MiCA White Paper

OriginTrail (TRAC)

Version 1.0
June 2025

White Paper in accordance with Markets in Crypto Assets Regulation (MiCAR)
for the European Economic Area (EEA).

Purpose: seeking admission to trading in EEA.

Prepared and Filed by LCX.com

NOTE: THIS CRYPTO-ASSET WHITE PAPER HAS NOT BEEN APPROVED BY ANY COMPETENT AUTHORITY IN ANY MEMBER STATE OF THE EUROPEAN ECONOMIC AREA. THE PERSON SEEKING ADMISSION TO TRADING IS SOLELY RESPONSIBLE FOR THE CONTENT OF THIS CRYPTO-ASSET WHITE PAPER ACCORDING TO THE EUROPEAN ECONOMIC AREA'S MARKETS IN CRYPTO-ASSET REGULATION (MICA).

LCX is voluntarily submitting this MiCA-compliant white paper for the OriginTrail (TRAC) token, which is classified as an "Other Crypto-Asset" under Regulation (EU) 2023/1114 on Markets in Crypto-Assets (MiCA). Unlike Asset-Referenced Tokens (ARTs), Electronic Money Tokens (EMTs), or Utility Tokens, TRAC is not subject to a mandatory white paper requirement. However, pursuant to Article 6(1), second subparagraph of MiCA, service providers may voluntarily publish a white paper to enhance transparency, regulatory certainty, and investor protection. OriginTrail's TRAC functions as the native utility token of the OriginTrail Decentralized Knowledge Graph network, a pioneering decentralized data network that enables trusted knowledge sharing across supply chains, enterprises, and Web3 applications. TRAC incentivizes network nodes to store and maintain verifiable data and allows users to stake and pay for data services in a trustless environment. As one of the first decentralized knowledge networks, OriginTrail plays a critical role in bridging real-world assets and data with blockchain technology – securing supply chain information, powering verifiable credentials, and enabling discovery of assets in the Web3 and AI ecosystem.

This document provides essential information about TRAC's characteristics, risks, and the framework under which LCX facilitates TRAC-related services in compliance with MiCA's regulatory standards.

This white paper has been prepared in accordance with the requirements set forth in Commission Implementing Regulation (EU) 2024/2984, ensuring that all relevant reporting formats, content specifications, and machine-readable structures outlined in Annex I of this regulation have been fully mapped and implemented, particularly reflected through the Recitals, to enable proper notification under the Markets in Crypto-Assets Regulation (MiCAR).

00 TABLE OF CONTENT

01 DATE OF NOTIFICATION

2025-06-04

COMPLIANCE STATEMENTS

02 This crypto-asset white paper has not been approved by any competent authority in any Member State of the European Economic Area. The offeror of the crypto-asset is solely responsible for the content of this crypto-asset white paper.

Where relevant in accordance with Article 6(3), second subparagraph of Regulation (EU) 2023/1114, reference shall be made to ‘person seeking admission to trading’ or to ‘operator of the trading platform’ instead of ‘offeror’.

03 This crypto-asset white paper complies with Title II of Regulation (EU) 2023/1114 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 The crypto-asset referred to in this white paper may lose its value in part or in full, may not always be transferable and may not be liquid.

05 Not Applicable

06 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.The crypto-asset referred to in this white paper is not covered by the deposit guarantee schemes under Directive 2014/49/EU of the European Parliament and of the Council.

SUMMARY

07 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 (36) or any other offer document pursuant to Union or national law.

08 Characteristics of the crypto-asset

The OriginTrail (TRAC) token qualifies as an "Other Crypto-Asset" (OTHR) under Title II of Regulation (EU) 2023/1114 (MiCA), as it does not fulfill the requirements to be classified as an Asset-Referenced Token (ART) or an Electronic Money Token (EMT).

TRAC is not linked to or backed by any fiat currency, basket of currencies, or other assets, and there is no issuer commitment to redeem TRAC at a fixed or stable value. This excludes it from being considered an EMT under Article 3(1)(7) or an ART under Article 3(1)(6) of MiCA. Instead, its value is market-driven and determined by supply and demand dynamics within the OriginTrail ecosystem and broader digital asset markets.While TRAC does enable access to network functions—such as publishing and querying data on the OriginTrail Decentralized Knowledge Graph (DKG), staking for node operation, and ensuring trustless data integrity—it is not limited to a narrow, closed ecosystem of goods or services. Therefore, it does not meet the strict MiCA definition of a utility token under Article 3(1)(9), which requires exclusive use within a specific application or service environment.

TRAC is fundamentally designed as a functional token used for coordinating decentralized network operations, incentivizing behavior, and securing data provenance, rather than serving as a payment instrument or claim on any underlying asset. Given these characteristics, TRAC falls appropriately within the scope of MiCA's "other crypto-assets" (OTHR) category.Accordingly, the obligations outlined in Title II of MiCA apply, including the requirement to publish a crypto-asset white paper and notify the competent authority before any public offer or admission to trading, without triggering the enhanced obligations that apply to ARTs or EMTs.

09 Not applicable

10 Key information about the offer to the public or admission to trading

OriginTrail (TRAC) is a cryptocurrency token that powers the decentralized knowledge graph infrastructure, enabling trusted data exchange and verifiable AI solutions across supply chains, scientific research, and other critical domains. TRAC does not have a centralized issuer conducting a new public offering. The token was originally distributed through earlier sales and community-focused allocations and is now actively circulating and traded on global crypto-asset markets.This white paper has been prepared voluntarily to meet the disclosure requirements of the MiCA framework, in support of the admission of TRAC to trading on regulated crypto-asset platforms within the European Economic Area. No new issuance or fundraising activity is connected to this document. The objective is to provide transparency and ensure regulatory compliance as TRAC is made available for trading under MiCA.

LCX AG, operating as a regulated Crypto-Asset Service Provider (CASP), will support the listing and secondary trading of TRAC on its fully compliant trading platform. Trading pair TRAC/EUR will be enabled, offering a secure, MiCA-aligned environment for market participants. All users accessing

TRAC trading through LCX must complete full Know-Your-Customer (KYC) and Anti-Money Laundering (AML) verification processes, in accordance with MiCAR and applicable financial regulations.

Total offer amount	Not applicable
Total number of tokens to be offered to the public	Not applicable
Subscription period	Not applicable
Minimum and maximum subscription amount	Not applicable
Issue price	Not applicable
Subscription fees (if any)	Not applicable
Target holders of tokens	Not applicable
Description of offer phases	Not applicable
CASP responsible for placing the token (if any)	Not applicable
Form of placement	Not applicable
Admission to trading	LCX AG, Herrengasse 6, 9490 Vaduz, Liechtenstein

A. PART A - INFORMATION ABOUT THE OFFEROR OR THE PERSON SEEKING ADMISSION TO TRADING

A.1 Name

LCX

A.2 Legal Form

AG

A.3 Registered Address

Herrengasse 6, 9490 Vaduz, Liechtenstein

A.4 Head Office

Herrengasse 6, 9490 Vaduz, Liechtenstein

A.5 Registration Date

24.04.2018

A.6 Legal Entity Identifier

529900SN07Z6RTX8R418

A.7 Another Identifier Required Pursuant to Applicable National Law

FL-0002.580.678-2

A.8 Contact Telephone Number

+423 235 40 15

A.9 E-mail Address

legal@lcx.com

A.10 Response Time (Days)

020

A.11 Parent Company

Not applicable

A.12 Members of the Management Body

Full Name	Business Address	Function
Monty C. M. Metzger	Herrengasse 6, 9490 Vaduz, Liechtenstein	President of the Board
Katarina Metzger	Herrengasse 6, 9490 Vaduz, Liechtenstein	Board Member
Anurag Verma	Herrengasse 6, 9490 Vaduz, Liechtenstein	Director of Technology

A.13 Business Activity

LCX provides various crypto-asset services under Liechtenstein's Token and Trusted Technology Service Provider Act ("Token- und Vertrauenswürdige Technologie-Dienstleister-Gesetz" in short "TVTG") also known as the Blockchain Act. These include custody and administration of crypto-assets, offering secure storage for clients' assets and private keys. LCX operates a trading platform, facilitating the matching of buy and sell orders for crypto-assets. It enables both crypto-to-fiat and crypto-to-crypto exchanges, ensuring compliance with AML and KYC regulations. LCX also supports token placements, marketing crypto-assets on behalf of offerors.

Under MiCA, LCX is classified as a Crypto-Asset Service Provider (CASP). LCX is not yet formally supervised under MiCA until the license is granted by the competent authority. LCX AG has applied for MiCA licensing on February 1, 2025, the first day of MiCA's implementation in Liechtenstein.

