



TechRate
AUDIT COMPANY

CSW

Smart Contract Security Audit

Disclaimer

This is a limited report on our findings based on our analysis, in accordance with good industry practice as at the date of this report, in relation to cybersecurity vulnerabilities and issues in the framework and algorithms based on smart contracts, the details of which are set out in this report. In order to get a full view of our analysis, it is crucial for you to read the full report. While we have done our best in conducting our analysis and producing this report, it is important to note that you should not rely on this report and cannot claim against us on the basis of what it says or doesn't say, or how we produced it, and it is important for you to conduct your own independent investigations before making any decisions. We go into more detail on this in the below disclaimer below – please make sure to read it in full.

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The analysis of the security is purely based on the smart contracts alone. No applications or operations were reviewed for security. No product code has been reviewed.

Background

TechRate was commissioned by CSW to perform an audit of smart contracts:

<https://github.com/crswap/CSW/tree/master/contracts>

Initial commit: b09582582fc851a94fc2a50b4adfb870686aba3c

Recheck commit: 6d22773270423272351b95023757274a419b5de4

Deployed:

- <https://polygonscan.com/address/0xa5B06407F7421Ed481f47324B8bF299ef611A846#code> (MasterChef)
- <https://polygonscan.com/address/0xe100A4bfE7A55404b330C13E0CBA31a6E3442a63#code> (Shares)
- <https://polygonscan.com/address/0x20bd8b30AE9B03fCd4064488fAa23D09f3F2f4B2#code> (CSWToken)

The purpose of the audit was to achieve the following:

- Ensure that the smart contract functions as intended.
- Identify potential security issues with the smart contract.

The information in this report should be used to understand the risk exposure of the smart contract, and as a guide to improve the security posture of the smart contract by remediating the issues that were identified.

Issues Checking Status

Issue description		Checking status
1.	Compiler errors.	Passed
2.	Race conditions and Reentrancy. Cross-function race conditions.	Passed
3.	Possible delays in data delivery.	Passed
4.	Oracle calls.	Passed
5.	Front running.	Passed
6.	Timestamp dependence.	Passed
7.	Integer Overflow and Underflow.	Passed
8.	DoS with Revert.	Passed
9.	DoS with block gas limit.	Low Issue
10.	Methods execution permissions.	Passed
11.	Economy model of the contract.	Passed
12.	The impact of the exchange rate on the logic.	Passed
13.	Private user data leaks.	Passed
14.	Malicious Event log.	Passed
15.	Scoping and Declarations.	Passed
16.	Uninitialized storage pointers.	Passed
17.	Arithmetic accuracy.	Passed
18.	Design Logic.	Passed
19.	Cross-function race conditions.	Passed
20.	Safe Open Zeppelin contracts implementation and usage.	Passed
21.	Fallback function security.	Passed

Security Issues

✓ High Severity Issues

No high severity issues found.

✓ Medium Severity Issues

1. ~~Extra token fee~~ (fixed)

Issue:

- The function `deposit()` in MasterChef contract increases pool and user amount not considering token's transfer fee. But ERC-20 token contract used for transferring may have tax fee.

Recommendation:

Calculate amount by subtracting contract balance before transfer from after transfer.

✓ Low Severity Issues

1. Out of gas

Issue:

- Functions `massUpdatePools()` uses the loop to update all loops from the `poolInfo` list. Function will be aborted with `OUT_OF_GAS` exception if there will be a pool addresses list.

Recommendation:

Check that the `poolInfo` array length is not too big.

Owner privileges (In the period when the owner is not renounced)

CSWoken (ownership transferred to MasterChef contract):

- Owner can mint and burn.

Shares:

- Owner can change percent value.
- Owner can change trusted addresses list.
- Trusted can send tokens.
- Trusted can add tokens to contract.

MasterChef:

- Dev address can change dev address.
- Fee address can change fee address.
- Owner can add pool.
- Owner can change:
 - allocation points of pool;
 - deposit fee basis points of pool;
 - emission rate;

Conclusion

Smart contracts contain low severity issue!

TechRate note:

Please check the disclaimer above and note, the audit makes no statements or warranties on business model, investment attractiveness or code sustainability. The report is provided for the only contract mentioned in the report and does not include any other potential contracts deployed by Owner.