

Lightning Works

SMART CONTRACT AUDIT REPORT



Prepared by:

BlockAudit

Date of Enrollment:

October 27th, 2022 - November 4th, 2022

Visit : www.blockaudit.report



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SUMMARY

This Audit Report mainly focuses on the extensive security of Lightning Works Smart Contracts. With this report, we attempt to ensure the reliability and correctness of the smart contract by complete and rigorous assessment of the system's architecture and the smart contract codebase.

The auditing process pays special attention to the following considerations:

- Testing the smart contracts against both common and uncommon attack vectors.
- Assessing the codebase to ensure compliance with current best practices and industry standards.
- Ensuring contract logic meets the specifications and intentions of the client.
- Cross referencing contract structure and implementation against similar smart contracts produced by industry leaders.
- Thorough line-by-line manual review of the entire codebase by industry experts.

The security assessment resulted in findings that ranged from critical to informational. We recommend addressing these findings to ensure a high level of security standards and industry practices. We suggest recommendations that could better serve the project from the security perspective:

- Enhance general coding practices for better structures of source codes;
- Add enough unit tests to cover the possible use cases;
- Provide more comments per each function for readability, especially contracts that are verified in public;
- Provide more transparency on privileged activities once the protocol is live.



OVERVIEW

Project Summary

Project Name	Lightning Works
Platform	Ethereum
Language	Solidity
Contract Link	N/A
Code Base	https://github.com/DiviGoApp/SSC
Commit Hash	069bdcfbafe6090e0e4183834a242296e8427cf9

File Summary

LWC	LWO-Contract.sol
LWM	LWO-Minter.sol
LWS	LWO-Simple.sol

Audit Summary

Date of Delivery	2 Nov 2022
Audit Methodology	Code Analysis. Automatic Assessment, Manual Review
Audit Result	Passed ✓
Audit Team	BlockAudit Report Team



FINDINGS

■ Critical	0	0.0%
■ High	0	0.0%
■ Medium	1	9.09%
■ Low	8	72.72%
■ Informational	0	0.0%
■ Ownership	2	18.18%



Vulnerability Findings Summary

ID	Type	Line	Severity	Status
LWM01	Access Control	71,44	■ Medium	Resolved
LWM02	Floating Pragma	-	■ Low	Resolved
LWM03	Wrong NatSpec Description	38	■ Low	Resolved
LWM04	Missing Events	32,62	■ Low	Acknowledged
LWS01	Missing Event & Zero Check	167	■ Low	Acknowledged
LWS02	Floating Pragma	-	■ Low	Resolved
LWC01	Floating Pragma	-	■ Low	Resolved
LWC02	Missing Zero Check	250,257,3 94,615	■ Low	Resolved
LWC03	Missing Events	-	■ Low	Acknowledged

Ownership Privileges Findings Summary

ID	Severity	Status
LWC04	■ Ownership	Acknowledged
LWM04	■ Ownership	Acknowledged

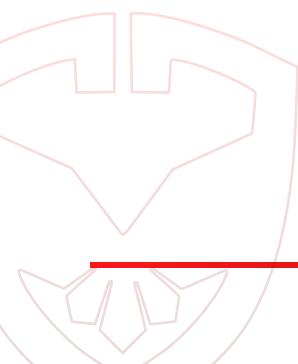


LWM01

Type	Access Control
Severity	■ Medium
File	LWO-Minter.sol
Line	71,44
Status	Resolved

Description

These functions can be called by any address because there are no require checks to verify if the calling address is a node caller





LWM02

Type	FloatingPragma
Severity	■ Low
File	LWO-Minter.sol
Line	-
Status	Resolved

Description

The current pragma Solidity directive is "`^0.8.4`". Contracts should be deployed with the same compiler version and flags that they have been tested thoroughly. Locking the pragma helps to ensure that contracts do not accidentally get deployed using other versions.



LWM03

Type	Wrong NatSpec Description
Severity	■ Low
File	LW0-Minter.sol
Line	38
Status	Resolved

Description

The natspec comment doesn't match the description of the contract. The comment 10 describes that all node callers can mint but in implementation, only owner can manually mint tokens



LWM04

Type	Missing Events
Severity	■ Low
File	LWO-Minter.sol
Line	38
Status	Acknowledged

Description

Emit events for critical parameter changes.

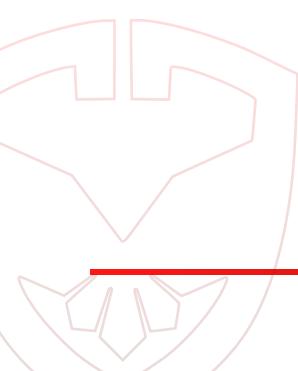


LWS01

Type	Missing Event & Zero Check
Severity	■ Low
File	LWO-Simple.sol
Line	167
Status	Acknowledged

Description

Emit Events for Critical parameter changes and check that the passed address is not zero.





LWS02

Type	FloatingPragma
Severity	■ Low
File	LWO-Simple.sol
Line	-
Status	Resolved

Description

The current pragma Solidity directive is "`^0.8.4`". Contracts should be deployed with the same compiler version and flags that they have been tested thoroughly. Locking the pragma helps to ensure that contracts do not accidentally get deployed using other versions.



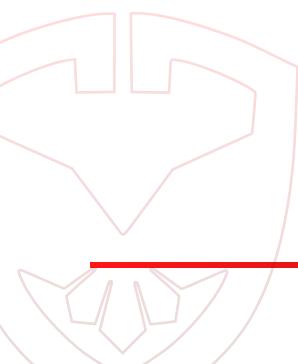


LWC01

Type	FloatingPragma
Severity	■ Low
File	LWO-Contract.sol
Line	-
Status	Resolved

Description

The current pragma Solidity directive is "`^0.8.4`". Contracts should be deployed with the same compiler version and flags that they have been tested thoroughly. Locking the pragma helps to ensure that contracts do not accidentally get deployed using other versions.