Under the TVTG framework, LCX provides:

- TT Depositary – Custody and safekeeping of crypto-assets.
- TT Trading Platform Operator – Operation of a regulated crypto-asset exchange.
- TT Exchange Service Provider – Crypto-to-fiat and crypto-to-crypto exchange.
- Token Issuer – Marketing and distribution of tokens.
- TT Transfer Service Provider – Crypto-asset transfers between ledger addresses.
- Token Generator & Tokenization Service Provider – Creation and issuance of tokens.
- Physical Validator – Enforcement of token-based rights on TT systems.
- TT Verification & Identity Service Provider – Legal capacity verification and identity registration.
- TT Price Service Provider – Providing aggregated crypto-asset price information.

A.14 Parent Company Business Activity

Not applicable

A.15 Newly Established

false

A.16 Financial Condition for the past three Years

LCX AG has a strong capital base, with CHF 1 million (approx. 1,126,000 USD) in share capital (Stammkapital) and a solid equity position (Eigenkapital) in 2023. The company has experienced fluctuations in financial performance over the past three years, reflecting the dynamic nature of the crypto market. While LCX AG recorded a loss in 2022, primarily due to a market downturn and a security breach, it successfully covered the impact through reserves. The company has remained financially stable, achieving revenues and profits in 2021, 2023 and 2024 while maintaining break-even operations.

In 2023 and 2024, LCX AG strengthened its operational efficiency, expanded its business activities, and upheld a stable financial position. Looking ahead to 2025, the company anticipates positive financial development, supported by market uptrends, an inflow of customer funds, and strong business performance. Increased adoption of digital assets and service expansion are expected to drive higher revenues and profitability, further reinforcing LCX AG’s financial position.

A.17 Financial Condition Since Registration

LCX AG has been financially stable since its registration, supported by CHF 1 million in share capital (Stammkapital) and continuous business growth. Since its inception, the company has expanded its operations, secured multiple regulatory registrations, and established itself as a key player in the crypto and blockchain industry.

While market conditions have fluctuated, LCX AG has maintained strong revenues and break-even operations. The company has consistently reinvested in its platform, technology, and regulatory compliance, ensuring long-term sustainability. The LCX Token has been a fundamental part of the ecosystem, with a market capitalization of approximately $200 million USD and an all-time high exceeding $500 million USD in 2022. Looking ahead, LCX AG anticipates continued financial growth, driven by market uptrends, increased adoption of digital assets, and expanding business activities.

B. PART B - INFORMATION ABOUT THE ISSUER, IF DIFFERENT FROM THE OFFEROR OR PERSON SEEKING ADMISSION TO TRADING[1]

B.1 Issuer different from offeror or person seeking admission to trading

True

B.2 Name

Trace Labs Limited

B.3 Legal Form

Private company limited by shares (Ltd.)

B.4 Registered Address

Winning Centre, 46–48 Wyndham Street, Central, Hong Kong

B.5 Head Office

Winning Centre, 46–48 Wyndham Street, Central, Hong Kong

B.6 Registration Date

26.06.2018

B.7 Legal Entity Identifier

Not applicable

B.8 Another Identifier Required Pursuant to Applicable National Law

Company Registration No.: 2714388 (Hong Kong)

B.9 Parent Company

Not applicable

B.10 Members of the Management Body

- Tomaž Levak:Co-Founder, Chief Executive Officer (Trace Labs)
- Žiga Drev: Co-Founder, Chief Operating Officer (Trace Labs)
- Branimir Rakić:Co-Founder, Chief Technology Officer (Trace Labs)

B.11 Business Activity

Trace Labs Limited is the core development company behind the OriginTrail ecosystem. The company’s primary business activity is the research, development, and promotion of the open-source OriginTrail Decentralized Knowledge Graph protocol. This involves building and maintaining the OriginTrail network software (nodes and smart contracts), providing enterprise solutions that leverage the OriginTrail network (especially in supply chain, data provenance, and Web3 applications), and fostering partnerships for adoption of the technology

B.12 Parent Company Business Activity

Not applicable

1

C. 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

LCX AG

C.2 Legal Form

AG

C.3 Registered Address

Herrengasse 6, 9490 Vaduz, Liechtenstein

C.4 Head Office

Herrengasse 6, 9490 Vaduz, Liechtenstein

C.5 Registration Date

24.04.2018

C.6 Legal Entity Identifier

529900SN07Z6RTX8R418

C.7 Another Identifier Required Pursuant to Applicable National Law

FL-0002.580.678-2

C.8 Parent Company

Not Applicable

C.9 Reason for Crypto-Asset White Paper Preparation

LCX is voluntarily preparing this MiCA-compliant white paper for TRAC to enhance transparency, regulatory clarity, and investor confidence in the trading of TRAC. While TRAC qualifies as “Other Crypto-Assets” under MiCA and thus does not strictly require a white paper, LCX is providing this document to support its role as a regulated Crypto-Asset Service Provider and to ensure full compliance with MiCA when facilitating TRAC trading on its platform. By publishing a MiCA white paper for TRAC, LCX aims to set a high disclosure standard and help market participants make informed decisions about the asset within the EU’s regulatory framework.

C.10 Members of the Management Body

Full Name	Business Address	Function
Monty C. M. Metzger	Herrengasse 6, 9490 Vaduz, Liechtenstein	President of the Board
Katarina Metzger	Herrengasse 6, 9490 Vaduz, Liechtenstein	Board Member
Anurag Verma	Herrengasse 6, 9490 Vaduz, Liechtenstein	Director of Technology

C.11 Operator Business Activity

LCX provides various crypto-asset services under Liechtenstein’s Token and Trusted Technology Service Provider Act (“Token- und Vertrauenswürdige Technologie-Dienstleister-Gesetz” in short “TVTG”) also known as the Blockchain Act. These include custody and administration of crypto-assets, offering secure storage for clients' assets and private keys. LCX operates a trading platform, facilitating the matching of buy and sell orders for crypto-assets. It enables both crypto-to-fiat and

crypto-to-crypto exchanges, ensuring compliance with AML and KYC regulations. LCX also supports token placements, marketing crypto-assets on behalf of offerors.

Under MiCA, LCX is classified as a Crypto-Asset Service Provider (CASP). LCX is not yet formally supervised under MiCA until the license is granted by the competent authority. LCX AG has applied for MiCA licensing on February 1, 2025, the first day of MiCA's implementation in Liechtenstein.

Under the TVTG framework, LCX provides:

- TT Depositary – Custody and safekeeping of crypto-assets.
- TT Trading Platform Operator – Operation of a regulated crypto-asset exchange.
- TT Exchange Service Provider – Crypto-to-fiat and crypto-to-crypto exchange.
- Token Issuer – Marketing and distribution of tokens.
- TT Transfer Service Provider – Crypto-asset transfers between ledger addresses.
- Token Generator & Tokenization Service Provider – Creation and issuance of tokens.
- Physical Validator – Enforcement of token-based rights on TT systems.
- TT Verification & Identity Service Provider – Legal capacity verification and identity registration.
- TT Price Service Provider – Providing aggregated crypto-asset price information.

C.12 Parent Company Business Activity

Not Applicable

C.13 Other persons drawing up the white paper under Article 6 (1) second subparagraph MiCA

Not Applicable

C.14 Reason for drawing up the white paper under Article 6 (1) second subparagraph MiCA

Not Applicable

D. PART D - INFORMATION ABOUT THE CRYPTO-ASSET PROJECT

D.1 Crypto-Asset Project Name

OriginTrail

D.2 Crypto-Assets Name

OriginTrail

D.3 Abbreviation

TRAC

D.4 Crypto-Asset Project Description

OriginTrail is a decentralized data network launched in early 2018 that is designed to organize and share trusted information across various parties using blockchain and knowledge graph technology. The OriginTrail platform enables multiple participants (such as businesses, organizations, and IoT devices) to publish and exchange data in a Decentralized Knowledge Graph (DKG) – a distributed, open, and interoperable graph database that ensures data integrity and provenance. The network's architecture is multi-layered: it consists of an off-chain layer (the DKG itself, maintained by a global network of OriginTrail nodes) and an on-chain consensus layer that leverages existing blockchains. Initially, OriginTrail utilized the Ethereum blockchain (ERC-20) for anchoring data and managing the TRAC token; over time it expanded to additional chains like Polygon and Gnosis Chain to enhance scalability and reduce costs. In 2023, the project introduced the OriginTrail Parachain (a dedicated blockchain in the Polkadot ecosystem with a separate OTP token) to further support high-throughput use cases and interoperability with Polkadot's network. The combination of these layers allows OriginTrail to offer a single, unified knowledge graph of verifiable data that is multi-chain and highly scalable. Key use cases include supply chain traceability (ensuring that each step of a product's journey is recorded and verifiable), verification of certifications and standards compliance, and more recently, connecting real-world assets (RWA) and datasets to the Web3 and AI domain in a trustworthy manner. By leveraging cryptographic proofs and decentralized storage, OriginTrail ensures that once data (termed "knowledge assets") is published to the network, its integrity can be checked by anyone and it remains tamper-evident and discoverable. The OriginTrail project thereby creates a neutral, inclusive ecosystem for trusted knowledge sharing, bridging the gap between siloed enterprise data and the open decentralized web.

