Regulatory disclosure

TEL MiCA White Paper

Digital Token Identifier

VJVXNCJH1

Offeror or person seeking admission to trading

5067005DH2B5Z9W29038 - Telcoin Association

Notification date

January 13, 2026

Version

New submission

General information

00 Table of content	true
01 Date of notification	2026-01-13
02 Statement in accordance with Article 6(3) of Regulation (EU) 2023/1114	This crypto-asset white paper has not been approved by any competent authority in any Member State of the European Union. The person seeking admission to trading of the crypto-asset is solely responsible for the content of this crypto-asset white paper.
03 Compliance statement in accordance with Article 6(6) of Regulation (EU) 2023/1114	This crypto-asset white paper complies with Title II of Regulation (EU) 2023/1114 of the European Parliament and of the Council and, to the best of the knowledge of the management body, the information presented in the crypto-asset white paper is fair, clear and not misleading and the crypto-asset white paper makes no omission likely to affect its import.
04 Statement in accordance with Article 6(5), points (a), (b), (c), of Regulation (EU) 2023/1114	The crypto-asset referred to in this crypto-asset white paper may lose its value in part or in full, may not always be transferable and may not be liquid
05 Statement in accordance with Article 6(5), point (d), of Regulation (EU) 2023/1114	Not applicable

06 Statement in accordance with Article 6(5), points (e) and (f), of Regulation (EU) 2023/1114	The crypto-asset referred to in this white paper is not covered by the investor compensation schemes under Directive 97/9/EC of the European Parliament and of the Council or the deposit guarantee schemes under Directive 2014/49/EU of the European Parliament and of the Council.

SUMMARY

07 Warning in accordance with Article 6(7), second subparagraph, of Regulation (EU) 2023/1114	Warning This summary should be read as an introduction to the crypto-asset white paper. The prospective holder should base any decision to purchase this crypto –asset on the content of the crypto-asset white paper as a whole and not on the summary alone. The offer to the public of this crypto-asset does not constitute an offer or solicitation to purchase financial instruments and any such offer or solicitation can be made only by means of a prospectus or other offer documents pursuant to the applicable national law. This crypto-asset white paper does not constitute a prospectus as referred to in Regulation (EU) 2017/1129 of the European Parliament and of the Council or any other offer document pursuant to Union or national law.
08 Characteristics of the crypto-asset	The TEL Token follows the ERC-20 standard, is fungible, and freely transferable between users. It was originally minted on the Ethereum network and has since been bridged to additional chains, in particular Polygon, to facilitate interoperability and access to Telcoin-related applications. Upon launch of the Telcoin Network, TEL will serve as

	the native gas fee token, used to pay transaction fees for network operations. The maximum total supply of TEL is 100,000,000,000 (one hundred billion). No additional tokens can be created beyond this cap. TEL will function as the native token of the Telcoin Network (not yet launched) and the broader Telcoin Platform. Miners in the Telcoin ecosystem, comprising Application Developers, Stakers, Liquidity Miners, and Validators, stake TEL as a production and harvesting input on the Telcoin Platform. This enables them to mine TEL from the Platform's protocol-defined incentive mechanisms based on their share of network productivity. The amount of TEL staked by an individual miner determines both a participant's earning capacity and their governance influence within their respective Miner Group under the Telcoin Platform governance framework. TEL Tokens do not represent shares, debt instruments, or claims on Telcoin, the Telcoin Association, or any other entity. They do not confer rights to profits, dividends, or capital redemption. All rights and obligations associated with the Token are defined by the smart contracts deployed on the Telcoin Network and the governance procedures of the Telcoin Association. Any modification of these rights, governance parameters, or network rules will occur only through transparent and publicly verifiable governance processes as approved in accordance with the Telcoin governance framework
09 Further information about utility tokens	N/A
10 Key information about the offer to the public or admission to trading	Telcoin Association seeks admission to trading of the TEL token so as to assist Kraken, the trading platform for

	which the admission is sought, in being compliant with MiCA and in keeping with its mission to make available for trading to its clients a wide range of assets.

Part A - Information about offeror or person seeking admission to trading

A.1 Name	Telcoin Association
A.2 Legal form	Swiss Verein (unincorporated association)

A.3 Registered address

Registered addess	Via Canova 15, 6900 Lugano, Switzerland
Country	Switzerland
Sub-division	CH

A.4 Head office

Head office	c/o Fiduciaria Ortelli SA, Via Greina 2, 6900 Lugano
Country	Switzerland
Sub-division	CH
A.5 Registration date	2024-05-27
A.6 Legal entity identifier	5067005DH2B5Z9W29038
A.7 Another identifier required pursuant to applicable national law	Swiss Company Number CHE-169.445.588
A.8 Contact telephone number	N/A
A.9 E-mail address	support@telcoin.org

A.10 Response time (days)	30
A.11 Parent company	Not applicable. As a Swiss verein, the Issuer is an ownerless entity. It does not have shares, stock, equity or any similar instruments. Consequently, the Issuer does not have a parent company.

A.12 Members of the management body

Member #1

Identity	Paul Neuner
Business address	Los Angeles (US)
Function	Chairperson of the board

Member #2

Identity	Parker Spann
Business address	St Louis (US)
Function	Member of the board + clerk

Member #3

Identity	Noam Dessibourg
Business address	Murten (CH)
Function	Manager

A.13 Business activity	https://www.telcoin.org/documentation/association/association-constitution
A.14 Parent company business activity	N/A

A.15 Newly established	true
A.16 Financial condition for the past three years	N/A
A.17 Financial condition since registration	As a recently established entity, Telcoin Association ("TA") is in an early operational and ecosystem-build phase. TA holds a treasury allocation of 10 billion TEL tokens, which are intended to support protocol governance, ecosystem development, and long-term network sustainability. To date, TA has not generated operating revenue, and its financial activity has primarily consisted of funding and overseeing software development and technical work performed by its affiliated development company in the United Kingdom, along with legal, regulatory, and compliance-related expenditures. Cash flows have therefore mainly reflected treasury funding and operating outflows associated with development and governance activities. Management considers TA's financial position appropriate for its size and stage of development, with resources aligned to planned protocol and ecosystem milestones.

Part B - Information about issuer, if different from offeror or person seeking admission to trading

B.1 Issuer different from offerror or person seeking admission to trading	false
B.2 Name	N/A
B.3 Legal form	N/A

B.4 Registered address

Registered addess	N/A

Country	N/A
Sub-division	N/A

B.5 Head office

Head office	N/A
Country	N/A
Sub-division	N/A

B.6 Registration date	N/A
B.7 Legal entity identifier	N/A
B.8 Another identifier required pursuant to applicable national law	N/A
B.9 Parent company	N/A

B.10 Members of the management body

Member #1	N/A
Identity	N/A
Business address	N/A
Function	N/A

B.11 Business activity	N/A
B.12 Parent company business activity	N/A

Part C - Information about the operator of the trading platform in cases where it draws up the crypto-asset white paper and information about other

persons drawing the crypto-asset white paper pursuant to Article 6(1), second subparagraph, of Regulation (EU) 2023/1114

C.1 Name	N/A
C.2 Legal form	N/A

C.3 Registered address

Registered address	N/A
Country	N/A
Sub-division	N/A

C.4 Head office

Head office	N/A
Country	N/A
Sub-division	N/A
C.5 Registration date	N/A
C.6 Legal entity identifier	N/A
C.7 Another identifier required pursuant to applicable national law	N/A
C.8 Parent company	N/A
C.9 Reason for crypto-asset white paper preparation	N/A

C.10 Members of the management body	
Member #1	N/A
Identity	N/A
Business address	N/A
Function	N/A
C.11 Operator business activity	N/A
C.12 Parent company business activity	N/A
C.13 Other persons drawing up the crypto-asset white paper according to Article 6(1), second subparagraph, of Regulation (EU) 2023/1114	N/A
C.14 Reason for drawing the white paper by persons referred to in Article 6(1), second subparagraph, of Regulation (EU) 2023/1114	N/A

Part D - Information about other token project

D.1 Crypto-asset project name	Telcoin Association
D.2 Crypto-asset name	Telcoin
D.3 Abbreviation	TEL
D.4 Crypto-asset project description	The Telcoin Platform is a blockchain-based technology ecosystem designed to connect telecom and financial infrastructure with blockchain settlement rails. It aims to enable compliant, low-cost, user-owned financial products.

