Smart Contract Security Audit V1

Special K Glass Smart Contract

24/6/2022



business@saferico.com https://t.me/SFI_ANN

_

Table of Contents

Table of Contents

Background

Project Information

NFT Information

Executive Summary

File and Function Level Report

File in Scope:

Issues Checking Status

Severity Definitions Audit Findings

Automatic testing

Testing proves Inheritance graph Call graph

Unified Modeling Language (UML)

Functions signature Automatic general report

Conclusion

Disclaimer

Background

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.

Project Information

• Platform: Ethereum

• Contract Address: 0x0D89Df0e8051346d39121ad6FeEdCac50bbD8DEE

• Code:

https://ropsten.etherscan.io/address/0x7b039374cc422595a9473b4e88d3d3c382da53a9#code

NFT Information

• Name: SKG

• MAX Supply: 10000

• Holders:

• Total transactions:

Contracts address deployed to test net (Ethereum)

Special K Glass smart contract on ETH test net to test every function by the auditor.

https://rinkeby.etherscan.io/address/0x0d89df0e8051346d39121ad6feedcac50bbd8dee

Executive Summary

According to our assessment, the customer's solidity smart contract is "WELL SECURED". The team has fixed the critical and low-level issues.

Well Secured	√
Secured	
Poor Secured	
Insecure	

Automated checks are with remix IDE. All issues were performed by the team, which included the analysis of code functionality, manual audit found during automated analysis were manually reviewed and applicable vulnerabilities are presented in the audit overview section. The general overview is presented in the Project Information section and all issues found are located in the audit overview section.

Team found 1 critical, 0 high, 0 medium, 4 low, 0 very low-level issues and 1 note in all solidity files of the contract

The files:

SpecialKGlass.sol

File and Function Level Report

File in Scope:

Contract Name	SHA 256 hash	Contract Address
I Specialk Glace col	f8eed8f9f88a275b1eae090d dd46ae40e5aa86e274ca7fd 23958addb8bede183	0x0D89Df0e8051346d39121ad6FeEdCac50bb D8DEE

Contract: BlowingGlassInherit: ERC721A, Ownable

• Observation: All passed including security check

Test Report: passedScore: passed

• Conclusion: passed

Function	Test Result	Type / Return Type	Score
name	√	Read / public	Passed
symbol	√	Read / public	Passed
preSaleMintRate	√	Read / public	Passed
supportsInterface	√	Read / public	Passed
tokenURI	√	Read / public	Passed
balanceOf	√	Read / public	Passed
Owner	√	Read / public	Passed
ownerOf	√	Read / public	Passed
totalSupply	√	Read / public	Passed
getApprovedForAll	√	Read / public	Passed
mintRate	√	Read / public	Passed
getApproved	✓	Read / public	Passed

whitelistMerkleRoot	√	Read / public	Passed
presale	√	Read / public	Passed
uriPrefix	✓	Read / public	Passed
paused	✓	Read / public	Passed
uriSuffix	√	Read / public	Passed
mint	√	Write / public	Passed
approve	√	Write / public	Passed
safeTransferFrom	√	Write / public	Passed
safeTransferFrom	✓	Write / public	Passed
setPaused	✓	Write / public	Passed
withdraw	✓	Write / payable	Passed
mintForAddress	✓	Write / public	Passed
transferOwnership	√	Write / public	Passed
setApprovalForAll	√	Write / public	Passed
transferFrom	✓	Write / public	Passed
mintWhitelist	✓	Write / payable	Passed
setMaxMintAmountPerTx	✓	Write / public	Passed
renounceOwnership	✓	Write / public	Passed
setUriSuffix	✓	Write / public	Passed
setMaxMints	✓	Write / public	Passed
setMintRate	✓	Write / public	Passed
setPresaleMintRate	✓	Write / public	Passed
setMaxSupply	✓	Write / public	Passed
setUriPrefix	✓	Write / public	Passed
setWhitelistMerkleRoot	✓	Write / public	Passed

Issues Checking Status

No.	Issue Description	Checking Status
1	Compiler warnings.	Passed
2	Race conditions and Reentrancy. Cross-function race conditions.	Passed
3	Possible delays in data delivery.	Passed
4	Oracle calls.	Passed
5	Design Logic.	Passed after fixing the errors
6	Timestamp dependence.	Passed with Notes
7	Integer Overflow and Underflow.	Passed
8	DoS with Revert.	Passed
9	DoS with block gas limit.	Passed with Notes
10	Methods execution permissions.	Passed
11	Economy model. If application logic is based on an incorrect economic model, the application would not function correctly and participants would incur financial losses. This type of issue is most often found in bonus rewards systems, Staking and Farming contracts, Vault and Vesting contracts, etc.	
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