D.5 Details of all persons involved in the implementation of the crypto-asset project

OriginTrail is an open-source project with no single centralized issuer controlling its operation. Development and maintenance are carried out by a decentralized community of contributors, with a significant leading role played by Trace Labs (the for-profit core development company that initiated the project) and support from various partners and community developers.

Full Name	Business Address	Function
Trace Labs Limited	*Hongkong (Global team)*	*Core development of OriginTrail protocol and software; ecosystem growth (B2B solutions, partnerships)*
OriginTrail Node Operators	*Global (Distributed)*	*Operation of ODN nodes (storing data, processing queries) to maintain the Decentralized Knowledge Graph; provide network security and data availability*

OriginTrail Community Developers	*Global (Distributed)*	*Open-source contributors to the codebase, building tools, documentation, and improvements for the network*
Trace Alliance Members	*Global (Enterprises & Partners)*	*Consortium of enterprises and organizations collaborating on adoption of OriginTrail, contributing use-cases and ensuring standards compliance (e.g., GS1 partnership for data standards integration)*

(Note: OriginTrail does not have a single "issuer" entity akin to a foundation issuing tokens; the TRAC token was distributed via an ICO and the ongoing project implementation involves a broad set of stakeholders as listed above.)

D.6 Utility Token Classification

false

D.7 Key Features of Goods/Services for Utility Token Projects

Not applicable

D.8 Plans for the Token

Not applicable

D.9 Resource Allocation

Not applicable

D.10 Planned Use of Collected Funds or Crypto-Assets

Not applicable

(Fields D.6–D.10 are not applicable because TRAC is not being offered as a new utility token for funding a specific project with defined future use of proceeds; rather, it is an existing token voluntarily admitted to trading.)

E. PART E - INFORMATION ABOUT THE OFFER TO THE PUBLIC OF CRYPTO-ASSETS OR THEIR ADMISSION TO TRADING

E.1 Public Offering or Admission to Trading

ATTR

E.2 Reasons for Public Offer or Admission to Trading

LCX's reason for admitting TRAC to trading and preparing this white paper is to foster transparency, regulatory clarity, and investor confidence regarding the OriginTrail token. TRAC is a well-established crypto-asset (initially issued in 2018) and, although it is classified as "Other Crypto-Assets" under MiCA (meaning it is not legally required to have a MiCA white paper), LCX is proactively aligning with MiCA's high standards of disclosure. By voluntarily publishing a MiCA-compliant white paper for TRAC, LCX aims to facilitate compliance readiness ahead of MiCA enforcement and demonstrate its commitment as a regulated exchange to provide comprehensive information about listed assets. This initiative is expected to enhance market access and acceptance of TRAC in the EU: it helps remove regulatory uncertainty for institutional investors and other market participants who may otherwise be cautious about engaging with the token. In essence, offering TRAC trading under the MiCA disclosure framework integrates the OriginTrail ecosystem into the regulated financial environment, potentially broadening its user base and use cases in Europe. It also reinforces LCX's role in shaping a compliant and transparent crypto market by extending MiCA's investor protection principles to a voluntary admission. Overall, this should benefit the OriginTrail project and TRAC holders through greater trust, increased participation from EU market actors, and a stronger foundation for long-term adoption of the technology.

E.3 Fundraising Target

Not applicable

E.4 Minimum Subscription Goals

Not applicable

E.5 Maximum Subscription Goal

Not applicable

E.6 Oversubscription Acceptance

Not applicable

E.7 Oversubscription Allocation

Not applicable

E.8 Issue Price

Not applicable

E.9 Official Currency or Any Other Crypto-Assets Determining the Issue Price

Not applicable

E.10 Subscription Fee

Not applicable

E.11 Offer Price Determination Method

Not applicable

E.12 Total Number of Offered/Traded Crypto-Asset

As of May 2025, approximately 499.8 million TRAC tokens are in circulation out of a fixed maximum supply of 500 million TRAC. (OriginTrail's tokenomics feature a hard-capped supply of 500,000,000 tokens. The entire supply was created (pre-mined) during the project's token generation event in January 2018. There is no ongoing inflation for TRAC – no new tokens have been minted beyond the initial issuance. The current circulating amount encompasses essentially all TRAC tokens ever

created, with a negligible number remaining locked or not in public circulation. During the 2018 distribution, tokens were allocated as follows: 35% sold to the public in the ICO, 20% allocated to founders and the core team (subject to a four-year vesting schedule that has fully elapsed by 2022), 10% allocated to advisors and early supporters (vested over two years, fully released by 2020), 15% reserved for future development (the project treasury to fund ongoing technical development and ecosystem growth), 10% reserved for ecosystem support (released gradually based on project milestones to encourage network adoption), and 10% set aside as a legal entity reserve (which remained locked until January 2025).

E.13 Targeted Holders

ALL

E.14 Holder Restrictions

Not applicable

E.15 Reimbursement Notice

Not applicable

E.16 Refund Mechanism

Not applicable

E.17 Refund Timeline

Not applicable

E.18 Offer Phases

Not applicable

E.19 Early Purchase Discount

Not applicable

E.20 Time-Limited Offer

Not applicable

E.21 Subscription Period Beginning

Not applicable

E.22 Subscription Period End

Not applicable

E.23 Safeguarding Arrangements for Offered Funds/Crypto-Assets

Not applicable

E.24 Payment Methods for Crypto-Asset Purchase

Not applicable

E.25 Value Transfer Methods for Reimbursement

Not applicable

E.26 Right of Withdrawal

Not applicable

E.27 Transfer of Purchased Crypto-Assets

Not applicable

E.28 Transfer Time Schedule

Not applicable

E.29 Purchaser's Technical Requirements

Not applicable

E.30 Crypto-asset service provider (CASP) name

Not applicable

E.31 CASP identifier

Not applicable

E.32 Placement Form

NTAV

E.33 Trading Platforms name

LCX AG

E.34 Trading Platforms Market Identifier Code (MIC)

LCXE

E.35 Trading Platforms Access

TRAC is widely traded on numerous cryptocurrency exchanges globally (both regulated and unregulated). As a decentralized asset, TRAC is not confined to any single trading venue; it can be accessed by retail and institutional investors worldwide through dozens of exchanges. LCX Exchange now supports TRAC trading (pair TRAC/EUR). To access TRAC trading on LCX, users must have an LCX account and complete the platform's KYC verification, as LCX operates under strict compliance standards. Trading on LCX is available via its web interface and APIs to verified customers.

E.36 Involved Costs

Not applicable

E.37 Offer Expenses

Not applicable

E.38 Conflicts of Interest

Not applicable

E.39 Applicable Law

Not applicable

E.40 Competent Court

In case of disputes related to services provided by LCX, the competent court is: The Courts of Liechtenstein, with jurisdiction in accordance with Liechtenstein law and applicable EU regulations.

F. PART F - INFORMATION ABOUT THE CRYPTO-ASSETS

F.1 Crypto-Asset Type

Other Crypto-Asset

F.2 Crypto-Asset Functionality

TRAC, the native token of the OriginTrail Decentralized Knowledge Graph, serves several critical functions within the OriginTrail network by acting as the economic incentive and access medium for the network's services. TRAC is used as a payment token for data operations: participants who wish to publish data (create "knowledge assets") onto the OriginTrail network must pay node operators in TRAC for storage and processing services. Conversely, node operators earn TRAC rewards in exchange for dedicating disk space, bandwidth, and computation to maintain and query the decentralized knowledge graph. TRAC also functions as a staking token: OriginTrail node operators are required to stake a certain amount of TRAC as collateral, which helps align their incentives with honest behavior (staked tokens can be subject to penalties or reduced rewards if the node fails to perform reliably, according to the network's reputation system). Staking more TRAC can increase a node's reputation and the volume of data tasks it is entrusted with, thereby potentially increasing its earnings – this mechanism encourages long-term commitment to network quality. Additionally, TRAC can be utilized for governance purposes: TRAC holders have the ability to participate in community governance processes, such as signaling preferences via off-chain voting (e.g., Snapshot votes) on proposals that affect the OriginTrail ecosystem's evolution (for instance, decisions on technical upgrades or allocation of community funds). These functionalities form the backbone of the OriginTrail network's security and utility: TRAC ensures that data is handled in a decentralized yet reliable manner by economically motivating correct behavior and growth of the network.

