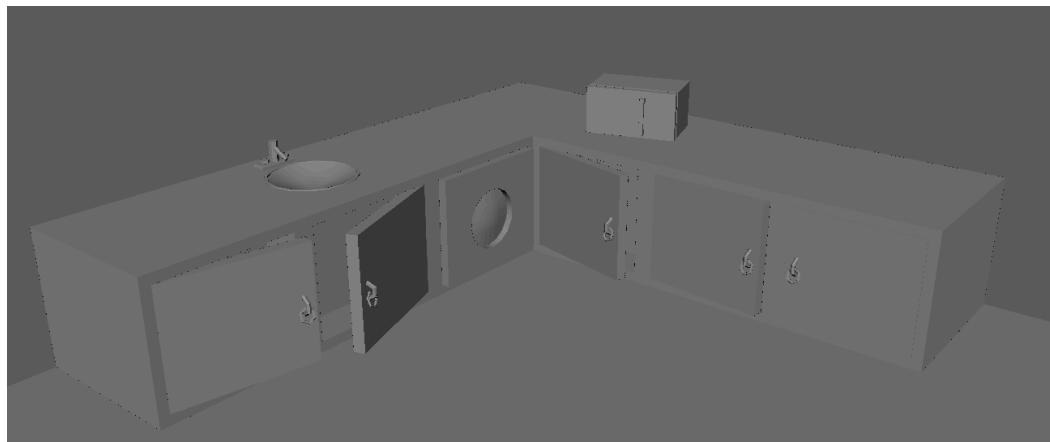
The color palette consists of a variety of 3 to 5 reddish to very dark browns and some “dry” reds, greens and blues to give some contrast but without over-saturating the colors.



4.2. 3D Room Mockups

Blockout of the game made in 3D, it encapsulates all the sections of the cabin with the key objects





5.Level Design

5.1. Puzzle design rules

For the creation of each puzzle there's certain rules that must be followed: "What moles can and can't do"; "How the space in the mine is organized and functions"; "How moles interact with each other"; "What different items do and don't".

5.2. Moles characteristics

Each mole has the 5 following characteristics: Name; Backpack; Task Speed; Location; "Specific quirk".

The Name of each mole is their own ID to help identify who's who.

The Backpack is each mole's hidden inventory, by default it's 1, meaning each mole can only carry 1 item at a time. The only exception is the BBM (Big Backpack Mole) which has a carry capacity of 3 items due to having a bigger backpack than everyone else.

The Task Speed is the time it takes for a mole to complete a certain task, each mole can have different task speeds.

The Location of each mole is based on what level of the mine they are located on, the section of the level they are on and what tile they are occupying

5.3. Space characteristics

The entirety of the mine is divided by level. Each level has its own characteristics when it comes to fauna, flora and geology.

Each Level is divided by sections, all numbered from 1 to 6, visible on the map with a big number in the middle of them.

Finally each section is divided by subdivisions. The part connecting each subdivision is called a path.

A path can be: Fully blocked by a wall, where there's no way to go through it; Can be opened and allow the moles to go through it; Can be blocked by specific debris or darkness that can be removed using certain items.

5.4. Item characteristics

There's exactly 4 items available to the moles. Every item has its own specific use.

Pickaxe: Can be used to remove stone debris.

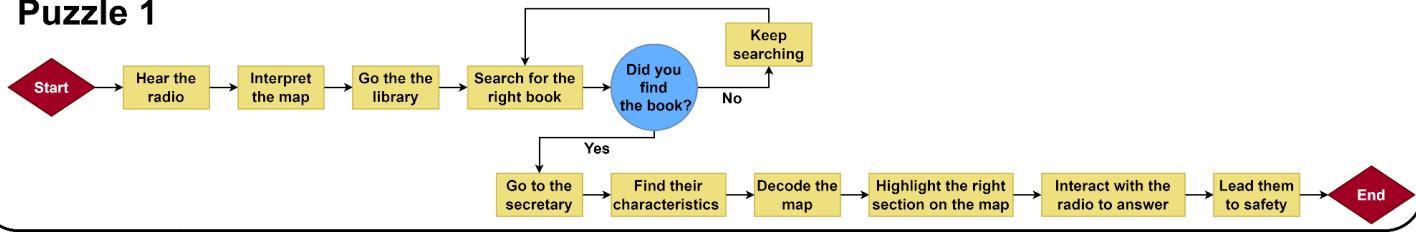
Shovel: Can be used to remove dirt debris.

