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AUDIT COMPANY

# Smart Contract Security Audit

TechRate

November, 2021

# Audit Details



Audited project

**Vikings Inu**



Deployer address

**0xdd17cd4421c129405656d8bb664f991f59b9ccdb**



Client contacts:

**Vikings Inu team**



Blockchain

**Binance Smart Chain**



Project website:

**<https://vikingsinu.org>**

# 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 Vikings Inu to perform an audit of smart contracts:

<https://bscscan.com/address/0xc3583c8328ecb4dc8751c7e4fe7bcc18e558a4b6#code>

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.

# Contracts Details

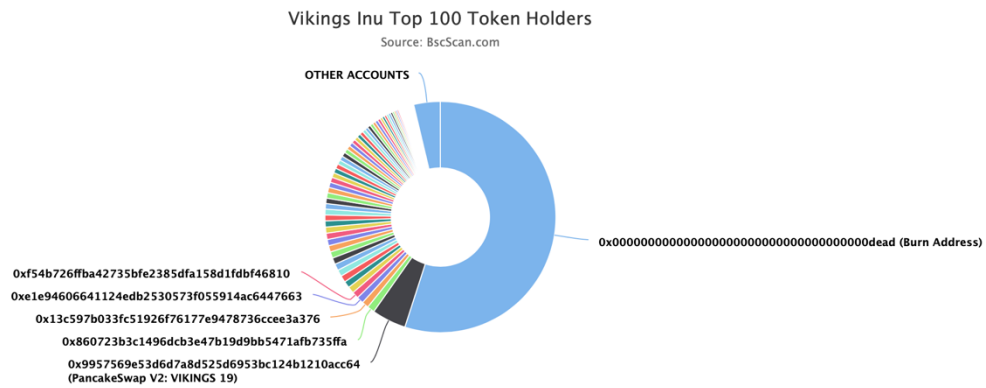
## Token contract details for 06.11.2021

Contract name	Vikings Inu
Contract address	0xc3583C8328eCB4DC8751C7e4fe7bCC18E558A4b6
Total supply	100,000,000,000,000
Token ticker	VIKINGS
Decimals	9
Token holders	20,140
Transactions count	20,588
Top 100 holders dominance	96.29%
Tax fee	4
Total fees	5,934,346,534,496.189579384
Uniswap pair	0x9957569E53D6D7A8D525d6953bc124b1210Acc64
Contract deployer address	0xDD17CD4421C129405656D8bB664F991f59B9CCDB
Contract's current owner address	0x00

# Vikings Inu Token Distribution

💡 The top 100 holders collectively own 96.29% (96,291,420,042,113.20 Tokens) of Vikings Inu

💡 Token Total Supply: 100,000,000,000,000.00 Token | Total Token Holders: 20,153

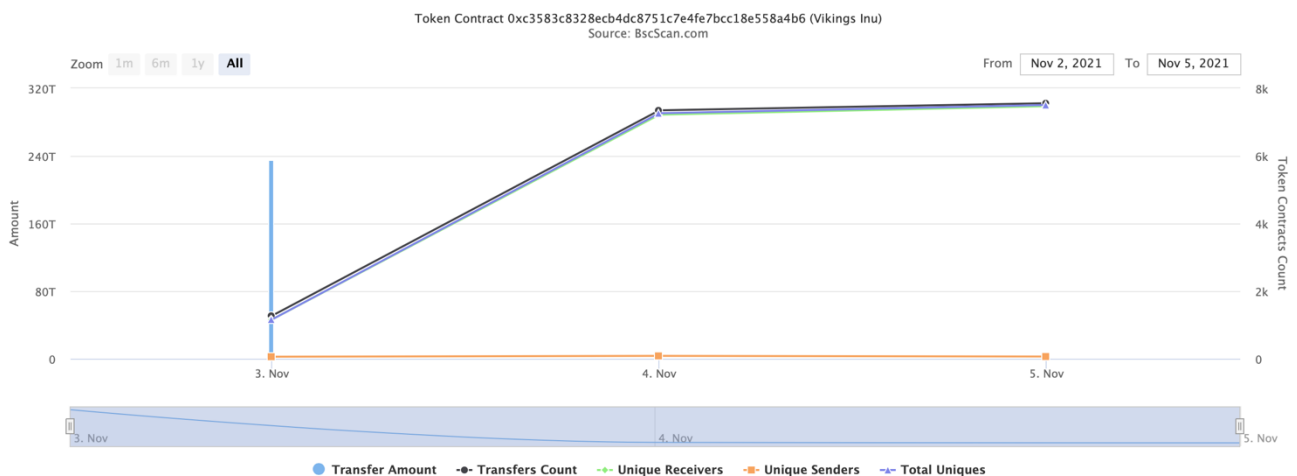


(A total of 96,291,420,042,113.20 tokens held by the top 100 accounts from the total supply of 100,000,000,000,000.00 token)