These functionalities, while akin to "utility" in a general sense, do not constitute TRAC as a "Utility Token" within the meaning of MiCAR. TRAC was not issued solely to provide digital access to a good or service from its issuer (Trace Labs) – instead, it serves as a general-purpose network token for a decentralized platform that no single provider exclusively controls. There is no contractual right to services from Trace Labs attached to holding TRAC; usage of TRAC is determined by decentralized network interactions rather than a promise by an issuer. Accordingly, TRAC is classified as an "Other Crypto-Asset" under Article 4(1)(6) MiCAR, rather than an ART, EMT, or regulated utility token

F.3 Planned Application of Functionalities

TRAC is already fully functional and integral to OriginTrail's current operations; there are no new or yet-to-be-enabled functionalities planned for TRAC beyond its existing roles. TRAC will continue to be used as the medium of exchange for data publishing and retrieval services on the OriginTrail Decentralized Knowledge Graph and as the staking token for node operators, as these roles are fundamental and ongoing. The network's roadmap is focused on expanding usage (e.g., onboarding more enterprise data, integrating additional blockchains, and fostering AI-related applications using the DKG), which will naturally increase demand for TRAC in its current capacities, rather than changing how TRAC functions. If the OriginTrail ecosystem introduces governance enhancements or new network parameters, TRAC may gain additional significance in those contexts (for example, if in the future on-chain governance mechanisms or additional staking-based features are implemented, TRAC would be the token used to participate). However, such potential developments would be extensions of TRAC's core utility (data payments, staking, and governance) and not entirely new categories of functionality. As of now, there are no announced plans to alter TRAC's fundamental nature; the focus remains on scaling the network and ecosystem which TRAC already powers.

F.4 Type of white paper

OTHR

F.5 The type of submission

NEWT

F.6 Crypto-Asset Characteristics

OriginTrail's TRAC token is a decentralized, permissionless crypto-asset designed to facilitate integrity and incentivization in a multi-chain knowledge-sharing network. Key characteristics include:

- Platform and Standard: TRAC is an ERC-20 compliant token operating primarily on the Ethereum blockchain. As an ERC-20 token, it inherits Ethereum's account-based ledger structure and smart contract capabilities. TRAC tokens can be freely transferred between Ethereum addresses, subject to network gas fees paid in ETH. In addition, TRAC is deployed on (or bridged to) other EVM-compatible networks such as Polygon (Matic) and Gnosis Chain (xDai) to improve transaction efficiency and cost – these versions are fungible representations of TRAC on those chains, maintained via cross-chain bridges. Despite multi-chain presence, Ethereum mainnet remains the reference network for TRAC's total supply tracking and primary liquidity.

- Underlying DLT & Security: The security of TRAC transactions is anchored by Ethereum's Proof-of-Stake consensus mechanism. Ethereum's validator network (over half a million validators globally staking ETH) confirms TRAC transfers with finality typically within minutes. This means TRAC benefits from the robust security and decentralization of the Ethereum blockchain (and similarly from Polygon's and Gnosis's security when used there). There is no centralized authority that can censor TRAC transactions or alter balances – all movements of TRAC are recorded on public ledgers. Additionally, the smart contracts related to TRAC (such as those governing staking or data marketplaces in the OriginTrail ecosystem) are open-source and have been publicly available for scrutiny, contributing to trust in the token's operation.

- Fixed Supply & Non-Inflationary: TRAC has a fixed maximum supply of 500,000,000 tokens that were all minted at its inception. It is a non-inflationary token – unlike some crypto-assets, there is no protocol schedule to generate new TRAC over time. This fixed supply means that TRAC's availability is predictable and not subject to dilution from inflation. All token releases followed predefined vesting or lock-up schedules (as described in E.12), which are now essentially complete. The absence of inflationary monetary policy makes TRAC's tokenomics straightforward: its market supply changes only via transfers between participants or any tokens being permanently removed from circulation (no automated burning occurs in normal operation).

- Economic Incentive & Utility Role: TRAC is the sole currency for transactions within the OriginTrail Decentralized Knowledge Graph network's internal economy. Its utility is integral to network operations – no other token or currency can substitute TRAC for staking or paying node service fees on the OriginTrail network. This creates a direct link between the demand for the network's services (such as supply chain data verification, credential validation, etc.) and the demand for TRAC. As network usage grows, participants need TRAC to utilize those services, aligning the token's value with network adoption. Moreover, TRAC's role in staking ties it to network security: well-functioning nodes are economically rewarded in TRAC, while poor performance can lead to opportunity costs or loss of reputation, thereby indirectly risking their staked TRAC earning potential.

- Interoperability and Standard Compliance: OriginTrail's technology emphasizes interoperability, and accordingly TRAC is embedded in a system that follows global data standards. The protocol can incorporate identifiers and data structures from standards like GS1 (used in supply chain for barcodes and electronic product code information services) or W3C's semantic web standards (like Decentralized Identifiers and Verifiable Credentials). While these standards are about data rather than the token itself, TRAC's usage within smart contracts and applications often complies with these open standards, making it easier for traditional IT systems to interface with OriginTrail. From a technical standpoint, TRAC's ERC-20 nature means it can interact with a wide variety of decentralized applications (DeFi exchanges, wallets, etc.) across the Ethereum ecosystem, giving it broad compatibility in the

crypto space.

- Open Source and Transparency: All core software related to TRAC and the OriginTrail network is open source. The main OriginTrail node software and smart contracts can be reviewed on public repositories (e.g., GitHub under the OriginTrail organization). This transparency allows independent security audits and community scrutiny. While as of this writing no separate formal third-party security audit report for the original TRAC token contract is known (the TRAC token contract is a standard ERC-20 implementation), the openness of the code and the fact that TRAC has been in circulation since 2018 without security incidents related to the token contract provide confidence in its reliability. The ongoing development under Trace Labs and community oversight further ensures that any technical issues can be identified and addressed promptly, with updates communicated openly to the community.

F.7 Commercial name or trading name

TRAC

F.8 Website of the issuer

https://origintrail.io/

F.9 Starting date of offer to the public or admission to trading

2025-07-08

F.10 Publication date

2025-07-08

F.11 Any other services provided by the issuer

Not applicable

F.12 Language or languages of the 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

Not available

F.14 Functionally Fungible Group Digital Token Identifier, where available

No FFG-DTI is currently assigned to OriginTrail (TRAC) This field will be updated upon issuance of a group identifier by the Digital Token Identifier Foundation or another competent authority, as per MiCA RTS Article 5.

F.15 Voluntary data flag

true

F.16 Personal data flag

false

F.17 LEI eligibility

false

F.18 Home Member State

Liechtenstein

F.19 Host Member States

Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden.

G. PART G - INFORMATION ON THE RIGHTS AND OBLIGATIONS ATTACHED TO THE CRYPTO-ASSETS

G.1 Purchaser Rights and Obligations

Purchasers or holders of TRAC do not acquire any claim, share, or enforceable right against an issuer or any other entity simply by holding the token. TRAC is OTHR token and does not represent equity, debt, or ownership in a legal entity.

G.2 Exercise of Rights and Obligation

Because holding TRAC does not bestow any formal contractual rights, there is no traditional "exercise" of rights in the sense of corporate securities or promised services. The primary rights associated with TRAC are technical and network-based and are exercised by using the token directly on the blockchain or network applications. For instance, to exercise the "right" to transfer TRAC, a holder simply initiates a token transfer transaction from their wallet and signs it with their private key; this transaction is then validated and executed on the Ethereum (or relevant) blockchain, moving the tokens to the recipient. To exercise the ability to utilize network services (such as publishing data on the OriginTrail DKG), a holder would send TRAC to the appropriate smart contract or service interface as payment, which is likewise an on-chain action. Similarly, the act of staking TRAC to operate a node (or to delegate, if delegation is supported off-chain via reputation marketplaces) is done by locking TRAC via the smart contract or node software – effectively a blockchain transaction or cryptographic action by the holder.

G.3 Conditions for Modifications of Rights and Obligations

Since there are no formal contractual rights attached to TRAC, any "modifications" to rights or obligations largely pertain to changes in the protocol rules or smart contract logic of the OriginTrail network that could affect how TRAC is used.

G.4 Future Public Offers

Not applicable

G.5 Issuer Retained Crypto-Assets

Not applicable

G.6 Utility Token Classification

No

G.7 Key Features of Goods/Services of Utility Tokens

Not applicable

G.8 Utility Tokens Redemption

Not applicable

G.9 Non-Trading Request

True

G.10 Crypto-Assets Purchase or Sale Modalities

Not applicable

G.11 Crypto-Assets Transfer Restrictions

Not applicable

G.12 Supply Adjustment Protocols

TRAC's supply is fixed and governed by its token contract with no algorithmic adjustment mechanisms. There is no protocol-level algorithm that expands or contracts the supply of TRAC based on price or any external metric (unlike, for instance, algorithmic stablecoins or rebase tokens). From inception, all TRAC tokens were created in a single genesis event; the token contract does not allow any further minting. Likewise, the contract does not automatically burn tokens under any normal operation (any burns would only occur if tokens are sent intentionally to an irrecoverable address by users). The only changes to TRAC's circulating supply over time have resulted from the release of previously locked tokens (per the vesting schedule), which is a one-time process now completed, and from any tokens that might be lost or irretrievable (e.g., sent to a burn address by mistake or lost private keys – which are not quantifiable but are not part of any designed mechanism). In other words, TRAC has a static supply model: the maximum supply stays at 500 million, and the circulating portion tends towards that maximum as vesting and locks conclude. Any change to this fixed supply principle would require a deliberate change in the smart contract or migration to a new token contract – an action that would need overwhelming community support and technical implementation (and none is planned or anticipated). Thus, no discretionary or automatic supply adjustments are in effect for TRAC, making its monetary policy transparent and immutable.