Lantern: Can be used to light a dark path.

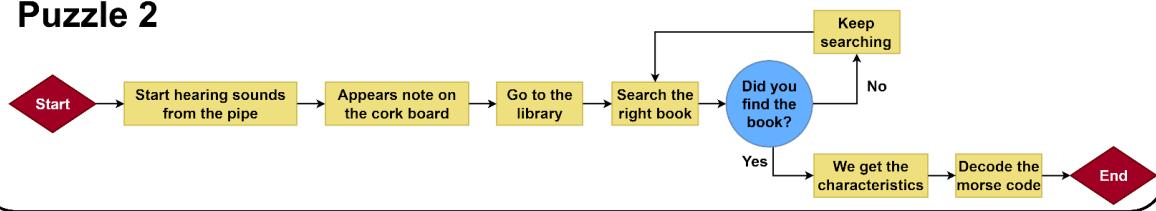
Ladder: Can be used to cross a hole.

5.5. Dependency Chart

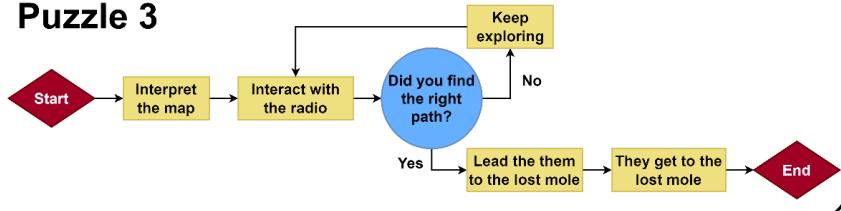
Puzzle 1



Puzzle 2



Puzzle 3

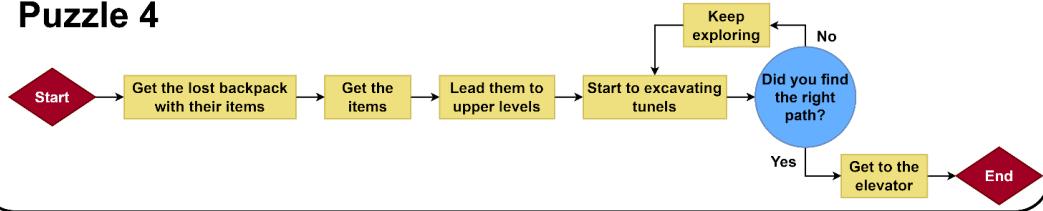


Start/ Ending → ♦

Ações → [Yellow Box]