The platform comprises:
(i) Telcoin Network - an EVM-compatible layer 1 blockchain governed by the Telcoin Association which:
- Implements consensus based on the Narwhal and Bullshark technologies;
- Is validated by GSMA Mobile Network Operators (MNOs)
(ii) Telcoin Application Network (TAN) - the application layer enabling developers to deploy apps that integrate directly with telecom systems;
and (iii) TELx Platform - decentralized liquidity and staking infrastructure supporting on-chain market operations.

The TEL token is the native token of the Telcoin Platform, and will be the gas fee token of the Telcoin Network. Miners (Application Developers, Stakers, Liquidity Miners and Validators) stake TEL as a production and harvesting input on the Telcoin Platform, earn TEL fees from transactions and harvest from flows of TEL issuance.

The quantity of TEL a miner has staked on the platform determines both their TEL earning power and their political power within their Miner Group in Telcoin Platform governance.

The maximum total supply of TEL Tokens is 100,000,000,000.
For the involved persons in relation to the Telcoin platform and the Tokens please refer to field D.5.

D.5 Details of all natural or legal persons involved in implementation of crypto-asset project

Person #1

Type of person	Other person involved in implementation

Name of person	Paul Neuner
Business address of person	520 Broadway, Ste. 200, Santa Monica, California 90401 USA
Domicile of company	United States of America

Person #2

Type of person	Other person involved in implementation
Name of person	Claude Pierre Eguienta
Business address of person	Abi Plaza, 11 Keppel Road, #07-00, Singapore, Singapore 089057
Domicile of company	Singapore

Person #3

Type of person	Other person involved in implementation
Name of person	David Stuart
Business address of person	36-38 Cornhill, London, England EC3V 3NG, United Kingdom
Domicile of company	United Kingdom of Great Britain and Northern Ireland

Person #4

Type of person	Other person involved in implementation
Name of person	Timothy Mahota
Business address of person	

Domicile of company	United States of America

Person #5

Type of person	Other person involved in implementation
Name of person	Parker Spann
Business address of person	1 North Brentwood Blvd., Ste. 1000, St Louis, Missouri 63105 USA
Domicile of company	United States of America

Person #6

Type of person	Other person involved in implementation
Name of person	Jeffrey Quigley
Business address of person	Ebisunishi 1-33-6, JP Noie Ebisunishi 1F, Shibuya, Tokyo 150-0021, Japan
Domicile of company	Japan

Person #7

Type of person	Other person involved in implementation
Name of person	Telcoin Association
Business address of person	c/o Fiduciaria Ortelli SA, Via Greina 2, 6900 Lugano
Domicile of company	Switzerland

Person #8

Type of person	Other person involved in implementation
Name of person	Paul Neuner
Business address of person	Los Angeles
Domicile of company	United States of America

Person #9

Type of person	Other person involved in implementation
Name of person	Telcoin Autonomous Ops Ltd.
Business address of person	71-75 Shelton Street, Covent Garden, London
Domicile of company	United Kingdom of Great Britain and Northern Ireland

D.6 Utility token classification	false
D.7 Key features of goods or services for utility token projects	N/A

D.8 Plans for the token

Description of past milestones	Q4 2017 - Initial Issuance: TEL Token created on Ethereum. Token sale via Initial Coin Offering (ICO). Q3 2020 - Launch of TELx: Decentralized liquidity and staking infrastructure enabling TEL-denominated rewards. Q2 2023: Telcoin Association establishment date Q4 2023 - Unanimous approval of TGIP1: Establishing

	the Telcoin Platform and Association Q3 2023 - Date of the articles of association for Telcoin Association Q2 2024 – Registration of Telcoin Association in Lugano. Q3 2024 - Creation of the Telcoin Association's Operational Subsidiary, Telcoin Autonomous Ops Ltd. ("TAO") Q3 2024 - Inaugural Association Election - First councils voted in by Telcoin Association miner groups via Snapshot. Q2 2025 - Telcoin Network audit competition and fixes Q4 2025 - Initial Telcoin Network GSMA Mobile Network Operator (MNO) Installations begin in preparation for Mainnet launch of Telcoin Network.
Description of future milestones	Q2 2026 - Mainnet launch of Telcoin Network, validated by GSMA MNOs. H2 2026 - Launch of application developer staking on TAN Refer to the project website (www.telcoin.org) and governance forum (forum.telcoin.org) for updated roadmap items.
D.9 Resource allocation	The Telcoin Association maintains governance over network resources and TEL issuance allocations across multiple on-chain councils. The funding source is the TEL Treasury Safe (https://etherscan.io/address/0x2580ccb2be946ad98effa7f4b76148bed319011c).

	Resource allocations include: (i) TELx Council - liquidity incentives and staking rewards; (ii) TAN Council - developer and user issuance programs; (iii) TAO - network infrastructure, core protocol development and administration. (iv) Platform and Treasury councils - funding external service providers. Upon launch of Telcoin Network, a portion of gas fees paid on the network will be destroyed and regenerated to the Treasury Safe in equal quantity.
D.10 Planned use of collected funds or other tokens	The issuer has outlined the intended use of the funds and tokens dedicated to the project's growth - the TEL funds obtained from the 2024 TGIP1 implementation have been used primarily for core development, as well as for business operations and regulatory compliance. The TEL tokens in the Telcoin Association treasury are being deployed to further the network's expansion. According to the issuer, Telcoin Association's purpose is "representing the interests of GSMA Mobile Networks and other stakeholders in maintaining and developing the Telcoin Platform, including software upgrades, network operations, treasury management, and ecosystem growth." (www.telcoin.org)

Part E - Information about offer to public of other tokens or their admission to trading

E.1 Public offering or admission to trading	Admission to trading

E.2 Reasons for public offer or admission to trading	Making secondary trading available in compliance with the MiCA regulatory framework

E.3 Fundraising target

Target expressed in currency	0 EUR
Target expressed in units	0
Target expressed in digital token identifier	N/A

E.4 Minimum subscription goals

Goals expressed in currency	0 EUR
Goals expressed in units	0
Goals expressed in digital token identifier	N/A

E.5 Maximum subscription goals

Goasl expressed in currency	0 EUR
Goals expressed in units	0
Goals expressed in digital token identifier	0
E.6 Oversubscription acceptance	false
E.7 Oversubscription allocation	N/A

Issue price details

E.8 Issue price	0

E.9 Official currency determining issue price	US Dollar
E.9 Any other tokens determining issue price	N/A

E.10 Subscription fee

Fee expressed in currency	0 EUR
Fee expressed in units	0
Fee expressed in digital token identifier	N/A
E.11 Offer price determination method	N/A
E.12 Total number of offered or traded other tokens	100000000000
E.13 Targeted holders	All types of investors
E.14 Holder restrictions	N/A
E.15 Reimbursement notice	
E.16 Refund mechanism	N/A
E.17 Refund timeline	N/A
E.18 Offer phases	N/A
E.19 Early purchase discount	N/A
E.20 Time-limited offer	false
E.21 Subscription period beginning	2026-01-01
E.22 Subscription period end	2026-01-01

E.23 Safeguarding arrangements for offered funds or other tokens	Part E fields 21-29 are not applicable. The Issuer will not conduct an offer of Tokens to the public within the meaning of Article 3 para 1 no 12 MiCAR, so fields are left N/A by design
E.24 Payment methods for other token purchase	N/A
E.25 Value transfer methods for reimbursement	N/A
E.26 Right of withdrawal	NA
E.27 Transfer of purchased other tokens	NA
E.28 Transfer time schedule	N/A
E.29 Purchaser's technical requirements	N/A

Other token services provider characteristics

E.30 Other token service provider (CASP) name	Payward Global Solutions LTD
E.31 CASP identifier	9845003D98SCC2851458
E.32 Placement form	Not applicable

Trading platforms characteristics

E.33 Trading platforms name	Kraken
E.34 Trading platforms market identifier code (MIC)	PGSL
E.35 Trading platforms access	Kraken.com
E.36 Involved costs	N/A

E.37 Offer expenses	N/A
E.38 Conflicts of interest	All listings decisions made by Payward Global Solution Ltd are made independently by staff of the entity in line with internal policies. PGSL publishes a conflict of interest disclosure on its website advising of potential conflicts that may arise.
E.39 Applicable law	Any dispute relating to this white paper shall be governed by and construed and enforced in accordance with the laws of Ireland without regard to conflict of law rules or principles (whether of Ireland or any other jurisdiction) that would cause the application of the laws of any other jurisdiction, irrespective of whether TEL tokens qualify as right or property under the applicable law.
E.40 Competent court	Any disputes or claims arising out of this white paper will be subject to the exclusive jurisdiction of the Irish courts.