G.13 Supply Adjustment Mechanisms

Not applicable.

G.14 Token Value Protection Schemes

False

G.15 Token Value Protection Schemes Description

Not Applicable

G.16 Compensation Schemes

False

G.17 Compensation Schemes Description

Not Applicable

G.18 Applicable Law

Not applicable

G.19 Competent Court

Not applicable

H. PART H – INFORMATION ON THE UNDERLYING TECHNOLOGY

H.1 Distributed ledger technology

The primary distributed ledger underlying TRAC is the **Ethereum blockchain**, on which TRAC exists as an ERC-20 token. Ethereum is a public, permissionless blockchain that employs a Proof-of-Stake (PoS) consensus mechanism (since the September 2022 "Merge" upgrade) to validate transactions. Ethereum's ledger is account-based, meaning balances of TRAC are associated with Ethereum addresses. Each TRAC transaction is a token transfer recorded within Ethereum blocks, benefiting from Ethereum's robust decentralization (thousands of independent validators globally) and security (economic finality through staked ETH and slashing for misbehavior). Blocks on Ethereum are produced approximately every 12 seconds, and finalized checkpoints occur typically within a few epochs (~6.4 minutes), providing high assurance that confirmed TRAC transactions are irreversible.

In addition to Ethereum, OriginTrail operates **multi-chain**, meaning parts of its ecosystem leverage other ledgers: for example, **Polygon** and **Gnosis Chain** are used as additional DLT networks where TRAC transactions can occur (via bridged tokens) to allow lower fees and faster confirmation times for certain application interactions. These networks are EVM-compatible and also use PoS or PoS-variant consensus (Polygon uses a PoS checkpointing mechanism on Ethereum; Gnosis Chain uses PoS). TRAC's presence on these ledgers is achieved through interoperability bridges that lock TRAC on one chain and mint a representation on the target chain, ensuring that the overall supply across chains remains constant.

Furthermore, the **OriginTrail Parachain** operates on Polkadot's framework as a separate blockchain in the OriginTrail ecosystem; however, that parachain has its own token (OTP) for fees and staking, and it interfaces with TRAC by allowing TRAC holders to utilize or wrap TRAC when engaging cross-chain (e.g., an envisaged interoperability between TRAC and OTP economies). The Parachain uses Polkadot's Nominated Proof-of-Stake (NPoS) consensus (combining BABE and GRANDPA algorithms) for block production and finality.

Crucially, the **OriginTrail Decentralized Knowledge Graph (ODN)** itself is maintained off-chain by nodes that form a peer-to-peer network. This off-chain network isn't a ledger for transferring TRAC, but it uses DLT in two ways: (1) to **anchor data hashes** on-chain (so that any piece of data stored off-chain has an immutable fingerprint on Ethereum or another chain, providing tamper evidence), and (2) to handle **settlements in TRAC**, as nodes exchange payments for services. Thus, the underlying DLT stack for OriginTrail is a combination of blockchains (Ethereum and others) plus off-chain storage networks. The storage and data exchange between OriginTrail nodes utilize a decentralized approach (the ODN can be thought of as a distributed database layer). Each knowledge asset published is broken into pieces and stored/retrieved through the network of nodes, using the DKG protocol which relies on **DHT (Distributed Hash Table)** techniques for discovery and potentially **IPFS-like content addressing** for certain types of data (OriginTrail has at times integrated with IPFS and cloud storage for holding larger data sets, while keeping hashes on chain).

In summary, Ethereum provides the **base ledger** for TRAC transactions with high security and global consensus; side-chains and parachains provide scalability and specialized functionality; and the OriginTrail node network forms a **second-layer data ledger** (a knowledge graph) that interacts with these blockchains. All components of this technology stack are decentralized and open, meaning no central party controls the ledger – trust is placed in cryptography, consensus algorithms, and economic incentives.

OriginTrail Whitepaper:https://origintrail.io/ecosystem/whitepapers

Public block explorer: https://etherscan.io/

Origin Trail Developers portal:https://origintrail.io/get-started/builders

Origin Trail Main repository: https://github.com/origintrail

H.2 Protocols and Technical Standards

OriginTrail's technology stack incorporates a variety of protocols and standards to ensure interoperability, security, and efficiency:

- Token Standards: TRAC adheres to the ERC-20 token standard (Ethereum Request for Comments 20), which defines a common set of functionalities (such as transfer, approval, and balance inquiry) for fungible tokens on Ethereum. On other EVM chains, TRAC similarly follows their equivalent ERC-20 implementations. By using ERC-20, TRAC is compatible with a broad range of wallets, exchanges, and smart contracts. Any smart contracts interacting with TRAC (e.g., the staking contracts or decentralized exchange pools) use standardized interfaces defined in the ERC-20 specification.

- Smart Contract Languages: The smart contracts associated with the OriginTrail ecosystem (for example, the token contract, and any registry or marketplace contracts used in the network's operation) are primarily written in Solidity, which is the predominant high-level language for Ethereum contracts. Some components on the Polkadot parachain are written in Rust (using the Substrate framework), but those mainly pertain to the OTP token and parachain logic rather than TRAC itself. The use of Solidity means the contracts undergo compilation to EVM bytecode and are executed deterministically by Ethereum's virtual machine, following standards like EIP-20 (for tokens) and others as relevant.
- Consensus Protocols: Ethereum's consensus protocol (after The Merge) is the "Casper FFG" combined with "LMD Ghost" – in simpler terms, Ethereum uses a Proof-of-Stake where validators propose and attest to blocks, and a finality gadget finalizes blocks. Polygon uses a combination of PoS validator set and checkpointing to Ethereum (its own consensus is IBFT-based for block production). Gnosis Chain uses the same consensus client stack as Ethereum (as it merged with the former xDai network). The OriginTrail Parachain uses Polkadot's NPoS and BABE/GRANDPA consensus. Additionally, within the ODN node network, OriginTrail employs its own protocol for data consensus and replication. This involves cryptographic verification of data (each data set is signed or hashed) and consensus on which node will store what piece of data. While not a blockchain consensus, the ODN protocol ensures data integrity and availability through redundancy and reputation scoring.
- Data and Interoperability Standards: A key aspect of OriginTrail is compliance with real-world data standards. For instance, the system natively supports GS1 EPCIS (Electronic Product Code Information Services) standards for supply chain events, meaning businesses can publish data like shipping events in a format that follows GS1 guidelines, and it can be seamlessly integrated into the DKG. The OriginTrail data is structured in the form of a knowledge graph, often utilizing semantic web standards such as RDF (Resource Description Framework) and JSON-LD for describing and linking data. This allows data on OriginTrail to be linked and queried using standards like SPARQL (for graph queries) in a manner interoperable with other knowledge graph systems. Identity and authenticity can be reinforced by standards like W3C Decentralized Identifiers (DIDs) and Verifiable Credentials; indeed, OriginTrail has been used to store verifiable credentials where the authenticity of a document (like a diploma or certificate) is anchored on the DKG. These open standards ensure that the OriginTrail network can plug into existing enterprise systems and web protocols, rather than being a silo.
- Cryptographic Standards: TRAC transactions and OriginTrail operations rely on established cryptographic algorithms. On Ethereum and similar chains, accounts (and thus TRAC ownership) use ECDSA (Elliptic Curve Digital Signature Algorithm) over the secp256k1 curve for transaction signing – the same standard as used by Ethereum and Bitcoin. The integrity of data in the DKG is ensured via hashing algorithms (typically SHA-256 or Keccak-256) to create digital fingerprints of data that are stored on-chain. When OriginTrail anchors a knowledge asset to a blockchain, it usually posts a hash of that data on the blockchain, using these hash functions. The bridging of TRAC between chains may use smart contracts that adhere to standards like ERC-20 extensions or specialized bridging protocols (like AMB – Arbitrary Message Bridge – in the case of xDai/Gnosis). Communication security between nodes (for exchanging data in the ODN) uses standard internet encryption (like TLS) when appropriate, and nodes are identified by cryptographic keys as well.
- Development and Versioning Protocols: OriginTrail has a formal process for proposing changes to the protocol, known as OriginTrail RFCs (Requests for Comments), which is inspired by the Internet RFC and Ethereum's EIP processes. This ensures any protocol updates or technical standards changes are documented and peer-reviewed. The project's repositories on GitHub use standard version control (Git) and continuous integration tools to test compliance with defined specifications. For the parachain component, development follows Substrate's upgrade mechanism and Polkadot's governance (for runtime upgrades if needed).