Severity Definitions

Risk Level	Description
Critical	Critical vulnerabilities are usually straightforward to exploit and can lead to tokens loss etc.
High	High-level vulnerabilities are difficult to exploit; however, they also have significant impact on smart contract execution, e.g. public access to crucial functions
Medium	Medium-level vulnerabilities are important to fix; however, they can't lead to tokens lose
Low	Low-level vulnerabilities are mostly related to outdated, unused etc. code snippets, that can't have significant impact on execution
Note	Lowest-level vulnerabilities, code style violations and info statements can't affect smart contract execution and can be ignored.

Audit Findings

Critical:

#Logic errors

Description

According to the smart contract functionality, the team should start the presale mint for the whitelist and then close it to start the public mint for the others, the auditor had found these logic errors on the smart contract.

The initial status of the contract is the presale is closed.

```
bool public presale = false;
```

so, the whitelist of the investors can't mint in the WL stage because it requires the presale to be active which can happen because the missing function.

```
function mintWhitelist(bytes32[] calldata merkleProof, uint256 quantity)
       public
       payable
        isValidMerkleProof(merkleProof, whitelistMerkleRoot)
    {
        require(!paused, "The contract is paused");
        require(presale, "Not in presale mode!");
        if (msg.sender != owner()) {
            if (presale == true) {
                require (quantity + numberMinted (msg.sender) <= MAX MINTS,
"Exceeded the limit");
                require(totalSupply() + quantity <= MAX SUPPLY, "Not enough tokens
left");
               require(msg.value >= preSaleMintRate * quantity, "Not enough ether
sent");
        safeMint(msg.sender, quantity);
```

The investors can only mint in the public stage because the presale in the normal stage is closed,

Remediation

The team should add a presale status function in the smart contract to allow the owner open and close the presale stage at any time he wants.

Status: Closed. Fixed In version 2

High:

No High severity vulnerabilities were found.

Medium:

No Medium severity vulnerabilities were found

Low:

#Multiple pragma statements

Line	Pragma
7	pragma solidity ^0.8.0;
75	pragma solidity ^0.8.0;
145	pragma solidity ^0.8.0;
175	pragma solidity ^0.8.0;
250	pragma solidity ^0.8.1;
475	pragma solidity ^0.8.0;
505	pragma solidity ^0.8.0;
533	pragma solidity ^0.8.0;
564	pragma solidity ^0.8.0;
709	pragma solidity ^0.8.0;
741	pragma solidity ^0.8.4;
1981	pragma solidity ^0.8.4;

Description

There are multiple pragma statements in the code. The newest compiler version 0.8.14 will work with the code, but keeping only one pragma statement helps in maintaining readability of the code.

Remediation

Keep a single pragma statement.

Status: Closed. Fixed In version 2

#Missing zero address validation

Description

When the owner wants to mint NFTs for investors, he has to check for the zero address to make, he didn't mint for the zero address. Otherwise, the mint function will act like burn function.

```
function mintForAddress( uint256 _mintAmount, address _reciever) public onlyOwner {
    _safeMint(_reciever, _mintAmount);
}
```

Remediation

Use the require statement to check for zero addresses.

Status: Closed. Fixed in version 2.

#Owner privileges (In the period when the owner isn't renounced)

Description

The owner can change the price in WL stage and public stage.

The owner can change the max supply of NFTs.

The owner can pause and un pause the contract.

```
function setPresaleMintRate(uint256 _cost) public onlyOwner {
    preSaleMintRate = _cost;
}

// Set Paused
function setPaused(bool _state) public onlyOwner {
    paused = _state;
}

function setMaxSupply(uint256 _amount) public onlyOwner {
        MAX_SUPPLY = _amount;
}

// Set Max Mints
function setMaxMints(uint256 _amount) public onlyOwner {
        MAX_MINTS = _amount;
}

// Set Mint Rate
function setMintRate(uint256 _cost) public onlyOwner {
        mintRate = _cost;
}
```

Remediation

Make these functions internal in next version or the team should announce the investors before doing anything to give them time if they want to do anything.

P.S: This issue is common to the majority of NFT smart contracts.

Status: Acknowledged.