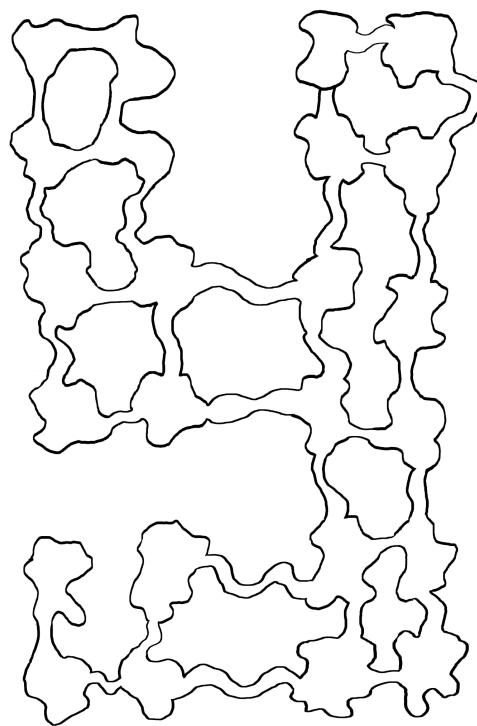
Condição → ●

Puzzle 4

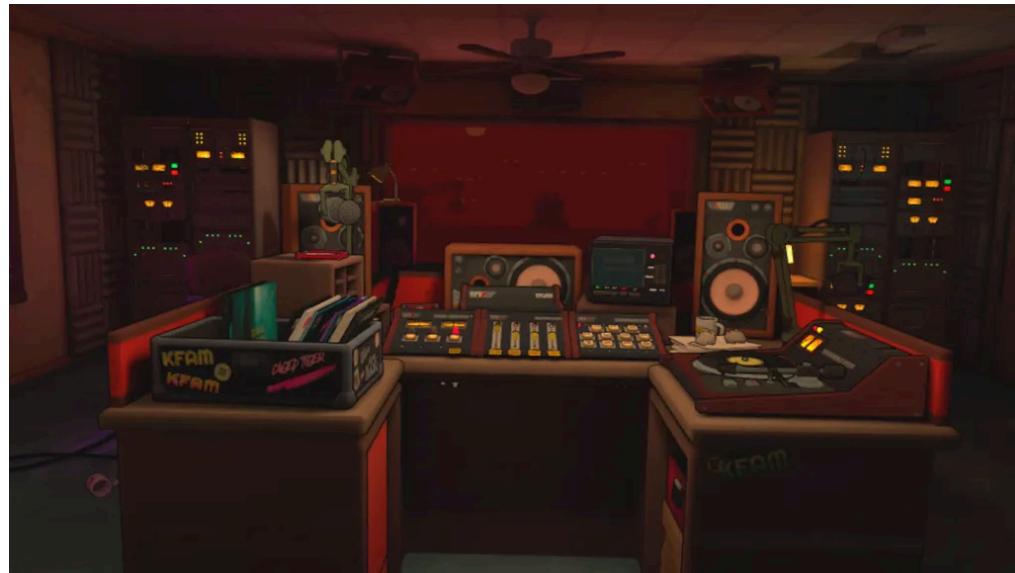


5.6. Puzzle 1

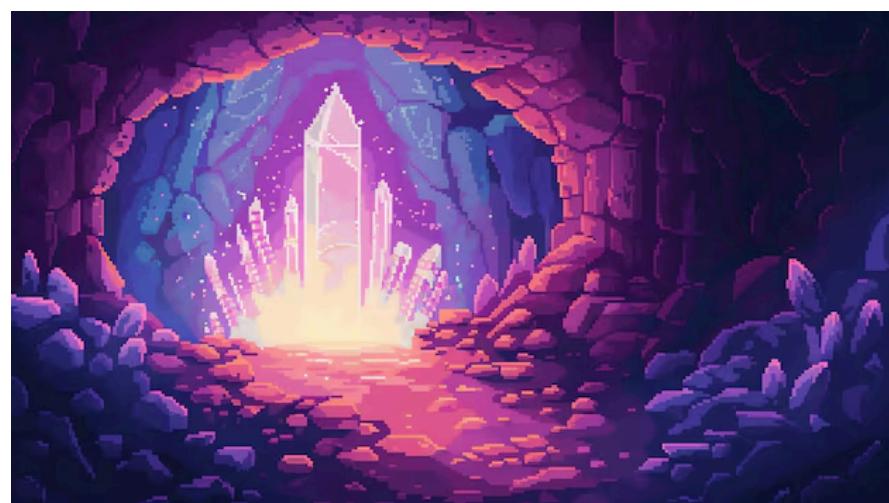
After the storm happens and the moles become stuck, radio communication comes in of them reporting that they are totally lost. All the moles just ran, and some even got separated. It is your job as the team's scout to help them out of there, so first, you must find out where they are exactly. They describe to you what they see and hear: they see green crystals on the wall made of a very dark and tough stone; they also hear a bunch of running water. To solve this puzzle, the player must first analyze all the maps of every level of the mine already displayed on the map wall. Every map of every floor is divided by 6 main sections. These sections have different features, not visible on the maps but marked by their scientific names on the map. To decode these, there's books located on the bookshelf, acting as the temporary library of the cabin. It's after the stairs on the first indoor level. On that bookshelf, there are many books, but for this puzzle, only the 1 "Flora, Fauna and Stones" book is important. After gathering it and bringing it to the radio table, the book can be displayed on it. The challenge is now to look through it and see images of every plant, animal and rock and their scientific name to then compare both to the information that was given by the moles inside the mine and the scientific names displayed on the map. The puzzle is solved after highlighting on the map the correct section, on the correct level of the mine, and interacting with the radio button. The correct answer is level 4, section 6.