H.3 Technology Used

The OriginTrail ecosystem uses a broad array of technologies, both on-chain and off-chain, to achieve its functionality:

- Programming Languages & Environments: The smart contracts (like the TRAC token contract and staking contracts) are implemented in Solidity and deployed on the Ethereum Virtual Machine. Off-chain, the core OriginTrail node software (often referred to as OT-node) is written in JavaScript/TypeScript (earlier versions) and continues to be developed with modern frameworks (the current OriginTrail V6 node has components in TypeScript for the logic of interacting with EVM chains and data layers). For the newer Polkadot-based components, Rust is used (since Substrate, the framework for Polkadot parachains, is in Rust). Additionally, OriginTrail provides libraries for developers in multiple languages – for instance, dkg.js (a JavaScript library) and dkg.py (a Python library) to facilitate easy integration with the Decentralized Knowledge Graph. These libraries enable developers to interact with nodes, publish data, and query the DKG without needing to understand low-level networking.

- Infrastructure & Network: Each OriginTrail node runs as a server that participates in a peer-to-peer network. This P2P network likely uses standard protocols for node discovery and communication – possibly built atop libraries like Libp2p or similar (commonly used in IPFS and other P2P networks) to handle peer discovery, messaging, and data exchange. Nodes maintain connections and form an overlay network distinct from any single blockchain. Data storage on each node can utilize traditional databases; indeed, knowledge graph data may be stored using a graph database or triplestore under the hood for efficient querying. The system must manage indexing and caching to allow semantic queries across the distributed data – technologies such as GraphQL or custom query APIs are likely provided as part of the node software for users to retrieve data. For large files or datasets, nodes might use external storage solutions (some earlier implementations allowed integration with IPFS or cloud storage, where only hashes are kept on the DKG).

- Repositories & Open Source Software: All the technology above is open-source. The project's code repositories are available in the public domain (e.g., GitHub OriginTrail organization containing repositories like ot-node, OT-RFC-repository, dkg-evm-module, etc.). This means the community can inspect, test, and even contribute to the code. The project employs standard open-source development tools: version control (Git), testing frameworks, and continuous integration pipelines. The existence of a dedicated RFC repository indicates a structured approach to discussing improvements and ensuring backward compatibility or migration plans for any breaking changes.

- Security Audits & Testing: While no major security incidents have been recorded for TRAC, it is worth noting the role of security testing in the technology stack. The Ethereum smart contracts would have undergone both unit testing and possibly third-party audits (for example, before the token sale in 2018 or subsequent upgrades, audits might have been conducted on token and vesting contracts). Additionally, as OriginTrail has evolved, critical components like bridging contracts or new smart contracts (for managing knowledge asset marketplaces, if any exist) would typically be audited by security firms to identify vulnerabilities. The ongoing testing includes test networks (the team and community likely run an OriginTrail testnet to pilot new releases), and bounty programs to encourage responsible disclosure of any issues (there have been community bounty programs for testing OriginTrail V6, etc.). The multi-chain nature also means careful integration testing is needed whenever bridging or cross-chain functionality is updated, to prevent issues like token duplication or loss.

- Scalability Techniques: From a technology perspective, OriginTrail employs several methods for scalability. The use of off-chain storage and processing (the DKG) means that the bulk of data handling does not congest the blockchain – only hashes and settlement transactions go on-chain. This is a form of layer-2 scaling concept, where the heavy data is kept off-chain and only proofs go on-chain. Additionally, by embracing multiple chains (Ethereum for security, side-chains for throughput), OriginTrail can route transactions to an optimal network: e.g., publishing many small data transactions on Polygon to save on fees, while still anchoring critical summaries on Ethereum for maximum security. Caching and selective replication (not every node stores every data asset; the network can allocate data where it's needed and maintain multiple copies for redundancy) ensure that as more nodes join, the capacity grows.

These technical strategies allow the network to support enterprise workloads (OriginTrail has, for example, handled supply chain data for thousands of products in production scenarios, demonstrating the viability of the tech at scale).

H.4 Consensus Mechanism

The consensus mechanisms relevant to TRAC and the OriginTrail network are those of the underlying blockchains and the internal protocols ensuring data consistency:

- Ethereum Proof-of-Stake (Casper/Beacon Chain): Since TRAC primarily lives on Ethereum, the consensus ensuring TRAC transactions are valid and ordered is Ethereum's PoS consensus. Here's how it works: Ethereum's consensus involves a set of validators who have deposited (staked) ETH into the Ethereum Beacon Chain. These validators are randomly selected to propose blocks and a larger subset is selected to attest (vote) on the validity of blocks in each slot (12-second interval). The mechanism, often referred to by components "LMD GHOST" (for chain head selection) and "Casper FFG" (for finality), requires validators to reach supermajority agreement. In practice, when you send a TRAC transaction, it gets included in a proposed block by one validator and then >2/3 of validators must attest to that block and the chain that leads to it. Once they do and enough epochs pass, the block is finalized (cannot be reverted without an extremely unlikely 1/3+ of validators attacking). This consensus is Byzantine Fault Tolerant up to the attacker threshold, and it consumes minimal energy (validators perform simple computations and messaging, no mining). If validators act dishonestly or go offline, Ethereum's protocol can slash or penalize them, which further secures consensus. The result for TRAC users is that after a transaction is finalized (within a few minutes at most), it's permanent and trusted by the entire network without a central authority.

- Polkadot's Nominated Proof-of-Stake (for Parachain OTP): Though TRAC itself isn't maintained by Polkadot's consensus, it's worth noting that the OriginTrail Parachain (where TRAC could be utilized indirectly) relies on Polkadot's consensus. Polkadot uses a NPoS system where a limited set of validators (e.g., 100 or more) are selected based on stake (including stake nominated by others) to produce blocks. It combines a block production algorithm called BABE (Blind Assignment for Blockchain Extension) which randomly assigns validators to create blocks in slots, and GRANDPA (GHOST-based Recursive ANcestor Deriving Prefix Agreement) which finalizes chains by having validators vote on chains at intervals. For OTP and parachain operations, consensus ensures that parachain blocks (which might include references to TRAC-related operations like bridging messages) are secured by the Polkadot Relay Chain validators. The parachain thus benefits from Polkadot's shared security.

- OriginTrail Node Consensus (data layer): Within the ODN, the notion of consensus is more about data integrity and agreement on task results. OriginTrail nodes engage in a knowledge consensus protocol: for example, when multiple nodes store the same dataset, they must all be able to produce the same hash for that dataset, and a client querying any of them should get identical answers. If a node were to provide faulty data, reputation consensus mechanisms (and potentially staking penalties or at least non-payment for that task) are in place to discourage that. The network might implement a challenge-response or voting among a few nodes to confirm data (similar to how filecoin or other decentralized storage verify retrievability). The specifics of ODN consensus likely involve majority voting or stakes to determine the truthfulness of data statements if disputes arise. However, because all critical data assertions are anchored on a blockchain (meaning there's an immutable reference hash on Ethereum/Gnosis), any node claiming a different data set can be immediately proven wrong by comparing to the on-chain hash. So the consensus on data correctness is largely anchored by blockchain consensus.

- Finality and Transaction Ordering: On Ethereum (and similarly on Gnosis/Polygon), finality is probabilistic until Casper finality – practically, after about 6-12 minutes one can consider a

TRAC transaction finalized on Ethereum with very high certainty. On Polygon and Gnosis, block confirmations (and any checkpointing to Ethereum in Polygon's case) achieve a similar effect. The ordering of TRAC transactions is simply the order in which they appear in blocks. This is preserved globally by the chain. Therefore, double-spend scenarios (two conflicting transfers of the same TRAC) are resolved by whichever transaction is included in the canonical chain first; the other will be rejected as it no longer has the necessary balance or nonce sequence. These guarantees come from the fundamental consensus of Ethereum – as long as the chain's consensus holds, TRAC transactions follow the same trust model as ETH itself.