#Use of block.timestamp for comparisons

Description

The value of block.timestamp can be manipulated by the miner. And conditions with strict equality is difficult to achieve - block.timestamp

Remediation

Avoid use of block.timestamp

Status: Acknowledged

Very Low:

No Very Low severity vulnerabilities were found.

Notes:

#Missing SPDX-License-Identifier:

Warning: SPDX license identifier not provided in source file. Before publishing, consider adding a comment containing "SPDX-License-Identifier: <SPDX-License>" to each source file. Use "SPDX-License-Identifier: UNLICENSED" for non-open-source code. Please see https://spdx.org for more information .

Remediation
Add License Identifier
// SPDX-License-Identifier: MIT

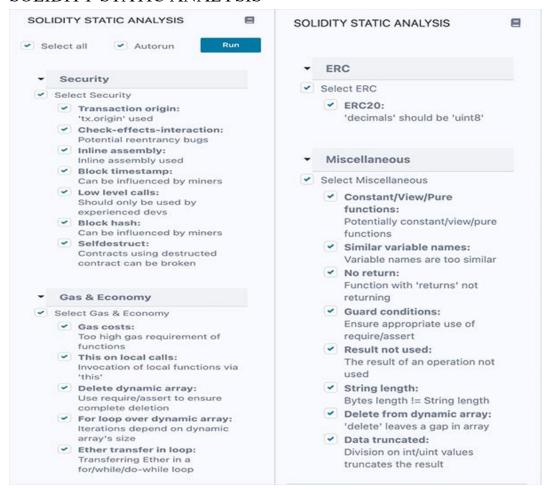
Status: Closed. Fixed In version 2

Automatic Testing

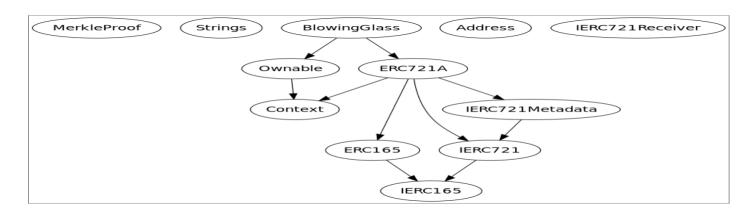
1- Check for security



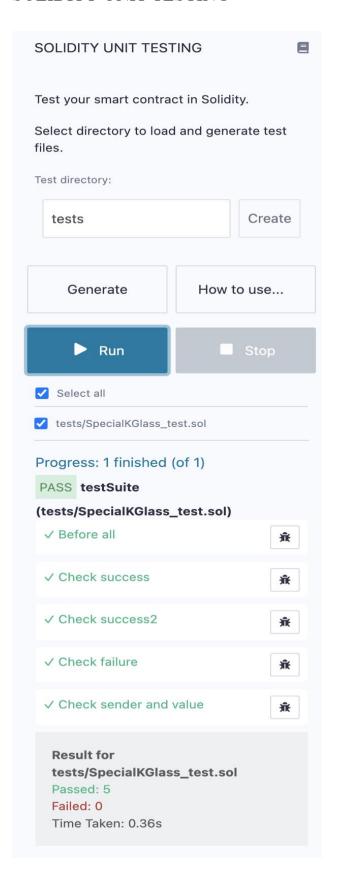
2- SOLIDITY STATIC ANALYSIS



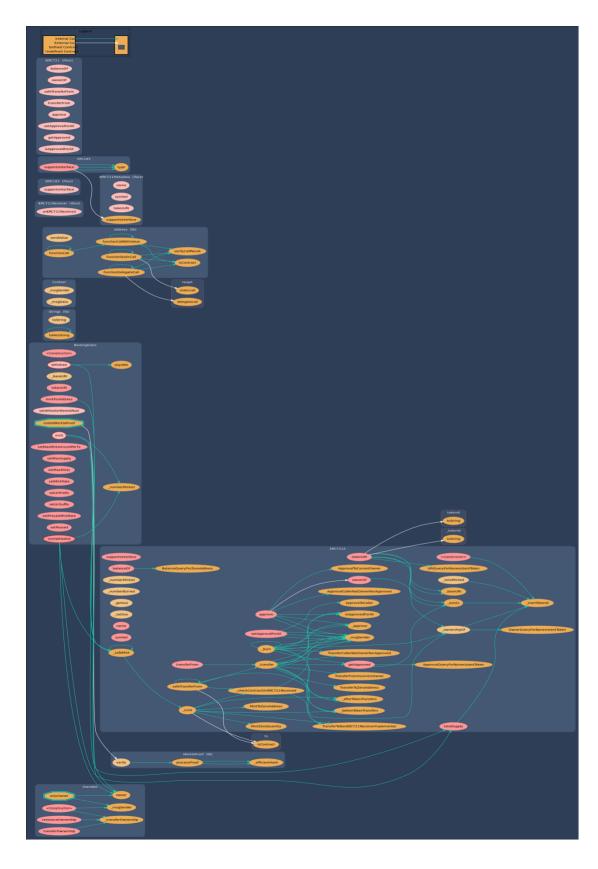
3- Inheritance graph



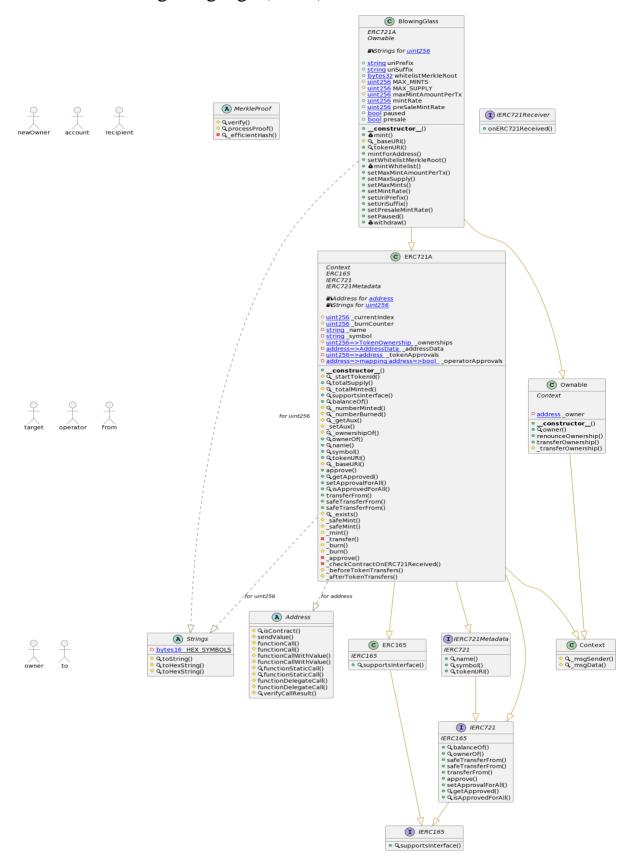
4- SOLIDITY UNIT TESTING



5- Call graph



Unified Modeling Language (UML)



Functions signature

```
Sighash | Function Signature
_____
16279055 => isContract(address)
5a9a49c7 => verify(bytes32[],bytes32,bytes32)
62702a6b => processProof(bytes32[],bytes32)
41ed615b => _efficientHash(bytes32,bytes32)
6900a3ae => toString(uint256)
8fba8d5c => toHexString(uint256)
63e1cbea => toHexString(uint256,uint256)
119df25f => _msgSender()
8b49d47e => _msgData()
8da5cb5b => owner()
715018a6 => renounceOwnership()
f2fde38b => transferOwnership(address)
d29d44ee => _transferOwnership(address)
24a084df => sendValue(address, uint256)
a0b5ffb0 => functionCall(address,bytes)
241b5886 => functionCall(address,bytes,string)
2a011594 => functionCallWithValue(address, bytes, uint256)
d525ab8a => functionCallWithValue(address, bytes, uint256, string)
c21d36f3 => functionStaticCall(address,bytes)