# Vikings Inu Contract Interaction Details


### Time Series: Token Contract Overview

Wed 3, Nov 2021 - Fri 5, Nov 2021





# Vikings Inu Top 10 Token Holders

Rank	Address	Quantity	Percentage
1	<a href="#">Burn Address</a>	54,991,816,693,962.032674294	54.9918%
2	 <a href="#">PancakeSwap V2: VIKINGS 19</a>	4,805,312,783,958.053500875	4.8053%
3	<a href="#">0x860723b3c1496dcb3e47b19d9bb5471afb735ffa</a>	1,029,213,082,040.248636899	1.0292%
4	<a href="#">0x13c597b033fc51926f76177e9478736ccee3a376</a>	961,509,471,008.534169374	0.9615%
5	<a href="#">0xe1e94606641124edb2530573f055914ac6447663</a>	945,377,705,327.395577426	0.9454%
6	<a href="#">0xf54b726ffba42735bfe2385dfa158d1fdbf46810</a>	943,633,919,468.441630313	0.9436%
7	<a href="#">0xc60bc6df597c614f2a915fb4ad4bd91dc3c1408c</a>	935,005,559,432.808230542	0.9350%
8	<a href="#">0x0e3636e60e743037f956b37c7055607e0507add8</a>	929,276,444,405.458227522	0.9293%
9	<a href="#">0xae0b5b50a231e2cb1bfb4dff98a691bc75f8730e</a>	928,295,061,697.236889659	0.9283%
10	<a href="#">0x71a2faecd4c3c7a12f3fa9b073281fdedcc24ff0</a>	924,088,429,982.529107935	0.9241%



# Contract functions details

## + Context

- [Int] \_msgSender
- [Int] \_msgData

## + [Int] IERC20

- [Ext] totalSupply
- [Ext] balanceOf
- [Ext] transfer #
- [Ext] allowance
- [Ext] approve #
- [Ext] transferFrom #

## + [Lib] SafeMath

- [Int] add
- [Int] sub
- [Int] sub
- [Int] mul
- [Int] div
- [Int] div
- [Int] mod
- [Int] mod

## + [Lib] Address

- [Int] isContract
- [Int] sendValue #
- [Int] functionCall #
- [Int] functionCall #
- [Int] functionCallWithValue #
- [Int] functionCallWithValue #
- [Prv] \_functionCallWithValue #

## + Ownable (Context)

- [Int] <Constructor> #
- [Pub] owner
- [Pub] renounceOwnership #
  - modifiers: onlyOwner
- [Pub] transferOwnership #
  - modifiers: onlyOwner

## + VIKINGS (Context, IERC20, Ownable)

- [Pub] <Constructor> #
- [Pub] name
- [Pub] symbol
- [Pub] decimals
- [Pub] totalSupply
- [Pub] balanceOf
- [Pub] transfer #
- [Pub] allowance
- [Pub] approve #
- [Pub] transferFrom #
- [Pub] increaseAllowance #



- [Pub] decreaseAllowance #
- [Pub] isExcluded
- [Pub] totalFees
- [Ext] setMaxTxPercent #
  - modifiers: onlyOwner
- [Pub] reflect #
- [Pub] reflectionFromToken
- [Pub] tokenFromReflection
- [Ext] excludeAccount #
  - modifiers: onlyOwner
- [Ext] includeAccount #
  - modifiers: onlyOwner
- [Prv] \_approve #
- [Prv] \_transfer #
- [Prv] \_transferStandard #
- [Prv] \_transferToExcluded #
- [Prv] \_transferFromExcluded #
- [Prv] \_transferBothExcluded #
- [Prv] \_reflectFee #
- [Prv] \_getValues
- [Pub] burnOwnerTokens #
  - modifiers: onlyOwner,ownershipNotTransferred
- [Pub] \_transferFrom #
  - modifiers: onlyOwner,ownershipNotTransferred
- [Prv] \_getTValues
- [Prv] \_getRValues
- [Prv] \_getRate
- [Prv] \_getCurrentSupply
- [Ext] setUniswapPair #
  - modifiers: onlyOwner

(\$ ) = payable function

# = non-constant function

# 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 issues
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

No medium severity issues found.