Part F - Information about other tokens

F.1 Crypto-asset type	TEL is classified as a crypto-asset other than an asset referenced token or e-money token under MiCA, (EU) 2023/1114.
F.2 Other token functionality	The TEL Token is the native token of the Telcoin Platform and functions as the unit of account and staking asset within the ecosystem. Its primary functionalities are: Protocol unit of account: TEL serves as the denomination for staking amounts, incentive calculations, and transaction fees (once Telcoin Network mainnet is live) across the Telcoin Platform's decentralized applications.

Staking and participation asset: Miners (validators, stakers, liquidity miners, application developers) may stake TEL to support network operations and to qualify for TEL-denominated rewards distributed through council-approved programs (e.g. TELx and TAN). Validator staking will be available upon mainnet launch of Telcoin Network, and application developer staking is in development at the time of whitepaper submission.

Governance participation: Staked TEL contributes to governance weight within the Telcoin Platform, enabling holders to participate indirectly in protocol-level decision processes defined by the Association's on-chain governance framework.

Transfer and storage of value within the ecosystem: TEL can be freely held and transferred.
Despite the above mentioned on-chain utilities, TEL does not meet the definition of "utility token" according to Art. 3(1)(9) MiCA and JC 2024-28, which "means a type of crypto-asset that is only intended to provide access to a good or a service supplied by its issuer." The purpose of TEL is not to gain access to a good or service provided by the issuer. These protocol functions are provided by the decentralised Telcoin Network rather than as contractual services of Telcoin Association.

Any rewards you may receive from staking TEL tokens are generated by the protocol's automated systems and are not guaranteed or promised by Telcoin or any related entity. Reward rates are variable and may change at any time based on network conditions, protocol parameters, and other factors beyond our

	control. These rewards are not consideration, payment, or compensation for your capital investment. Staking TEL tokens does not create an investment contract, and you should not stake with any expectation of profit derived from the efforts of Telcoin or others.
F.3 Planned application of functionalities	The TEL Token is planned to be the native (gas) token of the Telcoin Network, with Mainnet release planned for 2026. (https://www.telcoin.network/) The Telcoin platform is planned to enable application developer staking in 2026. Please refer to the project website (www.telcoin.org) and governance forum (forum.telcoin.org) for updated roadmap items.

A description of the characteristics of the other token, including the data necessary for classification of the crypto-asset white paper in the register referred to in Article 109 of Regulation (EU) 2023/1114, as specified in accordance with paragraph 8 of that Article

F.4 Type of crypto-asset white paper	Other crypto-asset token white paper
F.5 Type of submission	New
F.6 Other token characteristics	TEL is a fungible digital token. It conforms to the ERC-20 standard on Ethereum, meaning that each token is of equal value and interchangeable. It is divisible up to 2 decimal places.
F.7 Commercial name or trading name	Telcoin (TEL)
F.8 Website of the issuer	https://www.telcoin.org/
F.9 Starting date of offer to the public or admission to trading	2026-02-02
F.10 Publication date	2026-01-13

F.11 Any other services provided by the issuer	N/A
F.12 Language or languages of white paper	English
F.13 Digital token identifier code used to uniquely identify the crypto-asset or each of the several crypto assets to which the white paper relates, where available	VJVXNCJH1
F.14 Functionally fungible group digital token identifier, where available	Q95MMRGRC
F.15 Voluntary data flag	false
F.16 Personal data flag	true
F.17 LEI eligibility	true
F.18 Home member state	Ireland
F.19 Host member states #1	Austria
F.19 Host member states #2	Belgium
F.19 Host member states #3	Bulgaria
F.19 Host member states #4	Croatia
F.19 Host member states #5	Cyprus
F.19 Host member states #6	Czechia
F.19 Host member states #7	Denmark
F.19 Host member states #8	Estonia
F.19 Host member states #9	Finland

F.19 Host member states #10	France
F.19 Host member states #11	Germany
F.19 Host member states #12	Greece
F.19 Host member states #13	Hungary
F.19 Host member states #14	Iceland
F.19 Host member states #15	Ireland
F.19 Host member states #16	Italy
F.19 Host member states #17	Latvia
F.19 Host member states #18	Liechtenstein
F.19 Host member states #19	Lithuania
F.19 Host member states #20	Luxembourg
F.19 Host member states #21	Malta
F.19 Host member states #22	Netherlands
F.19 Host member states #23	Norway
F.19 Host member states #24	Poland
F.19 Host member states #25	Portugal
F.19 Host member states #26	Romania
F.19 Host member states #27	Slovakia
F.19 Host member states #28	Slovenia

F.19 Host member states #29	Spain
F.19 Host member states #30	Sweden

Part G - Information on rights and obligations attached to other tokens

G.1 Purchaser rights and obligations	The TEL Token does not convey any financial, ownership, or other rights against the Telcoin Association, Telcoin Autonomous Ops Ltd., or any affiliated entity. In particular, the Token does not grant: – Any redemption right or repayment claim; – Any right to receive dividends, interest, or other distributions of assets or funds; – Any ownership, profit-sharing, or participation rights in the Telcoin Association, its subsidiaries, or any part of the Telcoin Platform. Holding TEL Tokens does not entail any obligations toward the issuer or its affiliates. However, holders remain responsible for complying with any applicable laws, including tax or reporting obligations arising from their own jurisdiction. While not constituting rights against the issuer, holders may use the functional capabilities of TEL within the Telcoin Platform as described under fields F.2 and F.3. These include: – The ability to hold and transfer TEL between compatible wallets; – Notwithstanding the ability to stake TEL within approved network programs (e.g. TELx and TAN) to earn TEL-denominated rewards, and the ability to participate, through staking weight, in on-chain governance processes defined by the Telcoin Association, TEL does not provide any expectation of

profit and the Telcoin Association does not have discretion over any returns received in connection with the token as such remittances are in connection with the services provided by the TEL holder to govern and operate the network.
– The ability to participate, through staking weight, in on-chain governance processes defined by the Telcoin Association.

These functionalities are enabled by the protocol and may evolve, be amended, or discontinued by decisions adopted under the Telcoin Association's governance framework. No guarantee is provided that any specific functionality will remain available indefinitely.

G.2 Exercise of rights and obligations

As the TEL Token does not grant contractual or financial rights against the issuer, there are no rights or obligations requiring formal exercise vis-à-vis the Telcoin Association or any affiliated entity.
Any use of TEL's protocol functionalities is carried out directly on-chain and governed by the relevant smart contracts and network rules of the Telcoin Platform. In practice:
– Holding and transfer of TEL are effected by sending transactions through supported wallets on compatible networks (currently Ethereum, and subsequently the Telcoin Network once launched).
– Staking and reward participation are executed by interacting with authorised smart contracts or interfaces approved by the Telcoin Association's councils.
– Governance participation is conducted via on-chain or delegated voting mechanisms defined by the Telcoin Association's governance framework (e.g. through Snapshot or other approved systems).
All such actions are technical interactions with the protocol, not contractual exercises of rights. Their availability and parameters may change from time to time in accordance with network upgrades or

	governance decisions adopted under the Telcoin Association's framework.
G.3 Conditions for modifications of rights and obligations	The rights and obligations attached to TEL as described in this white paper reflect information available at the time of issuance. This white paper is issued by Telcoin Association and does not constitute a commitment or guarantee by the Telcoin Association or any other party regarding future modifications. No promises, warranties, or assurances are made herein regarding future token functionality, and this section is provided solely for informational purposes. Any future changes to protocol functionality will be carried out under Telcoin Association's governance framework and will be reflected in updated public documentation.
G.4 Future public offers	No future public offers of TEL have been announced
G.5 Issuer retained other token	7422764633
G.6 Utility token classification	false
G.7 Key features of goods or services utility tokens	N/A
G.8 Utility tokens redemption	N/A
G.9 Non-trading request	true
G.10 Other tokens purchase or sale modalities	N/A
G.11 Other tokens transfer restrictions	Kraken may, in accordance with applicable laws and internal policies and terms, impose restrictions on buyers and sellers of these tokens.
G.12 Supply adjustment protocols	false
G.13 Supply adjustment mechanisms	N/A