H.5 Incentive Mechanisms and Applicable Fees

The OriginTrail ecosystem is designed with incentive mechanisms that align the interests of token holders, node operators, and data publishers, using TRAC as the unit of value to reward contributions and enforce participation costs:

- Node Operator Rewards: Independent node operators in the OriginTrail Decentralized Network earn TRAC in exchange for providing services. When a participant (such as a company or dApp) wants to publish data onto the network, they must pay a data hosting fee in TRAC. This fee is collected and distributed to the node or nodes that store and serve the data (often multiple redundant nodes host a given knowledge asset for resilience). The pricing of these services is determined by market dynamics and possibly network-set base rates: for example, a certain amount of TRAC per kilobyte of data per unit time, modulated by supply and demand of storage. Node operators, in a competitive marketplace, might adjust how much data they take on relative to offered fees. Thus, TRAC serves as an incentive for nodes to contribute resources (storage, bandwidth, computation) – the more reliable and useful a node's service, the more TRAC it can earn over time.

- Staking and Collateral: To become a recognized node operator and partake in these rewards, nodes are generally required to stake TRAC. The staking mechanism means a node locks up a certain amount of TRAC (via a smart contract or protocol agreement) as collateral. This serves two purposes: (1) it gives the node a "stake" in behaving correctly – if the node cheats or consistently fails, it risks losing reputation (which in some implementations could mean slashing a portion of staked tokens or at least losing future opportunities), and (2) it acts as a gatekeeping mechanism to prevent trivial Sybil attacks (where someone spins up many fake nodes with no cost). The reputation system in OriginTrail (as described in their literature) weighs stake as one factor; nodes with more staked TRAC and a good track record are assigned more tasks and thereby have more earning opportunities. In effect, staking is an incentive mechanism: those who invest TRAC into the system's security can reap more rewards, while misbehavior could cause economic loss. It should be noted that as of the latest implementation, OriginTrail's node reputation and penalty system reduces future earnings for poor performance rather than burning stake outright (no evidence of direct slashing exists in documentation, making it more a "lock and earn" model), but the principle of stake incentivizing honest work stands.

- Fees for Services: Participants who use the network's services pay fees in TRAC. For example, a supply chain provider publishing product traceability data will pay a fee in TRAC that covers storing the data for a certain time and answering queries about it. Similarly, if a user wants to query complex data on the DKG (for example, finding all items that meet certain criteria), they might pay query fees to nodes that perform the aggregation. These fees ensure that heavy usage of the network compensates those doing the work, preventing spam and resource abuse. Importantly, on the blockchain level, any movement of TRAC (like paying these fees through smart contracts) requires paying the blockchain's native gas fee: e.g., if one interacts with Ethereum to transfer TRAC or call a contract, they pay ETH gas. On Polygon, they pay MATIC as gas, etc. These gas fees are external to TRAC but are a necessary part of using TRAC on-chain. For instance, a company might budget both some

ETH for gas and TRAC for service fees to use OriginTrail fully.

- No Protocol Taxation or Rent: TRAC's design does not impose an automatic tax or deduction on transactions. For example, transferring TRAC from A to B sends the full amount (minus gas paid in ETH); there is no built-in fee or burn. Likewise, holding TRAC does not incur demurrage or fees. The only "fees" come when actively using network services or trading on exchanges (an exchange might charge trading fees in its own schedule). The network doesn't extract a percentage of each interaction aside from what node operators charge and possibly minimal coordination fees. One exception is that some marketplaces or specialized services on OriginTrail (if developed) could charge commissions – for instance, if an OriginTrail-based data marketplace lets users sell datasets for TRAC, the smart contract might take a small percentage as a network fee or treasury contribution. Currently, however, the main fees go directly to service providers (the nodes).

- Voluntary Admission – No new token issuance revenue: It's worth noting that since this admission to trading is voluntary and not a token sale, LCX or the issuer aren't raising funds through TRAC distribution here. There's no "proceeds" from this white paper. LCX's incentive is mainly to list an asset that attracts trading volume (earning trading fees on its exchange) and to operate within regulatory clarity. For Trace Labs and the OriginTrail ecosystem, the incentive is increased token liquidity and legitimacy in the regulated market, which indirectly can improve the token's utility and value (benefiting those holding tokens, including the treasury holdings).

- Ecosystem and Community Incentives: A portion of TRAC (from the original allocation) is earmarked for ecosystem development (as mentioned, 10% ecosystem fund, 15% development fund). These tokens are used to incentivize growth beyond just node operations. For example, Trace Labs can grant TRAC rewards to startups integrating OriginTrail, or run hackathons where developers earn TRAC for creating useful tools, or reward community ambassadors. Such programs have occurred historically (community contests, grants). This mechanism ensures there is an incentive not only for running the network (nodes) but also for building on it and promoting adoption. Over time, as those funds deplete, the expectation is that a self-sustaining economy around TRAC (with perhaps governance deciding future incentives through the community treasury, if established) will take over.

- Price Signals and Market Incentives: While not a protocol-set mechanism, market dynamics serve as a feedback loop. If demand for OriginTrail's services increases, the demand for TRAC goes up (since companies need TRAC to utilize the network). This can drive the token price up, which in turn encourages more node operators to join (because the rewards in TRAC are worth more in fiat terms) – thereby increasing network capacity. Conversely, if usage is low, TRAC's price may stagnate or fall, which tempers node operator interest to an equilibrium where only the more efficient nodes remain (since if TRAC's price is low, only those who can operate cheaply stay profitable, which naturally filters out weaker nodes). This dynamic is similar to how Bitcoin miners respond to price and difficulty. The OriginTrail design, by being open and token-incentivized, leverages this market mechanism to scale the network in proportion to demand.

In summary, the incentive structure around TRAC is carefully designed to reward active contributors (node operators) and require those who gain value (data publishers/users) to pay proportionally for the resources they consume, all facilitated by the TRAC token. This creates a self-sustaining economy where TRAC flows from service demanders to service providers. The absence of arbitrary fees or inflation means the system is as straightforward as "you pay for what you use, and you earn for what you provide," with TRAC as the settlement medium. LCX's role in this context is to provide a marketplace for TRAC trading, adding liquidity and ease of access to the token, which in turn supports the health of these incentive mechanisms by allowing participants to acquire or liquidate TRAC as needed.

H.6 Use of Distributed Ledger Technology

True

H.7 DLT Functionality Description

The OriginTrail (TRAC) token operates on public distributed ledger technology (DLT), primarily leveraging the Ethereum blockchain and other compatible networks (e.g., Gnosis, Polygon) to enable secure and transparent operations within the OriginTrail Decentralized Knowledge Graph (DKG). The DLT infrastructure is used to record token transfers, anchor cryptographic proofs of data integrity, and manage smart contracts that govern TRAC staking, publishing, and validation mechanisms. These ledgers provide immutability, transparency, and verifiability of transactions and network activities. TRAC tokens serve as the economic incentive layer on top of the DLT, enabling decentralized governance, trustless coordination between network participants, and the secure exchange of verifiable knowledge assets. The use of public blockchains ensures interoperability, resilience, and alignment with MiCA's emphasis on open, decentralized infrastructure.

H.8 Audit

True

H.9 Audit Outcome

In its early development stages, OriginTrail's smart contracts were audited by DLT Labs, focusing on the core contract code. Subsequently, Hosho conducted an expedited security audit, particularly addressing newly added features like the pause functionality.

DLT labs audit report

Furthermore, CertiK has provided a security overview of OriginTrail, noting a Code Security Score of 74.56. While CertiK's assessment indicates a relatively good security posture, it also highlights areas for improvement, such as the absence of certain third-party audits and the need for enhanced code transparency.

Certik Audit report

I. PART I – INFORMATION ON RISKS

I.1 Offer-Related Risks

Market & Trading Risks: Once admitted to trading on LCX and other exchanges, TRAC will be subject to the typical volatility of crypto-asset markets. The price of TRAC can be highly volatile, and holders should be prepared for rapid and significant fluctuations in value. Various factors can drive TRAC's price swings, including overall cryptocurrency market sentiment, macroeconomic news, regulatory developments, and specifically news about the OriginTrail project or competing technologies in the blockchain data space. It is not uncommon for crypto-assets similar to TRAC to experience double-digit percentage price moves within a single day. Such volatility means investors could incur substantial losses (or gains) in short time periods, and the market price might not always reflect the intrinsic usage of the token. Liquidity risk is also a concern: while TRAC has been trading on global markets since 2018 and is available on several exchanges, it has a smaller market capitalization compared to major crypto-assets like Bitcoin or Ether. During periods of market stress or low trading volume, it may be difficult to execute large TRAC trades without causing a noticeable impact on the price (slippage). Although LCX aims to provide a reliable trading venue, extreme market conditions (e.g., a sharp market-wide downturn or a sudden loss of confidence in a sector) could lead to reduced liquidity or wider bid-ask spreads for TRAC, making it harder to buy or sell at expected prices.