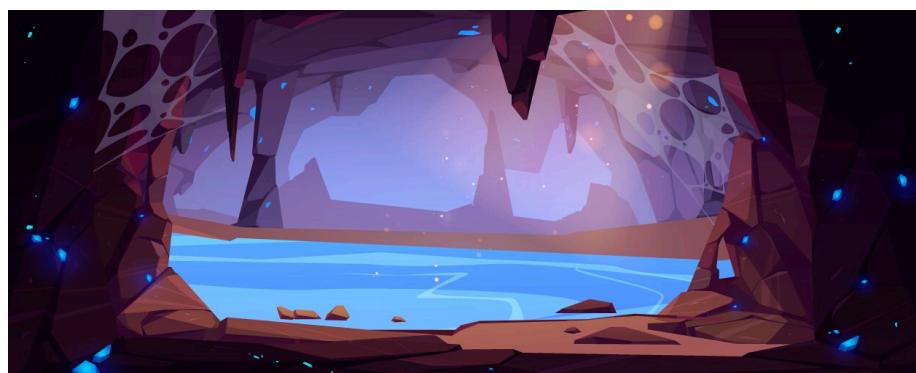


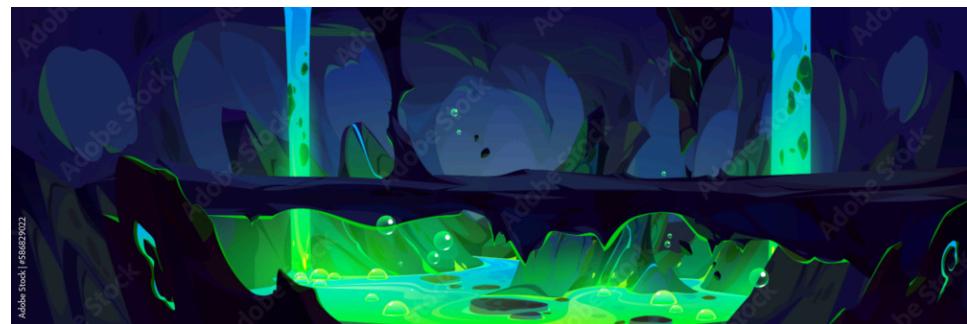
Prototype of the mine map.



Representation of the desk where we communicate with our friends.







Reference images that will be in the books to try to identify where our friends were located.