dbc40fb9 => functionStaticCall(address, bytes, string)
ee33b7e2 => functionDelegateCall(address, bytes)
57387df0 => functionDelegateCall(address,bytes,string)
946b5793 => verifyCallResult(bool, bytes, string)
150b7a02 => onERC721Received(address,address,uint256,bytes)
01ffc9a7 => supportsInterface(bytes4)
70a08231 => balanceOf(address)
6352211e => ownerOf(uint256)
b88d4fde => safeTransferFrom(address,address,uint256,bytes)
42842e0e => safeTransferFrom(address,address,uint256)
23b872dd => transferFrom(address,address,uint256)
095ea7b3 => approve(address, uint256)
a22cb465 => setApprovalForAll(address,bool)
081812fc => getApproved(uint256)
e985e9c5 => isApprovedForAll(address,address)
06fdde03 => name()
95d89b41 => symbol()
c87b56dd => tokenURI(uint256)
98995f77 => startTokenId()
18160ddd => totalSupply()
18160ddd => totalSupply()
736bf591 => __totalMinted()
4d388a98 => __numberMinted(address)
6ba1b8d0 => __numberBurned(address)
f4a540c5 => __getAux(address)
4ff8c452 => __setAux(address,uint64)
fb372cf2 => __ownershipOf(uint256)
743976a0 => __baseURI()
f8e76cc0 => __safeMint(address,uint256)
b3e1c718 => __safeMint(address,uint256,bytes)
de0d9900 => __mint(address,uint256,bytes,bool)
30e0789e => __transfer(address,address,uint256)
```

```
9b1f9e74 => _burn(uint256)
834a9477 => _burn(uint256,bool)
f272404d => _approve(address,uint256,address)
d88343e2 => _checkContractOnERC721Received(address,address,uint256,bytes)
ef435773 => _beforeTokenTransfers(address,address,uint256,uint256)
08c018f7 => _afterTokenTransfers(address,address,uint256,uint256)
a0712d68 => mint(uint256)
efbd73f4 => mintForAddress(uint256,address)
bd32fb66 => setWhitelistMerkleRoot(bytes32)
a6d612f9 => mintWhitelist(bytes32[],uint256)
b071401b => setMaxMintAmountPerTx(uint256)
f6f8b44b0 => setMaxSupply(uint256)
79c9cb7b => setMaxMints(uint256)
dbe2193f => setMintRate(uint256)
fec4a659 => setUriPrefix(string)
f6ba10e0 => setUriSuffix(string)
setPresaleMintRate(uint256)
setPaused(bool)
3ccfd60b => withdraw()
```

