Zombie World - Hytale Mod Design Document

1. Vision Statement

A high-intensity, wave-based survival mod for Hytale where players fight escalating undead threats, manage a complex economy, and evolve their characters through branching class paths.

2. Shop & Stat Progression

The shop is the heart of the "Break Phase." Instead of just buying items, players invest in **Stat Attributes** and **Gear Paths**.

2.1 Melee Attribute Upgrades

Players can invest in individual melee stats before specializing into a class.

- **Attack Power (AP):** Raw damage per hit.
- **Attack Speed:** Reduces the cooldown between swings/animations.
- **Knockback Magnitude:** How far enemies are pushed back (useful for crowd control).
- **Cleave/AoE:** Percentage of damage dealt to enemies adjacent to the primary target.
- **Lifesteal:** Small percentage of HP recovered on successful hits.

2.2 Ranged Attribute Upgrades

To address the "investment" issue, Ranged is treated as a high-reward high-skill floor path.

- **Projectile Velocity:** Speed of arrows/bullets.
- **Reload/Draw Speed:** How quickly the next shot can be fired.
- **Critical Chance:** Percentage chance to deal double damage.
- **Piercing:** Number of enemies a single projectile can pass through.
- **Ammo Capacity/Efficiency:** Reduces the need to buy ammo or increases magazine size.

3. Class Specialization (The Branching Path)

Upgrades are linear until a "Pivot Point" (usually after 5 levels in a base stat). At this point, the player chooses a specialized Class.

Melee Path Branches

Class	Unlock Requirement	Unique Perk
Berserker	Level 5 Attack Power	**Adrenaline:** Damage increases as your HP decreases.
Guardian	Level 5 Knockback	**Shield Wall:** Blocking reflects damage and stuns enemies.
Slayer	Level 5 Attack Speed	**Dash:** Replaces dodge with a damaging teleport/dash.

Ranged Path Branches

Class	Unlock Requirement	Unique Perk
Sharpshooter	Level 5 Velocity	**Headshot Multiplier:** Massive damage bonus for precision hits.
Trapper	Level 5 Reload Speed	**Elemental Shots:** Projectiles leave fire or ice patches on impact.
Desperado	Level 5 Ammo Efficiency	**Fan the Hammer:** Toggle to fire all remaining ammo in a rapid burst.

4. The Ranged "Investment" Problem

1. **Starter Kit:** Provide a "Rusty Slingshot" or "Weak Bow" for free at Wave 1.
2. **Distance Bonus:** Ranged kills grant a 1.2x Coin multiplier if the enemy is killed from >15 blocks away.
3. **Utility:** Ranged weapons can "stagger" bosses from a distance.

5. Economy & Wave Control Mechanics

5.1 The Break Phase

- **Smart Break Timer:** Default 60 seconds.
- **Player Forced Start:** Players can interact with a "Ready" object or command to end the break immediately.
- **Skip Bonus:** Every second remaining on the timer when forced grants a small coin bonus ($+1$ per second per player).

5.2 Wave Progression (Trigger Logic)

The flow of combat is governed by **Time-Based Ticks**.

- **Wave Ticks:** A wave is not a single event but a sequence of timed spawns.
- **The "Force Tick" Mechanic:** If all enemies from a current tick are killed before the next tick timer expires, the next tick is automatically triggered early to keep the pace high.

6. Wave Structure (Predefined & Cyclic)

- **Wave 1-10:** Tutorial/Onboarding. Introduces basic Zombies, Crawlers, and Sprinters.
- **Wave 11-20:** Introduction of armored variants and the first Mini-Boss.
- **Wave 21+:** The **Infinite Cycle**.
  - Health scaling: $HP_{new} = HP_{base} \times (1.15^{Wave-20})$.
  - Spawn Rate scaling: Increases the "Enemies per Tick" by 1 every 5 waves.

7. Configuration Examples

7.1 Wave Configuration

```
{
 "wave_id": 10,
 "display_name": "The Horde's Arrival",
 "break_duration": 45,
 "ticks": [
  {
   "delay_from_wave_start": 0,
   "spawns": [
    { "mob_id": "zombie_basic", "count": 15 },
    { "mob_id": "zombie_sprinter", "count": 5 }
   ]
  },
  {
   "delay_from_wave_start": 30,
   "spawns": [
    { "mob_id": "zombie_armored", "count": 8 },
```

```
      { "mob_id": "mini_boss_brute", "count": 1 }
    ]
  }
 ],
 "is_boss_wave": true
}
```

7.2 Shop & Stat Configuration

```
{
 "stat_id": "melee_attack_power",
 "base_cost": 100,
 "cost_multiplier": 1.5,
 "max_level": 10,
 "increments": [
   { "level": 1, "bonus_damage": 2 },
   { "level": 5, "unlocks_class_pivot": true }
 ]
}
```

7.3 Class Definition

```
{
 "class_id": "berserker",
 "name": "Berserker",
 "requirements": {
   "stat_id": "melee_attack_power",
   "min_level": 5
 },
 "perks": [
   {
     "id": "adrenaline",
     "scaling_type": "missing_health_percent",
     "multiplier": 0.5
   }
 ]
}
```