5.7. Puzzle 2

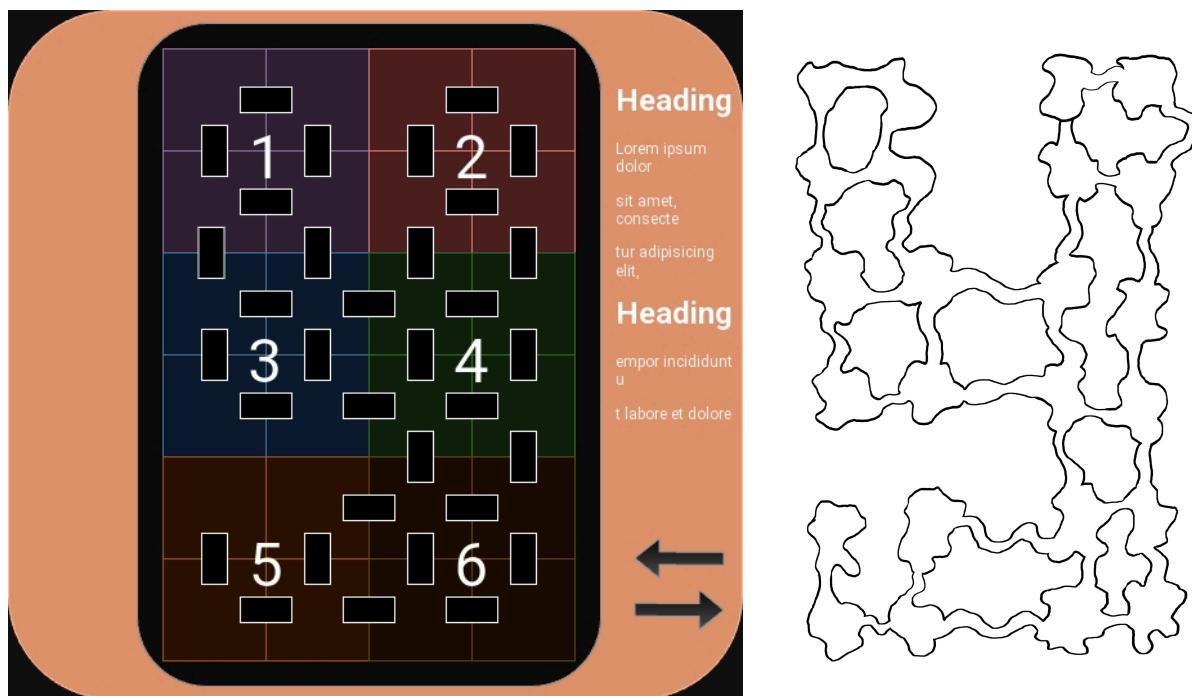
After getting to the new level the moles start hearing a weird noise like someone was hitting on the pipe in a weird rhythm, when we hear that rhythm one of the moles says “Oh this rhythm looks like morse code!”. We tell the other moles to reach closer to the piping to hear better and we hear “Steam and black rocks.” (morse code: ... - . - - / - - . - / -... - - - - - / -.- - - - - - - - - -) and after the sequence appears a new note on the cork board with the morse code. We go search in our small library where the book of morse code is, after we find it we decode it and we can finally guide them to the lost mole.

A	•-	N	-•	0	-----
B	-••	O	---	1	•-----
C	-•-	P	•---	2	••---
D	-••	Q	---•	3	•••--
E	•	R	•--	4	•••-•
F	••-•	S	•••	5	•••••
G	--•	T	-	6	-••••
H	•••	U	••-	7	--•••
I	••	V	•••-	8	----••
J	•---	W	•--	9	-----•
K	-•-	X	-••-	,	•-•••-
L	•-•	Y	-•--		---••--
M	--	Z	---•	?	••--••

Reference to the morse code puzzle.