Automatic general report

```
Files Description Table
| File Name | SHA-1 Hash |
|-----|
| /Users/macbook/Desktop/smart contracts/SpecialKGlass.sol |
1f46a0b0e711e06e73afd6c9e35feb141e0ba36e
Contracts Description Table
                  Type Bases
| Contract |
| **Function Name** | **Visibility** | **Mutability** |
**Modifiers** |
| **MerkleProof** | Library | ||| | | | | | | |
| L | verify | Internal 🖺 |
                         | L | efficientHash | Private 🖺 | | |
| **Strings** | Library | |||
| L | toString | Internal A | | |
| **Context** | Implementation | |||
| L | msgSender | Internal 🖺 | | |
| L | msgData | Internal 🖺 | | |
| **Ownable** | Implementation | Context |||
| L | <Constructor> | Public | | | NO | |
| L | owner | Public | | NO | |
| L | renounceOwnership | Public | | OnlyOwner | L | transferOwnership | Public | OnlyOwner |
| L | transferOwnership | Internal 🖺 | 🔘 | |
| **Address** | Library | ||
| L | isContract | Internal A |
| L | sendValue | Internal A | O | |
| L | functionCall | Internal A | L | functionCall | Internal A | D | L | functionCall | Internal A | D | D |
| L | functionCallWithValue | Internal A | O
| L | functionStaticCall | Internal | | L | functionStaticCall | Internal | |
| L | functionDelegateCall | Internal A | D
| L | functionDelegateCall | Internal A |
| L | verifyCallResult | Internal 🖺 | | |
```

```
| **IERC721Receiver** | Interface | || | | |
| L | onERC721Received | External | | ( ) | NO | |
| **IERC165** | Interface | |||
| L | supportsInterface | External | |
                               | NON |
| **ERC165** | Implementation | IERC165 ||| |
| L | supportsInterface | Public | | NO | |
| **IERC721** | Interface | IERC165 |||
| L | balanceOf | External | | NO | |
 L | ownerOf | External | | NO| |
| L | safeTransferFrom | External | | ●
| L | safeTransferFrom | External | |
                                |NON |
 | L | setApprovalForAll | External | | | |
 | getApproved | External | | | NO | |
| L | isApprovedForAll | External | | NO | |
| L | symbol | External | | NO
| L | tokenURI | External | | NO | |
| **ERC721A** | Implementation | Context, ERC165, IERC721, IERC721Metadata |||
 | L | startTokenId | Internal 🖺 |
 L | totalSupply | Public | | | NO | |
 L | totalMinted | Internal 🖺 | | |
 L | supportsInterface | Public | | NO | |
 L | numberMinted | Internal 🖺 | | |
 L | getAux | Internal 🖺 |
 L | setAux | Internal 🗎 | 🔘 | |
 | ownershipOf | Internal  
 L | ownerOf | Public | | NO| |
 L | name | Public | | NO | |
 L | symbol | Public | | NO |
 L | tokenURI | Public [ |
                     | NO |
 L | _baseURI | Internal 🖺 | | |
 L | approve | Public | | NO | NO |
 L | getApproved | Public | | NO | |
 L | safeTransferFrom | Public | | NO | |
L | safeTransferFrom | Public | | NO | |
 exists | Internal 🖺 |
 L | safeMint | Internal 🖺 |
 L | _safeMint | Internal A |
| L | _mint | Internal 🖺 | 🔘 | |
     transfer | Private 🖺 📗
| L | burn | Internal 🖺 | 🔘 | |
```

```
| L | burn | Internal A | O | | | |
| L | approve | Private 🖺 | 🔘 | |
| L | _checkContractOnERC721Received | Private 🖺 | 🔘 | |
| L | _beforeTokenTransfers | Internal 🗎 | 🔘 | |
| L | afterTokenTransfers | Internal A | O | |
| **BlowingGlass** | Implementation | ERC721A, Ownable |||
| L | <Constructor> | Public | | | | ERC721A |
| L | mint | External | | D | NO | |
| L | _baseURI | Internal 🖺 | | |
| L | tokenURI | Public | | NO | |
| L | mintForAddress | Public | | OnlyOwner |
L | mintWhitelist | Public | | III | isValidMerkleProof |
L | setMaxMintAmountPerTx | Public | | OnlyOwner |
| L | setMaxSupply | Public | | OnlyOwner | | | | | | | | | | |
| L | setMaxMints | Public | | onlyOwner | L | setMintRate | Public | onlyOwner |
| L | setUriPrefix | Public | | onlyOwner | | L | setUriSuffix | Public | onlyOwner | | L | setPresaleMintRate | Public | onlyOwner |
| L | withdraw | External | | D | onlyOwner |
Legend
| Symbol | Meaning |
|:----|
| Function can modify state |
  Function is payable |
```

