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AUDIT COMPANY

Smart Contract Security Audit

TechRate

November, 2021

Audit Details

Audited project

Etherland

Deployer address

0x21fac178e0b0df2db51a06d52b32de4479a8b3f1

Client contacts:

Etherland team

Blockchain

Ethereum

Project website:

https://www.elandatlas.com

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 Etherland to perform an audit of smart contracts:

- https://etherscan.io/address/0x1ab8Ee0cbC2D2A2F0E09a094358f3b0aAc275268#code
- https://etherscan.io/address/0x33e07f5055173cf8febede8b21b12d1e2b523205#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

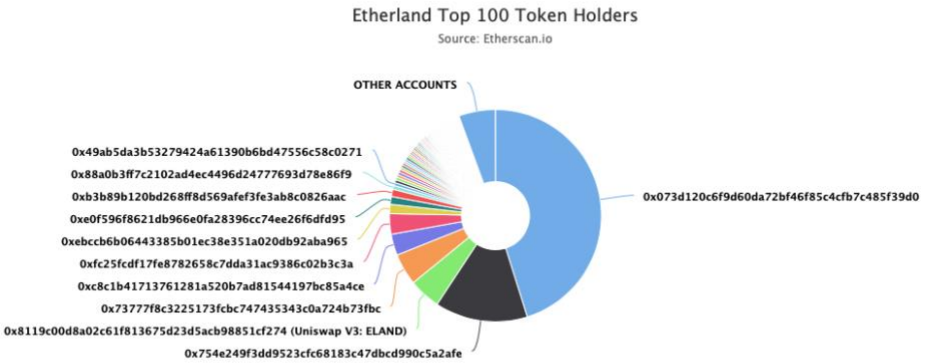
Token contract details for 07.11.2021

Contract name	Etherland
Contract address	0x33E07f5055173cF8FeBedE8B21B12D1e2b523205
Total supply	70,686,070
Token ticker	ELAND
Decimals	18
Token holders	930
Transactions count	7,896
Top 100 holders dominance	94.40%
Reserve address	0x754e249f3dd9523cfc68183c47dbcd990c5a2afe
Team address	0x73777f8c3225173fcbc747435343c0a724b73fbc
Landid NFT address	0x0000000000000000000000000000000000000000
Contract deployer address	0x21fac178e0b0df2db51a06d52b32de4479a8b3f1
Contract's current owner address	0x000000000000000000000000000000000000dead

Etherland Token Distribution

The top 100 holders collectively own 94.40% (66,729,142.46 Tokens) of Etherland

Token Total Supply: 70,686,070.00 Token | Total Token Holders: 930

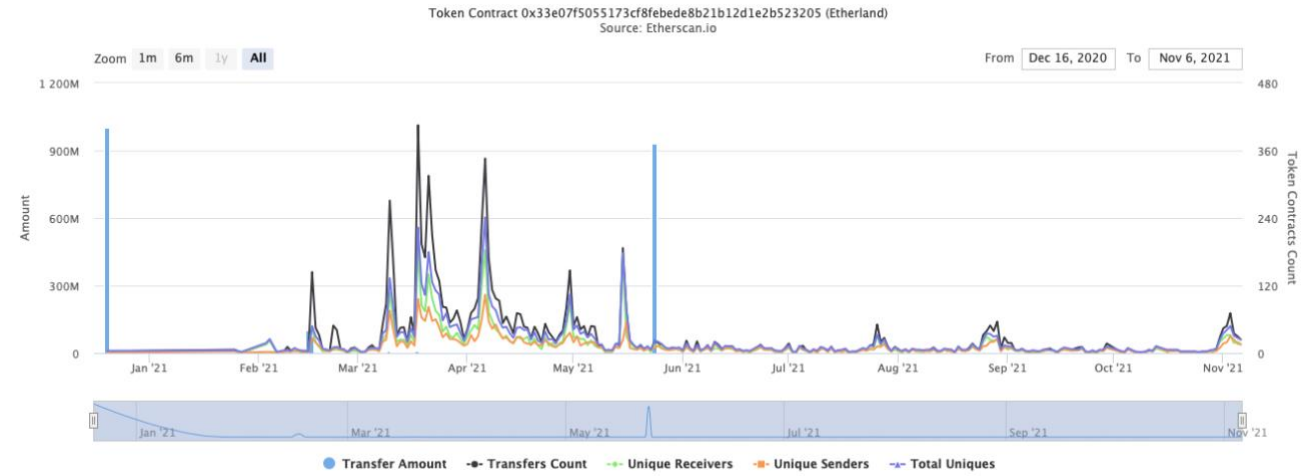


(A total of 66,729,142.46 tokens held by the top 100 accounts from the total supply of 70,686,070.00 token)