5.8. Puzzle 3

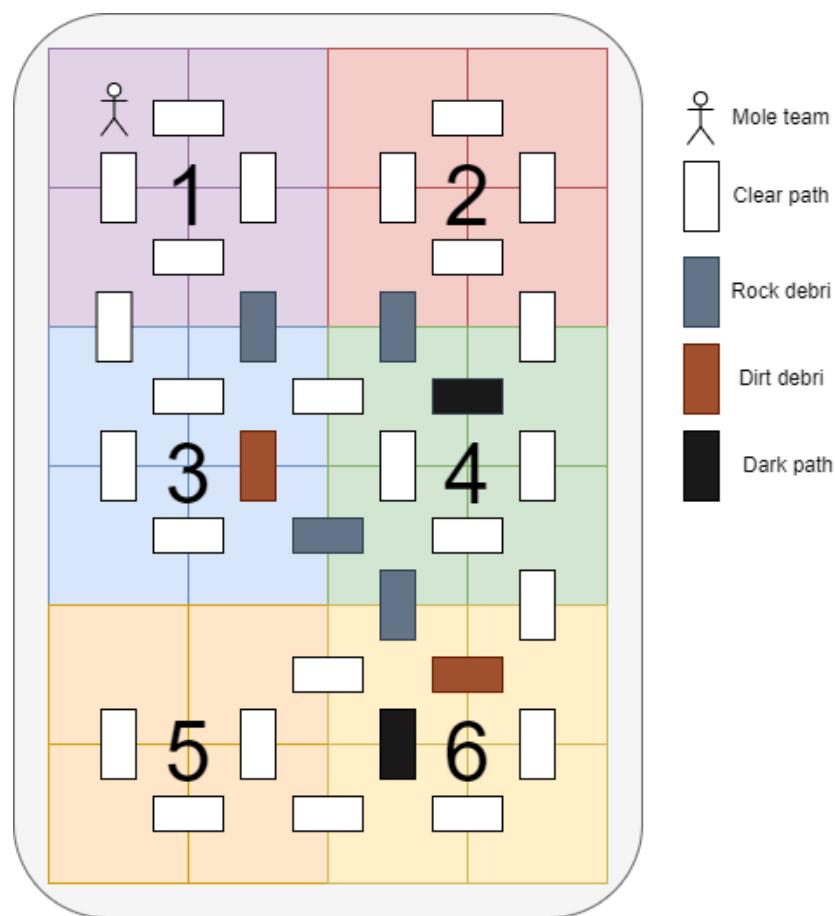
After knowing the location of our lost mole, the team must reach him. The puzzle now is to find a way to guide the moles to their lost friend. First, they have to find a way to the lower floors. Looking at the map, there's a symbol that shows that there's a way down on one of the far sections (section 1). Each section is subdivided in 4, each subdivision having a connection or not to other nearby subdivisions. Looking at the map on the wall, the player can see all of them, but not all of them are correct due to the recent changing terrain caused by the storm. The player can tell the group to move in one of 4 directions. If the group can move in that direction or not, their position on the map will update, or they will say they can't move in that way because of a wall or debris. After reaching the section where the way down is located, the moles will automatically go down to the level below. The second part of the puzzle is a more complicated version of the previous level. Finally, after guiding the group through this level, the puzzle is complete after they reach the correct section.



5.9. Puzzle 4

After calming down the lost mole, the group is finally together and has to now find a way to higher levels.

After checking the backpack of the lost mole, the group now has all their items and can go through both dirt and stone debri walls, light the way forward, and climb up and down holes. The current objective is then to keep climbing up. At level 3, there's an elevator that could potentially take everyone all the way up. To reach it, the group has to navigate the 2 previous levels with now the new tools at their disposal and also explore the third level. The puzzle is complete once the whole group reaches the elevator.