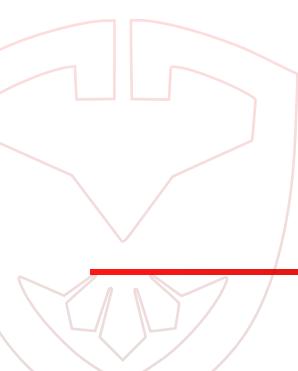


LWC02

Type	Missing Zero Check
Severity	■ Low
File	LWO-Contract.sol
Line	250,257,394,615
Status	Resolved

Description

There is no zero address validation in the transfer functions which may lead to loss of user funds if the users send the funds to the zero address by accident.



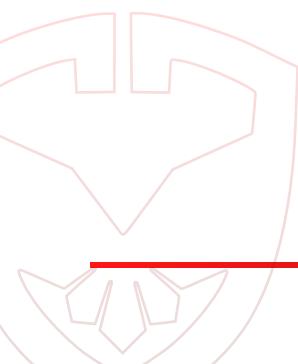


LWC03

Type	Missing Event
Severity	■ Low
File	LWO-Contract.sol
Line	All only node caller functions
Status	Acknowledged

Description

Emit Events for critical parameter changes





OWNERSHIP PRIVILEGES

LWC04

File	LWO-Contract.sol
Status	Acknowledged

Description

- The only node caller addresses are responsible for all critical parameter changes.
- Owner can set any arbitrary price for
- There are no limitation on how many addresses can be node callers
- Node caller addresses can make other addresses node callers
- Node callers can withdraw any ERC20 token from the contract if there are any present.

LWM04

File	LWO-Minter.sol
Status	Acknowledged

Description

- Owner can mint tokens but not more than the total supply



APPENDIX

Auditing Approach and Methodologies applied

The Block Audit Report team has performed rigorous testing of the project including the analysis of the code design patterns where we reviewed the smart contract architecture to ensure it is structured along with the safe use of standard inherited contracts and libraries. Our team also conducted a formal line by line inspection of the Smart Contract i.e., a manual review, to find potential issues including but not limited to

- Race conditions
- Zero race conditions approval attacks
- Re-entrancy
- Transaction-ordering dependence
- Timestamp dependence
- Check-effects-interaction pattern (optimistic accounting)
- Decentralized denial-of-service attacks
- Secure ether transfer pattern
- Guard check pattern
- Fail-safe mode
- Gas-limits and infinite loops
- Call Stack depth

In the Unit testing Phase, we coded/conducted custom unit tests written against each function in the contract to verify the claimed functionality from our client. In Automated Testing, we tested the Smart Contract with our standard set of multifunctional tools to identify vulnerabilities and security flaws. The code was tested in collaboration of our multiple team members and this included but not limited to;

- Testing the functionality of the Smart Contract to determine proper logic has been followed throughout the whole process.
- Analyzing the complexity of the code in depth and in detail line-by-line manual review of the code.
- Deploying the code on testnet using multiple clients to run live tests.
- Analyzing failure preparations to check how the Smart Contract performs in case of any bugs and vulnerabilities.
- Checking whether all the libraries used in the code are on the latest version.
- Analyzing the security of the on-chain data.



Issue Categories:

Every issue in this report was assigned a severity level from the following:

Critical Severity Issues

Issues of this level are critical to the smart contract's performance/functionality and should be fixed before moving to a production environment.

High Severity Issues

Issues on this level are strongly suggested by the team to be fixed before moving to the production environment.

Medium Severity Issues

Issues on this level could potentially bring problems and should eventually be fixed.

Low Severity Issues

Issues on this level are minor details and warnings that can remain unfixed but would be better fixed at some point in the future.

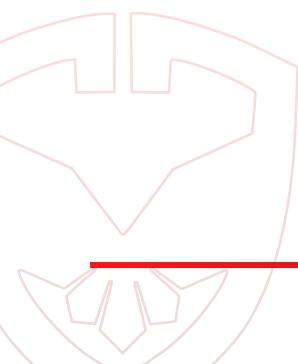


DISCLAIMER

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 the client 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 the client 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 the client to conduct the client's 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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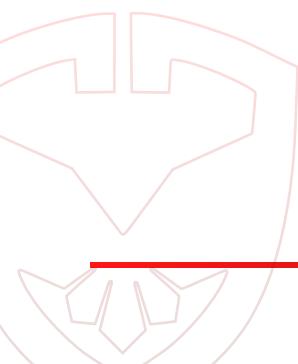




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The analysis of the security is purely based on the received smart contracts alone. No related/third-party smart contracts, applications or operations were reviewed for security. No product code has been reviewed.

Note: The statements made in this document should not be interpreted as investment or legal advice, nor should its authors be held accountable for decisions made based on them. Securing smart contracts is a multistep process. One audit cannot be considered enough. We recommend that the Lightning Works team put a bug bounty program in place to encourage further analysis of the smart contracts by other third parties





About BlockAudit

BlockAudit is an industry leading security organisation that helps web3 blockchain based projects with their security and correctness of their smart-contracts. With years of experience we have a dedicated team that is capable of performing audits in a wide variety of languages including HTML, PHP, JS, Node, React, Native, Solidity, Rust and other Web3 frameworks for DApps, DeFi, GameFi and Metaverse platforms.

With a mission to make web3 a safe and secure place BlockAudit is committed to provide it's partners with a budget and investor friendly security Audit Report that will increase the value of their projects significantly.



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