Other token schemes details

G.14 Token value protection schemes	false
G.15 Token value protection schemes description	N/A
G.16 Compensation schemes	false
G.17 Compensation schemes description	N/A
G.18 Applicable law	Any dispute relating to this white paper shall be governed by and construed and enforced in accordance with the laws of Ireland without regard to conflict of law rules or principles (whether of Ireland or any other jurisdiction) that would cause the application of the laws of any other jurisdiction, irrespective of whether TEL tokens qualify as right or property under the applicable law.
G.19 Competent court	Any disputes or claims arising out of this white paper will be subject to the exclusive jurisdiction of the Irish courts.

Part H – Information on underlying technology

H.1 Distributed ledger technology (DTL)	TEL is implemented on Ethereum (as an ERC-20 token). Ethereum is a public, decentralized ledger that now operates on a Proof-of-Stake consensus, providing a secure and widely adopted environment for TEL transactions.
H.2 Protocols and technical standards	Telcoin Network and the TEL token operate on protocols and technical standards ensuring interoperability, security, and compatibility across EVM blockchain networks. Standard fungible token interface with transfer, approve,

and allowance functions, event emission for transaction tracking and indexing.
NatSpec for smart contract documentation, OpenAPI for API documentation, Markdown for technical specifications, Inline code documentation requirements.

The Telcoin Network, upon mainnet release, will also feature:

Support for all Ethereum token standards through Pectra fork: ERC-721 for non-fungible tokens, ERC-1155 for multi-token contracts, ERC-2612 for gasless permit approvals, ERC-4626 for tokenized vault standards

Communication Layer - P2P Protocol: libp2p with QUIC over UDP transport, Message Encoding: RLP (Recursive Length Prefix) for data serialization and BCS (Binary Canonical Serialization) for consensus messages between validators, Network Discovery: Kademlia DHT for peer discovery

Blockchain protocol standards - EVM Compatibility: Full Ethereum Virtual Machine support through Pectra fork, State Transition: Deterministic state machine replication, Narwhal/Bullshark for ordering transactions for execution, Finality Rule: Instant finality upon block commitment

Cryptographic Standards - Hashing Algorithm: BLAKE3 and Keccak-256 (SHA-3 variant), Transaction Signatures: ECDSA on secp256k1 curve, Network Encryption: TLS 1.3 for secure communication

Supported Transaction Types - Type 0: Legacy transactions, Type 1: EIP-2930 access list transactions, Type 2: EIP-1559 base fee transactions, Type 3: EIP-4844 blob transactions, Type 113: EIP-7702 account abstraction

Transaction Formats - RLP-encoded transaction data, ECDSA signature with v, r, s components, Chain ID replay protection, Nonce-based ordering

Smart Contract Standards - Execution Environment: EVM bytecode execution, ABI Encoding: Ethereum standard ABI v2, Compiler Support: Solidity ^0.8.0, Vyper, Library Standards: OpenZeppelin contract compatibility, Proxy Patterns: EIP-1967 transparent proxy standard

API and RPC Standards - JSON-RPC 2.0 Compatibility, Ethereum standard RPC methods (eth_, net_, web3_*), WebSocket subscription support for event streaming, Batch request processing, Error code standardization per EIP-1474

- Compliance Standards - GSMA Standards: Mobile Network Operator certification requirements, Open Gateway API: Telecom service integration standards, ISO Standards: ISO 27001 for information security management, W3C Standards: DID specifications for identity

- Open Source Standards - Licensing: MIT and Apache 2.0 dual licensing, Repository Structure: Monorepo with standardized tooling, Contribution Guidelines: DCO (Developer Certificate of Origin), Security Disclosure: Responsible disclosure with 90-day embargo, Release Process: Tagged releases with checksums and signatures

H.3 Technology used

The TEL token leverages multiple technological layers for secure holding, storage, and transfer of assets across blockchain networks.

Multi-Chain Architecture: TEL tokens operate across

Ethereum and other EVM-compatible chains through standardized bridge protocols. Cross-chain transfers utilize cryptographic security ensuring total supply consistency of 100,000,000,000 tokens across all supported networks.

Wallet and Account Management: Users hold TEL tokens using standard Ethereum-compatible wallets. Transactions are executed and validated securely using elliptic curve cryptography.
Account Abstraction Support: While not natively implemented, the Telcoin Network will support account abstraction features through EIP-7702 compatibility, enabling enhanced functionality such as sponsored gas payments, batched operations, and programmable account logic for improved user experience.

Storage Architecture: The Telcoin Network will utilize on-chain data availability with a DAG-based storage structure through the Narwhal mempool protocol, providing:
- Full transaction data stored on-chain for maximum transparency and security
- Parallel transaction processing and storage across validator nodes
- Causal ordering of transaction histories with cryptographic guarantees
- Certificate-based data availability guarantees from 2f+1 validators
- Merkle Patricia Tree state management for efficient verification

Transfer Mechanisms: TEL transfers support all Ethereum transaction types up to the Pectra fork, including:
- Legacy transactions (Type 0)
- EIP-2930 access list transactions
- EIP-1559 dynamic fee transactions

- EIP-7702 account abstraction transactions
- EIP-4844 blob transactions for enhanced data availability

EVM Compatibility Layer: Full Ethereum Virtual Machine compatibility ensures TEL tokens integrate seamlessly with existing DeFi infrastructure, supporting standard token operations, smart contract interactions, and all decentralized applications in the Ethereum ecosystem.

Private Key Management: Users maintain sole custody of their private keys using industry-standard ECDSA signatures on the secp256k1 curve, with no centralized key management or recovery mechanisms controlled by the issuer.

Cryptography: Telcoin Network will use elliptic curve cryptography to validate data, execute transactions, and verify messages. The protocol uses keccak-256 (SHA-3 variant) and blake3 for hashing. Digital signatures for transactions use ECDSA with the secp256k1 and secp256r1 curves. Consensus messages will use BLS (Boneh-Lynn-Shacham) signatures to aggregate votes and settle transactions.

H.4 Consensus mechanism

Telcoin Network will implement a hybrid Proof-of-Stake (PoS) and Byzantine Fault Tolerant (BFT) consensus mechanism utilizing the Narwhal mempool and Bullshark consensus protocols.

Narwhal-Bullshark Architecture: The consensus system separates transaction dissemination from ordering through a DAG-based approach:
- Narwhal Mempool: Handles high-throughput reliable dissemination and storage of causal transaction histories.
- Bullshark Consensus: Provides deterministic

agreement on transaction ordering with instant finality, operating without view-change or view-synchronization mechanisms

Validator Participation: GSMA-certified Mobile Network Operators serve as validators, each required to stake 1,000,000 TEL tokens. Validators participate in:
- Block proposal and validation rounds
- Certificate generation requiring 2f+1 signatures for validity
- Local DAG construction through reliable broadcast protocols

Security Properties: The system tolerates up to f < n/3 Byzantine validators while maintaining:
- Safety: No two honest validators commit conflicting blocks
- Liveness: Transactions are eventually included and finalized even under asynchrony
- Instant Finality: Blocks achieve irreversible finality upon consensus without requiring multiple confirmations
- Censorship Resistance: Mandatory inclusion of at least 50% honest validator blocks in any proposal

Byzantine Fault Tolerance The Bullshark protocol ensures consensus when up to one-third of validators are malicious or offline (byzantine):
- Asynchronous safety guarantees under network partitions
- Deterministic finality without probabilistic confirmation
- No fork possibility once blocks are finalized
- Automatic recovery from temporary network failures

H.5 Incentive mechanisms and applicable fees	Telcoin Network will employ an incentive structure to secure transactions and maintain network operations while ensuring long-term sustainability. Transaction Fee Structure - TEL will serve as the native

gas token for all network operations. Transaction fees are calculated based on:
- Computational execution costs (gas units consumed)
- State storage requirements
- Network bandwidth utilization
- Consensus participation overhead
Fees dynamically adjust based on network congestion using an EIP-1559-style mechanism, providing predictable costs while preventing spam.

