



**For SHOSHA**  
**15 Dec 2021**



# **Smart Contract Security Assessment**

## **Final Report**



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The audit report has made all reasonable attempts to provide clear and articulate recommendations to the Project team with respect to the rectification, amendment and/or revision of any highlighted issues, vulnerabilities or exploits within the contracts provided. It is the sole responsibility of the Project team to sufficiently test and perform checks, ensuring that the contracts are functioning as intended, specifically that the functions therein contained within said contracts have the desired intended effects, functionalities and outcomes of the Project team.



# 1 Overview

This report has been prepared for Shosha on the Binance Smart Chain (BSC),Algorand. Maxloop provides a user-centred examination of the smart contracts to look for vulnerabilities, logic errors or other issues from both an internal and external perspective.

## 1.1 Summary

<b>Project Name</b>	Shosha
<b>URL</b>	<a href="https://shosha.io">https://shosha.io</a>
<b>Platform</b>	Binance Smart Chain ,Algorand
<b>Language</b>	Solidity

## 1.2 Contracts Assessed

Name	Contract	Live Code Match
ShoshaToken	0x601d93538eB6Ec0BC7aC1B38E6aF207BD8a1432D	✓ MATCH
Shosha.sol/SHA256	0x1f2952769ED1ce42fFe57274fF44D155D74C8e1e	✓ MATCH



# Audit Summary

<b>Delivery Date</b>	Dce. 15th, 2021
<b>Method of Audit</b>	Static Analysis, Manual Review
<b>Consultants Engaged</b>	2
<b>Timeline</b>	Dce. 13, 2021 - Dce. 15, 2021

## 1.3 Findings Summary

Severity	Found	Resolved	Partially Resolved	Acknowledged (no change made)
● <b>High</b>	0	-	-	-
● <b>Medium</b>	0	-	-	-
● <b>Low</b>	3	1	-	2
● <b>Informational</b>	1	-	-	1
<b>Total</b>	<b>4</b>	<b>1</b>	<b>-</b>	<b>3</b>

## Classification of Issues

Severity	Description
● <b>High</b>	Exploits, vulnerabilities or errors that will certainly or probabilistically lead towards loss of funds, control, or impairment of the contract and its functions. Issues under this classification are recommended to be fixed with utmost urgency.



● <b>Medium</b>	Bugs or issues with that may be subject to exploit, though their impact is somewhat limited. Issues under this classification are recommended to be fixed as soon as possible.
● <b>Low</b>	Effects are minimal in isolation and do not pose a significant danger to the project or its users. Issues under this classification are recommended to be fixed nonetheless.
● <b>Informational</b>	Consistency, syntax or style best practices. Generally pose a negligible level of risk, if any.

### 1.3.1 ShoshaToken

ID	Severity Summary	Status
01	<div>LOW</div> Mint function can be used to pre-mint large amounts of tokens before Ownership is transferred to the <b>Masterchef</b>	RESOLVED

### 1.3.2 ShoshaMasterChef

ID	Severity Summary	Status
01	<div>LOW</div> Inconsistency between deposit fee cap in add and set	ACKNOWLEDGED
02	<div>LOW</div> PendingMondo will show inaccurate pending harvests on the dapp frontend If the pending rewards causes totalSupply to be exceed <b>MAXSUPPLYCAP</b>	ACKNOWLEDGED
03	<div>INFO</div> Total token supply might not be minted due to try and catch pattern	ACKNOWLEDGED



## 2 Findings

### 2.1 ShoshaToken

The Shosha token is a simple BSC, Algorand token which will be used as the main reward token for the Gaming & NFTs. The contract allows for Shosha tokens to be minted when the mint function is called by the contract Owner, who at the time of deployment would be the deployer. Ownership is generally transferred to the Masterchef via the transferOwnership function for emission rewards to be minted and distributed to users staking in the Masterchef. The token has a max supply cap of 88,888,888

#### 2.1.1 Token Overview

<b>Address</b>	0x601d93538eB6Ec0BC7aC1B38E6aF207BD8a1432D
<b>Token Supply</b>	88,888,888
<b>Decimal Places</b>	18
<b>Transfer Max Size</b>	No maximum
<b>Transfer Min Size</b>	No minimum
<b>Transfer Fees</b>	None
<b>Pre-mints</b>	10,000



## 2.1.2 Privileges

The following functions can be called by the owner of the contract:

- mint
- renounceOwnership
- transferOwnership

## 2.1.3 Issues & Recommendations

### Issue #01

**mint function can be used to pre-mint large amounts of tokens before ownership is transferred to the Masterchef**

#### Severity

LOW SEVERITY

#### Description

The mint function could be used to pre-mint tokens for legitimate uses including, but not limited to, the injection of initial liquidity, token presale, or airdrops; however, this function may also be used to pre-mint and dump tokens when the token contract has been deployed but before ownership is set to the Masterchef contract.

This risk is prevalent amongst less-reputable projects, and any premints can be prominently seen on the Blockchain.

#### Recommendation

Consider being forthright if this mint function is to be used by letting your community know how much was minted, where they are currently stored, if a vesting contract was used for token unlocking, and finally the purpose of the mints.