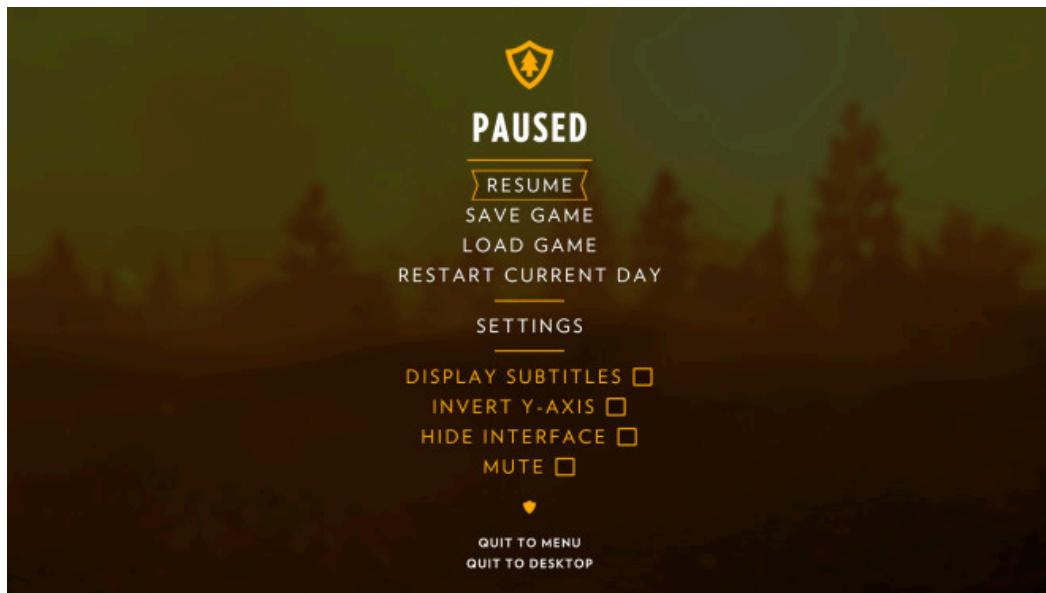


6.UI

The UI for the game will be kept minimalistic since it's the closest aesthetic in UI to the game. We will use images or scenery of the game as a background and even title drop with simple UI text with the options of the menu.



Minimalistic main menu UI from the game Firewatch



Minimalistic options menu UI from the game Firewatch

Our UIs will also integrate a cork board, normally used to track things and also used throughout the game to keep track of key elements of the game, such as information and sketches.



7. Menu Flow

As previously mentioned, we will have only 2 menus, each connected to one another and both will be an overlay on the background they are present.

7.1. Main Menu

The main menu will only have 3 options, Start Game, Options and Exit. Starting the game will change scenes to the scene where the game is played.

The Exit options will close the game, without saving any of the contents or changes made. Booting the game back up will always open a blank slate of the game.

The Options menu will open another UI with multiple options that the player can use to tweak the setting of the game.

7.2. Options Menu

The Options Menu will have a few options to tweak the game to the preferences of the player, such as the Resolution of the game, the Volume of the sound in the game, the Controls of the game where it will appear a list of the controls of the game and both a Resume option to leave the menu and a Main Menu option to return to the title screen scene.

The Options Menu will always be an overlay of the scene of the game, be it in the title screen of the Main Menu scene or during the game. It will also pause the game as long as the Option Menu is open.

8.Art Assets

8.1. Art Styles

For our art style we have chosen to create a more old and rustic type of wooden cottage set in the 90's, with furniture and household appliances that would be from way before the 90's.

The entirety of our project will be made by the team with the exception of a few rugs and curtains which will be a plane with an image placed as texture. These images will likely be edited in another software to create some depth and interact better with the environment around them.

Most of the objects created will be mid poly to high poly but there will be some with low poly as well as those objects will either not be very interactable or be placed somewhere with less lighting.

8.2. Assets list

Here we have a link to an excel sheet with all the assets listed and with a reference image which will be also described more detailed. [!\[\]\(2c23357b2ce30e79d586a996e0cfa785_img.jpg\) Asset List](#)

Fireplace

A brick and stone fireplace with burning embers inside. No iron grid in front of it.



Widows

We'll have multiple windows but only 2 types. A normal cabin window and a corner one, to give natural light to the kitchen. The glass with smudges to make it almost opaque.



Shelves

Wooden shelves with rectangle/square holes, clothes just built in walls and bookshelves.



Stack of Books

Just book spines to populate the shelves, and some full books for side view.



Rugs

Some tweed rugs with animals on them



Landscape paintings



Desk and Nightstand Lamps

Small Brass and Wood Lamps



Standing Lamps

Cylindrical lamps with long wood stands.



Desk

A wooden work desk with some drawers below.



Cork Board

A wall board made out of cork to attach notes and pictures.



Books

An assortment of books of different sizes, covers and colors to populate the decks, shelves, and floor of the cabin.



Transceiver

A device that transmits and receives radio waves and converts them to audio.

Mate out of wood to mimic a Radio.



Stove

Old Metal Stove with a chimney.

Kitchen cabinets and Cupboards

Wooden kitchen cabinets with a round handle with a wooden slab and a countertop.



Kitchen Sink

A metal sink with a faucet embedded in one of the cabinets.