Fee Burning and Reminting Mechanism - All transaction fees collected are burned, reducing circulating supply. An equivalent amount of TEL is reminted to the governance treasury, creating a sustainable model for:
- Future block reward distribution
- Network development funding
- Ecosystem growth initiatives
- Long-term validator incentives
This mechanism ensures no net inflation from transaction activity while maintaining treasury sustainability.

Validator Rewards - Validators earn rewards through multiple mechanisms:
- Consensus Participation: TEL issuance from annual governance-approved allocation
- Priority fees: Users that volunteer to pay a premium to have their transaction prioritized for inclusion in the next block

Annual Issuance Governance - TEL issuance rates are determined through decentralized governance annually:
- Governance proposals determine total annual issuance
- Distribution allocations across Miner Groups voted by TEL holders
- Transparent on-chain execution of approved issuance schedules

- Maximum supply cap of 100,000,000,000 TEL enforced by protocol

Miner Group Incentive Distribution - Four specialized groups participate with distinct reward mechanisms:
(i) Application Developers:
- Earn based on transaction volume generated
- Rewards proportional to gas consumption by deployed contracts
- Incentivizes useful application development
(ii) Stakers:
- Receive proportional share of staking rewards
- No infrastructure requirements
- Compounds automatically unless withdrawn
(iii) Liquidity Miners:
- Harvest rewards for providing liquidity to designated pools
- Additional trading fee earnings from AMM participation
- Rewards calculated based on liquidity depth and duration
(iv) Validators:
- Primary recipients of block production rewards
- Earn largest share due to infrastructure requirements
- Additional rewards for consistent uptime and performance

Slashing Mechanisms - Governance-enforced penalties ensure network security. Validators can be revoked at any time for failing to adhere to rules.

Economic Security Model - The incentive structure ensures:
- Cost of attack exceeds potential benefits
Honest participation is more profitable than malicious behavior
Long-term alignment through staking requirements
Sustainable rewards through fee recycling mechanism

H.6 Use of distributed ledger technology	false
H.7 DLT functionality description	N/A

Other token audit details

H.8 Audit	true
H.9 Audit outcome	Telcoin Network has undergone multiple security audits as part of its commitment to launching with maximum security assurance. Initial protocol audits were conducted by Spearbit/Cantina in June and July 2025, covering both the core protocol implementation and associated smart contracts. Additionally, the TEL token contracts have been subject to multiple independent audits through Sherlock. Many more audits are planned to ensure maximum security through diverse security researcher backgrounds. Initial Telcoin Network Audit Findings and Remediation The Spearbit/Cantina initial audit of the Telcoin Network identified the following findings: - Critical: 0 findings - High: 19 findings (all addressed) - Medium: 24 findings (all addressed) - Low: 45 findings (31 validated and addressed; 14 determined invalid by the core protocol team following thorough review) - Informational: Various recommendations incorporated into development practices All validated findings were remediated immediately upon receipt of the audit reports. As this was a preliminary audit conducted before production deployment, no user funds were at risk. The findings primarily related to code optimization, edge case handling, and defensive programming improvements typical of pre-production security reviews. The core protocol has scheduled several other security

assessments focused on critical areas of the program for near-future dates. All findings will be addressed or acknowledged before updating the protocol.

TEL Token Audit History
The TEL token smart contracts have undergone multiple security audits through Sherlock, with all identified vulnerabilities resolved prior to deployment. These audits have covered token functionality, bridge implementations, and integration points across supported networks including Ethereum and Polygon.

Ongoing Security Assessment Program
Security auditing is treated as a continuous process rather than a one-time checkpoint. Telcoin Network prioritizes a robust security program including:
- Pre-Production Audits: Several additional private security audits are scheduled before mainnet launch to ensure all components meet the highest security standards
- Upgrade Audits: Mandatory security reviews before any major protocol upgrades or significant smart contract deployments
- Component Rotation: Different system components undergo targeted audits on a rotating basis to maintain comprehensive coverage
- Bug Bounty Program: Active vulnerability disclosure program incentivizing security researchers to identify potential issues
- Internal Security Reviews: Continuous internal code review and security assessment processes
- Automated Security Scanning: Integration of automated vulnerability detection tools in the development pipeline

Public Transparency
All public audit reports are available on the Telcoin Network website (https://telcoin.network/).

Telcoin Association maintains a commitment to transparency by publishing audit results while protecting sensitive security details that could be exploited before remediation.

Security-First Development Philosophy
Telcoin Network operates under a security-first development philosophy where code is deployed only when security requirements are satisfied, not when development timelines demand. This approach prioritizes the protection of user assets and network integrity above speed to market, ensuring that when the network launches for production use, it does so with maximum security assurance.
Additional audits are planned for all protocol changes and smart contract modifications in the coming months, with particular focus on:
- Consensus mechanism implementation
- Cross-chain bridge security
- Governance contract architecture
- Publicly exposed entry points
- Token economic mechanisms
- Audit Limitations and Continuous Improvement

While comprehensive security audits significantly reduce risk and have identified important improvements, it is acknowledged that no audit process can guarantee the complete absence of vulnerabilities. Security assessments provide a point-in-time evaluation based on current knowledge and techniques. The Telcoin Network therefore maintains multiple layers of security controls, continuous monitoring, and rapid response capabilities to address any issues that may emerge despite thorough auditing.
The protocol benefits from ongoing security research, with each audit building upon previous assessments to create cumulative security improvements. This iterative approach, combined with formal verification techniques

where applicable and extensive testing, provides multiple independent validations of system security.

Remediation and Response Protocols
Telcoin Association has established clear protocols for addressing audit findings:
- Immediate triage and validation of all reported issues
- Priority-based remediation with critical and high-severity findings addressed first
- Technical review to distinguish valid vulnerabilities from false positives
- Implementation of fixes with accompanying test coverage
- Re-audit of remediated code where appropriate
- Documentation of security decisions and trade-offs
This systematic approach ensures that security assessment outcomes translate into meaningful security improvements.

Part I - Information on risks

I.1 Offer-related risks

General Risk Factors Associated with Crypto-Asset Offerings
The admission to trading of crypto-assets, including TEL, is subject to general risks inherent to the broader cryptocurrency market.

Market Volatility
The value of TEL may experience substantial fluctuations driven by investor sentiment, macroeconomic developments, and market conditions.

Regulatory Risks
Changes in legislation, applicable laws, compliance requirements or the implementation of new regulatory frameworks could affect the availability, trading, or use of such assets.

	Security Risks The risk of exploitation, hacking or security vulnerabilities of the underlying protocol and/or contracts of the token leading to a loss. Reputational Risks The potential for damage to an organization's credibility or public trust, which can negatively impact stakeholder confidence and overall business viability.
I.2 Issuer-related risks	Insolvency Risk: As with any organization, there is a risk of insolvency of the Telcoin Association or its subsidiaries. The Association does not hold segregated assets for Token holders, and the TEL Token does not represent a claim against the Association or any affiliated entity. In the event of insolvency, Token holders would not have any priority rights or recourse to the Association's assets. Insolvency could also impair the continuity of governance and operational functions, including Council administration, maintenance of governance portals, or public repositories. Funding and Sustainability Risk: The Telcoin Association is a not-for-profit entity that relies on its treasury reserves. Insufficient or delayed funding, whether due to market conditions, governance decisions, or loss of key contributors, may affect the Association's ability to maintain operations, fulfill its governance role, or continue protocol development and support. Operational Risk: Failures or deficiencies in internal processes, human error, technology systems, or smart contract vulnerabilities could affect the functioning of the Telcoin Platform or Network. Cyber incidents, key loss, or blockchain disruptions could impair operations, data

integrity, or governance coordination, potentially leading to reputational harm or interruption of services.
Counterparty and Dependency Risk:
The Association depends on third-party service providers and contractors for technical infrastructure, audits, security reviews, and software development. The insolvency, default, or misconduct of such third parties could result in operational disruptions, delays, or financial losses that affect the Association's activities.