Etherland Contract Interaction Details

Time Series: Token Contract Overview

Sun 20, Dec 2020 - Sat 6, Nov 2021



Etherland Top 10 Token Holders

Rank	Address	Quantity (Token)	Percentage
1	0x073d120c6f9d60da72bf46f85c4cfb7c485f39d0	31,913,007	45.1475%
2	0x754e249f3dd9523cfc68183c47dbcd990c5a2afe	9,999,999	14.1471%
3	Uniswap V3: ELAND	3,420,385.349687784898968183	4.8388%
4	0x73777f8c3225173fcbc747435343c0a724b73fbc	3,414,421	4.8304%
5	0xc8c1b41713761281a520b7ad81544197bc85a4ce	2,284,414.350481501809240327	3.2318%
6	0xfc25fcdf17fe8782658c7dda31ac9386c02b3c3a	2,203,427.49459808326491993	3.1172%
7	0xebccb6b06443385b01ec38e351a020db92aba965	1,000,004.915836832432520083	1.4147%
8	0xe0f596f8621db966e0fa28396cc74ee26f6dfd95	831,765.243067232135740092	1.1767%
9	0xb3b89b120bd268ff8d569afef3fe3ab8c0826aac	800,000	1.1318%
10	0x88a0b3ff7c2102ad4ec4496d24777693d78e86f9	400,000	0.5659%

Contract functions details

+ [Lib] SafeMath
  - [Int] add
  - [Int] sub
  - [Int] sub
  - [Int] mul
  - [Int] div
  - [Int] div

+ Proxiable
  - [Int] updateCodeAddress #
  - [Pub] proxiableUUID

+ [Int] iLANDID
  - [Ext] adminRightsOf

+ Storage

+ Context (Storage)
  - [Int] _msgSender

+ Ownable (Context)
  - [Pub] getRelinquishmentToken
    - modifiers: onlyOwner
  - [Pub] renounceOwnership #
    - modifiers: onlyOwner
  - [Pub] preRenounceOwnership #
    - modifiers: onlyOwner
  - [Pub] transferOwnership #
    - modifiers: onlyOwner
  - [Int] _transferOwnership #

+ [Int] IERC20
  - [Ext] totalSupply
  - [Ext] balanceOf
  - [Ext] transfer #
  - [Ext] allowance
  - [Ext] approve #
  - [Ext] transferFrom #

+ ERC20 (Ownable, IERC20)
  - [Pub] name
  - [Pub] symbol
  - [Pub] decimals
  - [Pub] totalSupply
  - [Pub] balanceOf
  - [Pub] transfer #
  - [Pub] allowance
  - [Pub] approve #
  - [Pub] transferFrom #
  - [Pub] increaseAllowance #
  - [Pub] decreaseAllowance #

  - [Int] _transfer #
  - [Int] _mint #
  - [Int] _burn #
  - [Int] _approve #
  - [Int] _setupDecimals #
  - [Int] _beforeTokenTransfer #

+ ERC20Capped (ERC20)
  - [Int] setImmutableCap #
  - [Pub] cap

+ ERC20Burnable (ERC20Capped)
  - [Pub] burn #
  - [Pub] burnFrom #

+ ERC20Mintable (ERC20Burnable)
  - [Pub] mintingFinished
  - [Int] mint #

+ LandRegistry (ERC20Mintable)
  - [Pub] setRecordRightsOffers #
    - modifiers: isNftAdmin
  - [Pub] openLandRegistry #
    - modifiers: isNftAdmin
  - [Pub] closeLandRegistry #
    - modifiers: isNftAdmin
  - [Pub] registerLand #
  - [Int] validRecordRight
  - [Pub] consumeRecordRight #
    - modifiers: isNftAdmin

+ Etherland (LandRegistry, Proxiable)
  - [Int] percentOf
  - [Pub] init #
  - [Pub] updateCode #
    - modifiers: onlyOwner
  - [Pub] circulatingSupply
  - [Pub] batchTransfer #
  - [Pub] setLandidNftAddress #
    - modifiers: onlyOwner
  - [Pub] setLandRegistrationAddress #
    - 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 `batchTransfer()` uses the loop to multiple transfer. Function will be aborted with `OUT_OF_GAS` exception if there will be a long addresses list.

Recommendation:
Check that the addresses array length is not too big.

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

- Owner can change code address.
- Owner can change landidNftAddress and landRegistration addresses.
- NFTAdmin can change recordRightsOffers.
- NFTAdmin can open/close land registry.
- NFTAdmin can consume record right.

Conclusion

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

Liquidity locking details NOT provided by the team.

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.