Beds

5 wooden frame beds with different color wool blankets.



Wardrobe

A solid wooden wardrobe with 2 doors.



Drapes

Old and ragged drapes, full opaque with solid colors. Hanged with a metal bar.

Nightstand

5 nightstands (one for each bed) matching the style of the wardrobe. Wooden with shelves and drawers.



Door

The inside of a wooden door with an iron handle doesn't open (no hinges shown)

Chairs

Wooden chairs for the desks.



Stools

Three-legged round stools with a circular top.



Crates and Boxes.

Various sizes and chapped wooden crates.



Deck, Railings and Stairs

A wooden platform to give the room depth and height. With wooden stairs and railings.



Hand Lamps

Brass and Glass lamp to hang or hold.



Helmet and Head Lamps

Steel construction helmet with a detachable lamp.



Backpacks

Tweed backpacks with lots of compartments.



Pickaxes and Shovels

Mining tools you typically see in excavation sites.

Ropes

Nest of ropes and tangled.



9.Sound

9.1. Sound Vision

SFX and music are important for a good game experience. We'll have a selection of ambient music, gibberish voice acting (like *The Sims* or *Animal Crossing*), UI feedback and Radio static and feedback sound with interactable objects.

9.2. Sound Effects

9.2.1. UI Sounds

We will have two types of sounds in the UI: one with the player overs a interactable button/menu and another one for pressing said Menu

Player Actions

Walking

Since the cottage is an old wooden one, the sound the player makes is a mix of rubber hitting wood and a creaking of wood.

Transceiver

The Transceiver will have multiple sound effects: passive and active.

Interacting with the transceiver the player will have two types of static: the one when he opens the transceiver menu and the other one when he tries to listen without triggering any voice lines.

Books for shelves

When the player picks up any book from a shelf it plays a soft, rustling sound of paper and a slight friction noise as the book slides against its neighbors. A gentle thud as the book's spine scrapes the wood shelf.

Books from table

When the player picks up any book from a shelf it plays light thud or tap as your hand makes contact with the cover, followed by a soft scraping sound as the book slides slightly against the surface of the table. Since it is a hardcover book the cover will make a faint, solid tap.

Book Opening

When a player picks up any book a soft creak of the spine flexes, followed by the gentle rustling of paper pages as they part.

Cork Board

Placing a note on a corkboard would start with a light rustling as you handle the paper, followed by a soft, muted push from the pin to secure it.

When removing the note, a subtle "pop" or soft scrape as the pin is pulled out, followed by a slight rustle as the paper is lifted off the board. The sound might end with a quiet flutter as the paper moves in your hand.

9.3. Music and Ambient Sounds

Style and Ambients

Primary instruments are:

Acoustic guitar and soft piano

The softness of the strings evokes warmth

Cello

For a base line and depth

Wind instruments like chimes

Invoke the feeling of wind and snowfall outside

Synth pads

Gente ambient pads for stormy atmospheric backdrop

Mood

The intended mood is quiet and contemplative, with moments of warmth

Rhythms and Transitions

Music will blend seamlessly with the gameplay mechanics to avoid breaking player immersion.

The soundtrack will rely on smooth transitions between tracks, especially when moving between puzzles of puzzle pieces and when moving between different emotional tones in conversations.

For example, during intense conversations the tempo may increase with deep strings for tension and in between conversations or in moments of silence, the music will shift back to minimal, ambient tones, letting the ambient sounds of the storm take over.

9.4. Voice acting

The voice acting used in the game is as described above in *9.1. Sound Vision*. We will be using some gibberish voice acting accompanied with text.

The “gibberish” will still have a different tone and cadence for the more tense dialogues.

10. Extra Links

This section contains links to all extra documents used by the team to supplement the GDD.

-  [MoleDiagrams-Mine side.pdf](#)
-  [MoleDiagrams-Cabin side.pdf](#)
-  [MoleDiagrams-MineLevelExample.pdf](#)
-  [Moodboard Winter Cabin](#)
- [PuzzleDependencyChart.drawio](#)