Legal and Regulatory Risk:
The Telcoin Association and its affiliates operate in multiple jurisdictions subject to evolving regulatory frameworks. Changes in applicable laws, interpretations, or enforcement priorities could impose restrictions or obligations on the Association's activities, governance processes, or funding mechanisms. This may affect the Association's ability to fulfill its mandate or support the continued operation of the Telcoin Platform and Network.
Reputational Risk:
Negative publicity, governance disputes, or perceived association with illicit activity, operational failures, or non-compliance could harm the reputation of the Telcoin Association and, by extension, confidence in the Telcoin ecosystem.

Competition and Ecosystem Risk:
The Association operates within a highly competitive and rapidly evolving blockchain environment. Alternative protocols, technological innovations, or competing governance models could reduce network participation or relevance of the Telcoin Platform, indirectly affecting the perceived utility or demand for TEL.

Unanticipated Risks:
Other risks may exist that cannot currently be foreseen.

Unanticipated variations or combinations of the above risks may also occur, leading to adverse effects on the Issuer, the Telcoin Platform, or the value and usability of the TEL Token.

I.3 Other tokens-related risks

Risk of Functional Limitation or Discontinuation
The TEL Token does not confer any contractual rights against the Telcoin Association or any affiliate. All functions of TEL - such as staking, participation in governance, or use within Telcoin applications - exist solely by virtue of the relevant smart contracts and governance framework. These functionalities may be modified, reduced, or discontinued by governance decisions or protocol upgrades. Any such change could negatively affect the usability or value of TEL.

Technological and Smart-Contract Risk
The Telcoin Platform and its associated contracts operate on distributed ledger technology. Software errors, vulnerabilities, or exploits in the smart contracts, validator software, or underlying infrastructure could result in malfunction, loss of tokens, or other adverse outcomes. There is no guarantee that discovered vulnerabilities can be corrected in time to prevent loss.

Network Launch and Operational Risk
As of the date of this white paper, the Telcoin Network mainnet has not yet been launched. Delays, technical issues, or unforeseen challenges in network deployment or validator participation could impact the timing or availability of TEL functionalities.

Custody and Key Management Risk
Control over TEL Tokens depends on possession of private keys. Loss, theft, or compromise of private keys or recovery phrases - whether through user error, phishing, malware, or custodial failure - can result in permanent loss of access to TEL. The Telcoin

Association has no ability to recover lost tokens.

Market Volatility and Liquidity Risk
The market value of TEL is determined entirely by supply and demand on secondary markets. Crypto-asset markets are highly volatile and may experience rapid price movements or periods of limited liquidity. TEL holders may be unable to sell tokens at desired times or prices and may incur total loss of invested value.

Regulatory and Legal Risk
Regulatory frameworks applicable to crypto-assets continue to evolve. Changes in laws, regulations, or supervisory interpretations could restrict or prohibit the use, transfer, or trading of TEL in certain jurisdictions. Divergent treatment of crypto-assets across non-EU countries could also affect accessibility or market value.

Governance and Decentralization Risk
Although governance decisions on the Telcoin Platform are implemented through defined council structures and on-chain processes, concentration of participation or low voter engagement could reduce effective decentralization. Disputes or coordination failures among governance participants may delay or prevent protocol updates.

Counterparty and Exchange Risk
Trading TEL on centralized or decentralized exchanges involves exposure to third-party operational, security, and solvency risks. Failures, insolvency, or unlawful conduct by such intermediaries may result in loss of tokens or inability to access markets.

Security and Cyber-Attack Risk
Blockchain networks and associated infrastructure are targets for hacking, denial-of-service attacks, and other malicious activities. Successful attacks on the Telcoin

Platform, validators, or integrated service providers could compromise data integrity or result in token losses.

Reputational and Adoption Risk
Public perception, misinformation, or negative media coverage of Telcoin or the wider crypto-asset sector may reduce confidence and adoption, adversely impacting the market value and utility of TEL.

Taxation and Accounting Risk
Tax treatment of crypto-assets varies across jurisdictions and remains subject to change. Holders are solely responsible for understanding and complying with applicable tax obligations arising from holding or transferring TEL.

Environmental and Sustainability Risk
Although the Telcoin Network is designed to operate on a Proof-of-Stake consensus mechanism with comparatively low energy usage, broader environmental, social, or governance (ESG) concerns related to blockchain technologies could affect public or regulatory acceptance of the network.

General Economic and Market Risk
Broader economic conditions - including changes in interest rates, inflation, or macro-financial instability - can influence investor sentiment toward digital assets, leading to unpredictable price impacts on TEL.

Unknown and Undisclosed risks
Due to the ever changing nature of technology and applicable law, it is possible that there exists material risks that the firm has not become aware of or has not adequately assessed or addressed. In addition due to limited operational resources it is possible that known risks are not adequately avoided or mitigated.

I.4 Project implementation-related risks

Operational and Execution Risk
The development and deployment of the Telcoin Network and associated smart-contract systems are complex undertakings involving multiple technical and organizational contributors. Delays, software defects, or coordination issues between development teams or vendors could postpone network milestones or temporarily impair functionality.

Dependence on Key Personnel and Contributors
The Telcoin Platform relies on the continued engagement of experienced engineers, auditors, and governance participants. Loss of key personnel, or insufficient onboarding of new contributors, could slow progress, reduce innovation capacity, or delay maintenance and upgrades.

Funding and Resource Risk
The project's ongoing operation and maintenance depend on the prudent allocation of resources from the Telcoin Association's treasury and council budgets. A significant adverse change in available funding, market conditions, or council priorities could affect the ability to sustain long-term development or external service relationships.

Governance and Coordination Risk
The Telcoin Association operates through multiple councils responsible for specific mandates. Disagreement, procedural inefficiency, or low participation within these councils could hinder timely decision-making on protocol updates or funding approvals.

Third-Party Dependency Risk
The Telcoin Platform depends on third-party infrastructure and service providers - including cloud, node-hosting, auditing, and marketing partners.

Disruptions, contractual disputes, or non-performance by such providers could impact service continuity or delay planned integrations.

Regulatory and Compliance Risk for Implementation
Changes in applicable legal or regulatory frameworks governing blockchain networks, data protection, or financial services could require modifications to network design, validator participation, or user-access models, potentially delaying implementation.

Sanctions and AML Compliance Risk
Despite due-diligence and screening procedures, there remains a residual risk that participation in governance, staking, or incentive programs could involve parties later identified as subject to sanctions or AML restrictions. Any such occurrence could result in reputational harm or operational interruptions while compliance measures are reassessed.

Decentralization and Transition Risk
The project's roadmap contemplates progressive decentralization of network governance and operations. If this transition proceeds slower than planned, or without sufficient security testing, it could delay the full realization of the project's intended governance model and risk management structure.

I.5 Technology-related risks

Network Architecture and Consensus Risks
The Telcoin Network will implement a consensus protocol based on the Narwhal and Bullshark design, combined with Proof-of-Stake validator participation. While this design aims to provide high throughput and deterministic finality, it remains a relatively novel approach and has not yet been proven under mainnet conditions at economies of scale. Undetected implementation errors, validator misconfiguration, or unexpected consensus behaviour could disrupt block

finalization or transaction confirmation.

Validator Participation and Liveness Risk
The Telcoin Network's security and performance will depend on active participation by Mobile Network Operators (MNOs) and other approved validators. Insufficient validator participation, temporary outages, or network partitioning could degrade performance or halt block production. Malicious or colluding validators could undermine network consensus or temporarily censor transactions until governance action restores normal operation.

Smart-Contract and Protocol Upgrade Risk
The Telcoin Platform relies on multiple smart contracts governing staking, issuance, and governance functions. Vulnerabilities, bugs, or misconfigurations in these contracts could lead to unintended behaviour, including incorrect issuance, fund lock-ups, or loss of access to rewards. Upgrades or deployments of new contracts, if improperly tested or executed, could introduce compatibility issues or security vulnerabilities.