#### Resolution

RESOLVED

10,000 tokens were pre-minted and ownership has been transferred to the Masterchef.



## 2.2 ShoshaMasterChef

The Shosha Masterchef is a fork of Goose Finance's Masterchef. A notable feature of forking the latter is the removal of the migrator function from the original Sushiswap, which could possibly be used maliciously to steal user's tokens.

BAKERGuild has limited the deposit fee to at most 8%.

There is also a maximum emission rate of 60 Shosha tokens per block. 10% of the emissions are minted to the devAddr.

### 2.2.1 Privileges

**The following functions can be called by the owner of the Masterchef:**

- add
- set
- updateEmissionRate
- updateStartTimestamp
- transferOwnership
- renounceOwnership





The following functions can be called by the DevAddr of the Masterchef:

- setDevAddress

The following functions can be called by the FeeAddr of the Masterchef:

- setFeeAddress

### 2.2.2 Issues & Recommendations

Issue #02	Inconsistency between deposit fee cap in add and set
Severity	<div><div></div>LOW SEVERITY</div>
Description	<p>For deposit fees, while add has a max cap of 8%, set has a max cap of 4%.</p> <p>add: Line 1136 require(_depositFeeBP &lt;= 800, "add: invalid deposit fee basis points");</p> <p>set: Line 1159 require(_depositFeeBP &lt;= 400, "set: invalid deposit fee basis points");</p> <p>This behavior is inconsistent, and could allow the owner to add a pool with 8% fee, even if 4% is the expected maximum cap.</p>
Recommendation	<p>The Shosha team should clarify what their maximum cap on the deposit fee is, and ensure that checks in both add and set use the same value. It is encouraged to use the lower value as the cap.</p>



## Location

Similarly to `updatePool`, `pendingShosha` does not check if the pending rewards will cause the total supply to exceed the `MAXSUPPLYCAP`.

This can cause inaccurate pending harvests to be shown towards the end of token emissions.

## Description

Consider factoring in the `MAXSUPPLYCAP`, and set the pending reward to be the difference between `MAXSUPPLYCAP` and `totalSupply` if the pending reward causes `totalSupply` to exceed `MAXSUPPLYCAP`.

```
uint256 ShoshaReward =  
multiplier.mul(ShoshaPerBlock).mul(pool.allocPoint).div(total AllocPoint);
```

## Resolution

ACKNOWLEDGED

### Issue #03

**pendingShosha will show inaccurate pending harvests on the dapp frontend if the pending rewards causes totalSupply to be exceed MAXSUPPLYCAP**

### Severity

LOW SEVERITY

```
if (Shosha.totalSupply().add(ShoshaReward) >  
Shosha.maxSupply()) { ShoshaReward =
```



```
Shosha.maxSupply().sub(Shosha.totalSupply()); }
```

```
accShoshaPerShare =  
accShoshaPerShare.add(ShoshaReward.mul(1e18).div(pool.lpSupply ));
```

## Recommendation

pendingShosha will show inaccurate pending harvests on the dapp frontend if the pending rewards causes totalSupply to be exceed MAXSUPPLYCAP.

## Resolution

ACKNOWLEDGED

## Issue #04

## Total token supply might not be minted due to try and catch pattern

## Severity

INFORMATIONAL

## Description

As there is a MAXCAPSUPPLY for the Shosha token, minting the reward and causing the maximum cap to exceed would result in a revert.

ShoshaToken::Line 814: require(\_totalSupply.add(amount) <= MAXCAPSUPPLY, "Max supply reached");

To prevent this, the following try and catch pattern is done in updatePool.

Line 1209~

```
try Shosha.mint(devaddr, ShoshaReward.div(10)) {  
} catch (bytes memory reason) { ShoshaReward = 0;  
    emit ShoshaMintError(reason);  
}
```

```
try Shosha.mint(address(this), ShoshaReward) {  
} catch (bytes memory reason) { ShoshaReward = 0;  
    emit ShoshaMintError(reason); }
```



In the case where totalSupply + amount does exceed MAXCAPSUPPLY, the mint will not be done. This means that the token supply could be capped at an amount slightly lower than MAXCAPSUPPLY.

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**Recommendation** Consider minting the difference between MAXCAPSUPPLY and totalSupply, if any.

```
uint256 ShoshaReward =
multiplier.mul(ShoshaPerBlock).mul(pool.allocPoint).div(total AllocPoint);
uint256 devReward = ShoshaReward.div(10); uint256 totalRewards =
Shosha.totalSupply().add(devReward).add(ShoshaReward);

if (totalRewards <= Shosha.maxSupply()) {
    // mint dev reward as normal as not at maxSupply
    Shosha.mint(devaddr, devReward);
} else {
    // update ShoshaReward to difference
    ShoshaReward= Shosha.maxSupply() - Shosha.totalSupply();
}
if (ShoshaReward != 0) {
    // only mint to MC and calculate and update accShoshaPerShare if
    ShoshaReward is non 0 Shosha.mint(address(this), ShoshaReward);
    pool.accShoshaPerShare =
    pool.accShoshaPerShare.add(ShoshaReward.mul(1e18).div(pool.lpSupply)); }
pool.lastRewardBlock = block.number;
```

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**Resolution**

ACKNOWLEDGED



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