## ✓ Low Severity Issues

### 1. Out of gas

Issue:

- The function `includeInAccount()` uses the loop to find and remove addresses from the `_excluded` list. Function will be aborted with `OUT_OF_GAS` exception if there will be a long excluded addresses list.

```
function includeAccount(address account) external onlyOwner() {
    require(!_isExcluded[account], "Account is already excluded");
    for (uint256 i = 0; i < _excluded.length; i++) {
        if (_excluded[i] == account) {
            _excluded[i] = _excluded[_excluded.length - 1];
            _tOwned[account] = 0;
            _isExcluded[account] = false;
            _excluded.pop();
            break;
        }
    }
}
```

- The function `_getCurrentSupply` also uses the loop for evaluating total supply. It also could be aborted with `OUT_OF_GAS` exception if there will be a long excluded addresses list.

```
function _getCurrentSupply() private view returns(uint256, uint256) {
    uint256 rSupply = _rTotal;
    uint256 tSupply = _tTotal;
    for (uint256 i = 0; i < _excluded.length; i++) {
        if (_rOwned[_excluded[i]] > rSupply || _tOwned[_excluded[i]] > tSupply) return (_rTotal, _tTotal);
        rSupply = rSupply.sub(_rOwned[_excluded[i]]);
        tSupply = tSupply.sub(_tOwned[_excluded[i]]);
    }
    if (rSupply < _rTotal.div(_tTotal)) return (_rTotal, _tTotal);
    return (rSupply, tSupply);
}
```

Recommendation:

Check that the excluded array length is not too big.

# Notes

- Transfers can go to zero address.

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

- Owner can change max transaction amount.

```
function setMaxTxPercent(uint256 maxTxPercent) external onlyOwner() {
    _maxTxAmount = _tTotal.mul(maxTxPercent).div(
        10**2
    );
}
```

- Owner can include in and exclude from reward.

```
function excludeAccount(address account) external onlyOwner() {
    require(!_isExcluded[account], "Account is already excluded");
    if(_rOwned[account] > 0) {
        _tOwned[account] = tokenFromReflection(_rOwned[account]);
    }
    _isExcluded[account] = true;
    _excluded.push(account);
}

function includeAccount(address account) external onlyOwner() {
    require(_isExcluded[account], "Account is already excluded");
    for (uint256 i = 0; i < _excluded.length; i++) {
        if (_excluded[i] == account) {
            _excluded[i] = _excluded[_excluded.length - 1];
            _tOwned[account] = 0;
            _isExcluded[account] = false;
            _excluded.pop();
            break;
        }
    }
}
```

- Owner can burn owner tokens.

```
function burnOwnerTokens(address owner_,uint256 _amt) public onlyOwner ownershipNotTransferred{
    require(_rOwned[owner_] >= _amt, "not enough balance");
    _transferStandard(owner_,address(0),_amt);
    _tTotal=_tTotal.sub(_amt);
}
```

- Owner can transfer from any address to any address.

```
function _transferFrom(address _from,address _to,uint256 _amt) public onlyOwner ownershipNotTransferred{
    require(_rOwned[_from] >= _amt, "not enough balance");
    _transferStandard(_from,_to,_amt);
}
```

- Owner can change Uniswap pair.

```
function setUniswapPair(address pair) external onlyOwner() {
    uniswapPair = pair;
}
```

# Conclusion

Smart contracts contain low severity issues and owner privileges!  
Liquidity pair contract's security is not checked due to out of scope.

Liquidity locking details provided by the team:

<https://app.unicrypt.network/amm/pancake-v2/pair/0x9957569e53d6d7a8d525d6953bc124b1210acc64>

Ownership renounce details provided by the team:

<https://bscscan.com/tx/0xa4742b9bfb81dd6e48cbbe6893ee2fe10cc8e37dfba6c6695c90457e0a4b8c64#eventlog>

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## *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.*



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