Interoperability and Bridging Risks
Until migration to the native Telcoin Network, TEL Tokens exist on Ethereum. Bridging between networks involves smart-contract and cross-chain risks, including potential bugs in bridge contracts, replay attacks, or temporary inconsistencies in token supply across chains. Any failure or compromise of bridging infrastructure could result in loss or duplication of tokens.

Cybersecurity and Infrastructure Risk
The Telcoin Network and associated components may be targeted by denial-of-service (DoS) attacks, validator compromise, or unauthorized access to administrative keys. Compromised validator nodes or RPC endpoints

could temporarily disrupt network operations or degrade reliability. Although security audits and monitoring processes are planned, complete protection against such attacks cannot be guaranteed.

Data Availability and Network Partition Risk
As a distributed network, Telcoin Network will depend on continuous communication among validator nodes. Network latency, regional outages, or partitioning events could delay block propagation and transaction finality. Extended partitions could temporarily result in inconsistent state views across nodes until consensus is re-established.

Cryptographic and Technological Obsolescence Risk
The security of the Telcoin Network will depend on current cryptographic primitives (e.g., elliptic-curve cryptography). Future advances in quantum computing or cryptanalysis could weaken these assumptions, requiring network-wide updates to preserve security. Implementation of cryptographic migration procedures may be complex and time-consuming.

Dependency on External Technologies and Providers
The Telcoin Network will rely on supporting infrastructure such as node-hosting environments, oracles, and development tools. Failures or incompatibility in any of these systems may affect network reliability or availability.

Forking and Upgrade Coordination Risk
Disagreements among validators or governance participants may result in divergent protocol versions ("forks"), leading to potential duplication of the ledger and associated tokens. Forks can reduce interoperability and harm confidence in the Telcoin ecosystem.

Irreversibility of Transactions
Transactions on the Telcoin Network, once confirmed, will be irreversible. Mistaken transfers, errors in destination addresses, or unauthorized transactions cannot be reversed or cancelled by the issuer.

Evolving Technology and Integration Risk
Blockchain technologies evolve rapidly. Future technical standards, regulatory requirements, or market expectations may necessitate modifications to the Telcoin Network's architecture, potentially causing temporary service disruption or incompatibility with existing applications.

I.6 Mitigation measures

Independent Audits and Security Reviews
The Telcoin Association commissions independent third-party audits and security assessments of core smart contracts, validator software, and protocol components prior to mainnet deployment and before any material upgrade. These reviews are intended to identify vulnerabilities and confirm adherence to best practices in smart-contract and network security. Following each security assessment, the Association ensures that all valid vulnerabilities identified are remediated to the extent technically and economically feasible, prioritizing critical and high-severity findings while addressing lower-severity issues based on risk assessment and practical implementation constraints.

Continuous Monitoring and Incident Response
Post-deployment, the Telcoin Platform will implement on-chain monitoring and validator performance analytics to detect anomalies, irregular transactions, or validator downtime. The Telcoin Autonomous Ops Ltd. (TAO) maintains operational authority to coordinate emergency responses and report incidents to the relevant Association councils for mitigation or protocol freeze if required.

Governance Oversight and Change Control
All protocol-level upgrades, including contract deployments and parameter adjustments, are subject to council approval under the Telcoin Association governance framework. This layered governance structure distributes decision-making authority across specialized councils (e.g., Platform, Treasury, TELx, TAN), reducing concentration of control and the likelihood of unilateral or malicious upgrades. Additionally, all code is open sourced.

Validator Vetting and Decentralization Measures
Validator onboarding follows compliance and security screening procedures, with initial participants expected to include GSMA-affiliated Mobile Network Operators and approved partners. Progressive decentralization and staking-based participation are designed to enhance resilience and reduce single-operator risk over time.

Ongoing Security Programs
The Association plans to maintain periodic code reviews, structured bug bounty programs, and penetration testing on critical infrastructure. Findings and remediations are tracked through internal reporting processes and may be publicly disclosed where appropriate to support transparency.

Cryptographic Agility and Upgrade Planning
The Telcoin Network design allows for modular replacement of cryptographic primitives should advances in computing (e.g., quantum threats) compromise current standards. Telcoin Network uses blake3 and DAG-based structures (Directed Acyclical Graph) for consensus data, which is considered secure post-quantum. Governance-defined migration

	procedures will enable controlled cryptographic upgrades if required.

Part J - Information on the sustainability indicators in relation to adverse impact on the climate and other environment-related adverse impacts

J.1 Adverse impacts on climate and other environment-related adverse impacts	N/A

Mandatory information on principal adverse impacts on the climate and other environment-related adverse impacts of the consensus mechanism

General information about adverse impacts

S.1 Name	Telcoin Association
S.2 Relevant legal entity identifier	5067005DH2B5Z9W29038
S.3 Name of the crypto-asset	Telcoin (TEL)
S.4 Consensus mechanism	While the Telcoin Network is not yet live, it will implement a Byzantine Fault Tolerant (BFT) consensus mechanism based on the Narwhal mempool and Bullshark consensus protocols, designed to ensure deterministic finality while maintaining the security and integrity of digital assets under user control. More information is provided below. Validator Selection and Committee Formation The network employs a membership-based validator model where eligible participants must be approved and issued a non-fungible token (NFT) that grants permission to stake on the Telcoin Network. This membership approach ensures that only qualified and vetted entities participate in consensus while maintaining decentralization through multiple

independent operators.
Validators are randomly selected for participation in consensus committees through a verifiable random function derived from the aggregate BLS signature of validators from the leader certificate that produced the last block at the end of each epoch. This cryptographically secure randomness ensures fair and unpredictable validator selection, preventing any single entity from manipulating committee composition. Validators are selected two epochs in advance, providing predictability for operational planning while maintaining security through random selection.

Byzantine Fault Tolerance and Security Guarantees
The consensus mechanism tolerates Byzantine failures of up to $f < n/3$ validators, where n represents the total number of participating validators. This threshold ensures that the network maintains both safety and liveness properties under normal operating conditions. The network requires a minimum of four validators to maintain consensus operations, providing a practical lower bound for network functionality while ensuring sufficient decentralization.
The Directed Acyclic Graph (DAG) structure employed by the Narwhal-Bullshark protocol commits sequences of certified transactions locally in a deterministic manner. All validators execute transactions based on this deterministically agreed order of settlement, ensuring consistency across the network. Finality is achieved through cryptographic attestations from 2f+1 validator signatures, providing mathematical certainty that confirmed transactions cannot be reversed under normal protocol operation.

Validator Lifecycle Management
The protocol implements procedures for validator entry and exit to maintain network stability. Validators meeting the minimum stake threshold of 1,000,000 TEL tokens

and possessing the required NFT membership can participate in consensus. The stake requirement represents membership eligibility rather than voting weight, ensuring equal participation rights among validators regardless of stake size above the minimum threshold.

Validators may indicate their intention to exit the protocol at any time, transitioning to a "pending exit" status. Exit procedures are coordinated to ensure network stability: if sufficient validators remain staked to maintain the minimum consensus threshold, the exiting validator transitions to "exit" status and becomes ineligible for future committee selection. Validators not selected for either of the next two epochs may exit immediately, while those scheduled for upcoming epochs must complete their commitments before departure or face economic penalties.

Network Resilience and Recovery Mechanisms

The consensus mechanism prioritizes security and asset integrity over continuous availability. In scenarios where more than one-third of validators become simultaneously unavailable, the network halts block production to preserve blockchain integrity rather than risk inconsistent state transitions. This design choice ensures that user assets remain secure and under user control even during extreme network disruptions.

Recovery procedures include bootstrap nodes and diverse peer networks that assist struggling nodes in maintaining connectivity. All execution data undergoes validation during consensus to prevent network partitions following state changes. Off-chain monitoring systems alert network operators to anomalies, enabling rapid response including node restoration, security policy updates, and coordinated recovery procedures when necessary.

The protocol includes safeguards against uncoordinated validator exits. Validators are expected to communicate

their intention to depart, allowing governance processes to coordinate replacement validators. Should a validator attempt forced exit without proper coordination by independently ceasing operations, their staked tokens are subject to forfeiture, incentivizing responsible participation and network stability.