Conclusion

The contracts are written systematically. Team found no critical issues after fixing the errors. So, it is good to go for production.

Since possible test cases can be unlimited and developer level documentation (code flow diagram with function level description) not provided, for such an extensive smart contract protocol, we provide no such guarantee of future outcomes. We have used all the latest static tools and manual observations to cover maximum possible test cases to scan Everything.

Security state of the reviewed contract is "Well Secured".

- ✓ No volatile code.
- ✓ No many high severity issues were found.
- √ Low (or very low) level issues have been fixed.

Disclaimer

This is a limited report on our findings based on our analysis, in accordance with good industry practice as of 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 the team on the basis of what it says or doesn't say, or how team produced it, and it is important for you to conduct your own independent investigations before making any decisions. team go into more detail on this in the below disclaimer below – please make sure to read it in full.

By reading this report or any part of it, you agree to the terms of this disclaimer. If you do not agree to the terms, then please immediately cease reading this report, and delete and destroy any and all copies of this report downloaded and/or printed by you. This report is provided for information purposes only and on a non-reliance basis, and does not constitute investment advice. No one shall have any right to rely on the report or its contents, and Saferico and its affiliates (including holding companies, shareholders, subsidiaries, employees, directors, officers and other representatives) (Saferico s) owe no duty of care towards you or any other person, nor does Saferico make any warranty or representation to any person on the accuracy or completeness of the report. The report is provided "as is", without any conditions, warranties or other terms of any kind except as set out in this disclaimer, and Saferico hereby excludes all representations, warranties, conditions and other terms (including, without limitation, the warranties implied by law of satisfactory quality, fitness for purpose and the use of reasonable care and skill) which, but for this clause, might have effect in relation to the report. Except and only to the extent that it is prohibited by law, Saferico hereby excludes all liability and responsibility, and neither you nor any other person shall have any claim against Saferico, for any amount or kind of loss or damage that may result to you or any other person (including without limitation, any direct, indirect, special, punitive, consequential or pure economic loss or damages, or any loss of income, profits, goodwill, data, contracts, use of money, or business interruption, and whether in delict, tort (including without limitation negligence), contract, breach of statutory duty, misrepresentation (whether innocent or negligent) or otherwise under any claim of any nature whatsoever in any jurisdiction) in any way arising from or connected with this report and the use, inability to use or the results of use of this report, and any reliance on this report. 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.