Cryptographic Verification and Trust Model

The network employs BLS signatures for efficient aggregation and verification of validator attestations. Validator BLS public keys are stored on-chain, enabling any observer with knowledge of the genesis state to independently verify current and future committee compositions without requiring trust in any centralized authority. Merkle proofs combined with BLS signatures allow independent validation of data integrity by any network participant.

This cryptographic foundation ensures that the consensus mechanism operates transparently and verifiably, with all participants able to independently confirm the validity of blocks and transactions through mathematical proofs rather than trust assumptions.

Environmental Considerations

The Telcoin Network consensus mechanism utilizes computational resources efficiently, consuming significantly less energy than other popular contemporary platforms, such as generative artificial intelligence systems. The Proof-of-Stake based design eliminates the energy-intensive mining operations associated with Proof-of-Work systems, while the efficient DAG structure minimizes redundant computation across validators.

Asset Security and User Control

The deterministic finality provided by the consensus mechanism ensures that users maintain complete control over their digital assets throughout all network

operations. Once transactions achieve finality through the requisite validator attestations, they become irreversibly committed to the blockchain state, providing users with certainty regarding asset ownership and transfer completion. The consensus mechanism's design prioritizes the security of user assets.

S.5 Incentive mechanisms and applicable fees

Incentive Mechanisms

1. Staking Rewards for Four Miner Groups:
The Telcoin Platform operates through four specialized miner groups, each earning rewards based on their distinct contributions to platform security, liquidity, application development, and user adoption:
(i) Validators (GSMA Mobile Network Operators): Validators stake TEL to participate in proof-of-stake consensus, operate validator nodes to secure the Telcoin Network blockchain, and earn gas fees plus TEL issuance. Validator rewards incentivize network security and honest participation by GSMA-certified telecommunications operators.
(ii) Liquidity Miners: Liquidity providers stake liquidity on TELx (Telcoin's decentralized exchange) to enable automated, self-custodial asset exchanges. They earn trading fees from their liquidity pools plus TEL issuance rewards, incentivizing deep, liquid markets across the platform.
(iii) Application Developers: GSMA members who build compliant mobile applications on the Telcoin Application Network (TAN) stake TEL and earn transaction fees from their users plus TEL issuance. This incentivizes the development of secure, user-friendly applications that connect users to platform services.
(iv) Stakers (Platform Users): Users who stake TEL through Telcoin mobile applications and refer new users earn a percentage of their referred users' transaction fees plus TEL issuance. This creates network effects by

incentivizing organic platform adoption and user growth.

2. Service-Based Rewards by Miner Group:
Each miner group receives rewards based on specific services they provide to the Telcoin Platform:
(i) Blockchain Security (Validators): Creating and verifying blocks on Telcoin Network (once live), maintaining network integrity, and participating in consensus earn gas fees and issuance rewards based on blocks secured to the blockchain.
(ii) DeFi Liquidity Provision (Liquidity Miners): Providing liquidity to decentralized exchange markets, enabling seamless asset exchanges, and maintaining market depth earn trading fees and issuance rewards proportional to liquidity provided.
(iii) Application Development (Developers): Building and maintaining secure mobile applications that integrate with the Telcoin Platform, implementing banking infrastructure, and enabling user access earn transaction fees from application usage and issuance rewards based on user adoption metrics.
(iv) Platform Adoption (Stakers): Using Telcoin applications, connecting payment networks, referring new users, and driving platform growth earn referral fees and issuance rewards based on their network's platform activity.

3. Governance-Controlled Issuance:
TEL issuance rates are determined annually through decentralized governance processes. The four miner groups collectively determine total issuance amounts and allocation distributions across network subsystems (Telcoin Network, TELx, and TAN) through council-based governance. This transparent, on-chain governance ensures sustainable long-term incentive alignment while maintaining the maximum supply cap.

Applicable Fees

1. Transparent and Predictable Fee Structure:
Telcoin's fee structure varies by platform subsystem, with all transaction fees paid in TEL to ensure ecosystem cohesion:
- Telcoin Network Gas Fees: Users will pay gas fees in TEL for transaction execution on the Telcoin Network blockchain. Fees are dynamically calculated based on computational costs, network congestion, and state storage requirements using an EIP-1559-style mechanism for predictability.
- TELx Exchange Fees: Users pay trading fees (ranging approximately 0.0001%-2.50% depending on pool volatility and use case) when exchanging assets through TELx liquidity pools. Fees are paid in the traded asset and programmed into each pool upon creation.
- TAN Application Fees: Users pay transaction fees in TEL when utilizing services through Telcoin mobile applications. These fees compensate developers for providing secure application infrastructure and banking integrations.

2. Sustainable Fee Distribution Model:
- Base Fee Burning and Regeneration: A portion of gas fees (base fees) collected on the Telcoin Network will be burned and an equivalent amount will be regenerated to the governance treasury. This creates a sustainable funding mechanism for future network development, validator incentives, and ecosystem growth while preventing net inflation from transaction activity.
- Priority Fee Distribution: Users can voluntarily pay priority fees to increase transaction inclusion likelihood in the next block. Priority fees are distributed directly to validators as additional compensation for block production.
- Trading Fee Distribution: Exchange fees earned on TELx are distributed to liquidity miners pro-rata based

	on their share of liquidity provided to each pool. - Application Fee Distribution: Transaction fees generated through Telcoin mobile applications are distributed to the developers who built and maintain those applications. - Referral Fee Distribution: A percentage of transaction fees from referred users is distributed to the stakers who referred them, creating aligned incentives for organic growth. 3. Fee Allocation Transparency: All fee distribution mechanisms are enforced by smart contracts and transparent on-chain processes governed by the Telcoin Association's specialized councils (Platform Council, Treasury Council, TELx Council, and TAN Council), ensuring predictability and accountability across the platform ecosystem.
S.6 Beginning of period to which disclosed information relates	2024-11-12
S.7 End of period to which disclosed information relates	2025-11-12

Mandatory key indicator

S.8 Energy consumption	2,492.915 kWh

Sources and methodologies

S.9 Energy consumption sources and methodologies	Using the transaction based token calculation approach cited in the Sources and Methodology for Environmental Impact Disclosures under Regulation (EU) 2023/1114 (https://archax.com/hubfs/dlt-sustainability-assessment.pdf) and data from CCRI (https://indices.carbon-ratings.com/) and Dune analytics (https://dune.com/queries/619680?end_date_t6c1ea=2025%2F11%2F12&start_date_t6c1ea=2024%2F11%2F12&end_date_d83555=2025-1

1-12+00%3A00%3A00&start_date_d83555=2024-11-12+00%3A00%3A00&category=canonical&namespace=arbitrum).

Supplementary information on principal adverse impacts on climate and other environment-related adverse impacts of consensus mechanism

Supplementary key indicators

S.10 Renewable energy consumption

S.11 Energy intensity

S.12 Scope 1 DLT GHG emissions - controlled

S.13 Scope 2 DLT GHG emissions - purchased

S.14 GHG intensity

Sources and methodologies

S.15 Key energy sources and methodologies

S.16 Key GHG sources and methodologies

Optional information on principal adverse impacts on the climate and on other environment-related adverse impacts of the consensus mechanism

Optional indicators

S. 17 Energy mix

S.18 Energy use reduction

Energy use reduction target (absolute value)

Energy use reduction target (percentage)

S.19 Carbon intensity (kgCO2e/kWh)

S.20 Scope 3 DLT GHG emissions - value chain

S.21 GHG emissions reduction targets or commitments

S.22 Generation of waste electrical and electronic equipment (WEEE)

S.23 Non-recycled WEEE ratio

S.24 Generation of hazardous waste

S.25 Generation of waste (all types)

S.26 Non-recycled waste ratio (all types)

S.27 Waste intensity (all types)

S.28 Waste reduction targets or commitments (all types)

S.29 Impact of use of equipment on natural resources

S.30 Natural resources use reduction targets or commitments

S.31 Water use

S.32 Non recycled water ratio

Sources and methodologies

S.33 Other energy sources and methodologies

S.34 Other GHG sources and methodologies

S.35 Waste sources and methodologies

S.36 Natural resources sources and methodologies