Regulatory Risk: The regulatory environment for crypto-assets is evolving in the EU and worldwide. MiCA will introduce a harmonized framework, but until it is fully in effect (and even after), national measures or new international regulatory actions could impact TRAC trading. For instance, if a particular country were to ban or heavily restrict crypto trading, holders in that jurisdiction could be

forced to liquidate or hold without transacting. Additionally, if TRAC were later interpreted by any regulator as falling under a different classification (e.g., a security or e-money – although there is no indication of that currently), trading could be curtailed or subject to new rules. Even rumors of regulatory changes can cause price volatility. As LCX is proactively complying with MiCA for TRAC, some regulatory risk is mitigated, but it cannot be eliminated – future laws or guidance (for example on taxation, or on the usage of tokens in certain sectors) might affect demand or the ability of certain entities to hold TRAC.

Trading Platform & Custody Risks: When trading TRAC on LCX's platform (or any exchange), users face the standard operational and security risks associated with centralized trading venues. These include the risk of exchange downtime or outages – for example, high trading volume or technical issues could temporarily disrupt the ability to place orders or withdraw funds. If LCX or another exchange were to experience a cyberattack, hacking incident, or insolvency, users' TRAC holdings on that platform could be at risk (in extreme cases, users might lose assets held on-platform if the exchange's safeguards fail, though LCX employs strict security and compliance measures to prevent such outcomes). Holding TRAC with a third-party custodian or on an exchange introduces custodial risk – users are trusting that entity to securely manage private keys. Even with LCX's regulated custody solution, there remains a non-zero risk of theft (through hacking or insider malfeasance) or loss of access. It is important to note that these platform-related risks are not unique to TRAC, but general to how one chooses to trade or hold the token.

I.2 Issuer-Related Risks

Because TRAC does not have a traditional “issuer” with ongoing obligations (no single entity promises a return or service to token holders), classical issuer credit risk is not present – however, ecosystem and development risks associated with the OriginTrail project fulfill a similar role. The success and value of TRAC are inherently linked to the continued development, support, and adoption of the OriginTrail network. A key risk factor is the project’s dependency on Trace Labs and core contributors: if Trace Labs (the company leading development) were to encounter financial difficulties, pivot away from OriginTrail, or dissolve, this could significantly slow or jeopardize further improvements to the protocol. While OriginTrail is open-source and there is a global community, the core team’s expertise would be hard to replace immediately. Similarly, if key team members (founders or lead engineers) leave the project or there is internal organizational turmoil, the vision and execution might suffer, impacting the network’s growth and the token’s utility.

Another facet is adoption risk: OriginTrail needs to continuously onboard enterprises, partners, and node operators to remain vibrant. If, for any reason, the project fails to achieve further adoption in its target industries (for example, if companies do not integrate as expected, or a competitor’s solution outpaces OriginTrail in technology or partnerships), demand for the network’s services – and thus demand for TRAC – could stagnate or decline. Holders of TRAC should recognize that their token’s value is not backed by any tangible assets or guarantees, but rather by the perceived utility and success of the OriginTrail ecosystem.

Any negative developments in the ecosystem (such as a major bug, data scandal, or partnership loss) could erode confidence and reduce token value. It’s worth noting that, unlike a centralized issuer, the decentralization of OriginTrail means there is no single point of failure that will outright “kill” TRAC – even if Trace Labs stopped work, the existing code and network could continue running as long as some community participants maintain it. However, the lack of a central issuer also means there is no entity to step in to support the token price or project if things go awry (no bailouts or corporate reserves to deploy for token holder benefit). The project’s decentralization can make coordinating responses to challenges slower or more complex (compared to a company making a quick decision). On the other hand, the community could rally to overcome setbacks – this introduces uncertainty as to outcome.

In summary, holders of TRAC face the risk that the project’s stewards or community could fail to sustain the network’s utility or development. The value of TRAC could be severely impacted if, for example, a critical mass of node operators shut down due to lack of profitability, or if a superior technology renders OriginTrail obsolete. Conversely, because of the network’s open nature, no single failure (short of a catastrophic flaw in the token smart contract or a total user exodus) can halt the token’s existence – TRAC would likely continue to trade, albeit potentially at low values, even in a scenario of project distress. Investors effectively are relying on the continued health and innovation of the OriginTrail ecosystem, which is a risk factor outside their direct control.

I.3 Crypto-Assets-Related Risks

- Decentralization and Absence of Backing: TRAC is a purely digital asset with no physical backing or guaranteed redemption value. Its worth is determined entirely by what others are willing to pay for it on the market. Unlike an asset-referenced token, there is no basket of commodities or fiat reserves underpinning TRAC’s price. And unlike an e-money token, it does not correspond 1:1 to any fiat currency. This means TRAC could, in extreme scenarios, lose the majority of its value or even become essentially worthless if the market loses confidence – for instance, if the OriginTrail network is not used at all, TRAC would have little practical utility and demand. Holders must acknowledge the possibility that their investment could theoretically drop to zero. This is not unique to TRAC – many crypto-assets carry this risk – but it’s an important general risk: holding TRAC is not the same as holding equity, debt, or a claim; it confers no recourse if value dissipates.

- Market Volatility: As noted under offer-related risks, general crypto market volatility is a core risk. Historical data shows that even established crypto-assets can swing wildly with changing market sentiment. Factors such as hacks in other projects, macroeconomic shifts (e.g., inflation, interest rates

affecting the appeal of speculative assets), or global events (like bans or endorsements of blockchain technology by governments) can lead to correlated movements across crypto markets. TRAC, being a mid-cap token, might experience amplified volatility because it doesn't have the deep liquidity of top-tier coins – smaller buy or sell pressures (in absolute terms) can cause larger percentage moves. Volatility can lead to emotional decision-making – some holders might panic sell during a crash, locking in losses.

- Technology and Security Risks: Crypto-assets like TRAC come with underlying technological risks. Despite best efforts in coding and auditing, there is a possibility of bugs or vulnerabilities in the smart contracts or protocols. A critical bug in the TRAC token contract itself (though unlikely given its simplicity and years of operation) could, in worst case, freeze tokens or allow unexpected minting – which would drastically undermine trust and value. More relevant, perhaps, are risks in the broader OriginTrail technology.

- Competition and Market Adoption: OriginTrail operates in a competitive landscape of blockchain and decentralized data projects. There are other protocols aiming at supply chain tracking, data markets, or knowledge graphs (such as VeChain, Morpheus.Network, Graph Protocol for data querying, etc.). If one of those or a new entrant provides similar functionality with better performance or marketing, OriginTrail could lose users. In such a scenario, TRAC's utility and demand might decline. The risk is that technological or market competition could reduce OriginTrail's share of its target market. Since TRAC's value is tied to network effect (the more people use it, the more valuable it becomes), any stagnation or reduction in network activity due to competition can negatively affect token value.

- Concentration of Holdings: It is known from the initial allocation that sizable portions of TRAC were allocated to founders, team, and reserves. While these are largely unlocked by 2025, how they are managed still poses a risk. If a large holder (for example, an early investor or the project's treasury) decided to sell a substantial quantity of TRAC on the market, it could depress the price significantly (market impact).

  In conclusion, holding TRAC involves substantial risks inherent to crypto-assets: high volatility, technical uncertainties, regulatory changes, and dependence on the success of the underlying project. Investors should carefully evaluate these risks against their own risk appetite. Diversification, thorough research, and staying informed about project updates and security practices are prudent steps for anyone engaging with TRAC or similar assets.

I.4 Project Implementation-Related Risks

The implementation of the OriginTrail (TRAC) project involves several operational and technical risks that may affect its development, deployment, or continued functionality. As a decentralized protocol integrating blockchain and knowledge graph technologies, OriginTrail depends on a globally distributed network of nodes, third-party infrastructure (e.g., Ethereum and other public blockchains), and open-source community contributions. Delays or failures in protocol upgrades, unexpected technical challenges, or insufficient adoption of the Decentralized Knowledge Graph (DKG) could hinder network scalability or disrupt service availability. Furthermore, any vulnerability or bug in the smart contracts, staking mechanism, or validator coordination could impact TRAC's functionality or token utility. External dependencies such as data providers, infrastructure partners, or integration layers may also pose coordination or reliability risks. Lastly, as the project evolves, changes in team structure, funding limitations, or strategic pivots could affect roadmap execution or token utility assumptions. The OriginTrail team mitigates these risks through ongoing audits, open-source transparency, developer grants, and community governance initiatives, but residual risks inherent to complex decentralized systems remain.

- Technical Complexity of the Decentralized Knowledge Graph (DKG):The DKG is a novel infrastructure combining semantic data with blockchain. Its complexity increases the likelihood of unforeseen bugs, integration delays, or interoperability issues with partner networks.
- Dependency on Public Blockchain Networks:OriginTrail relies on third-party distributed ledgers like Ethereum, Gnosis, and Polygon for anchoring and transactions. Any congestion, security issues, or policy changes in these networks could disrupt TRAC operations.
- Ecosystem Adoption Risk:The success of OriginTrail depends on adoption by enterprises, developers, and data providers. Slow onboarding, lack of incentives, or limited awareness could hinder ecosystem growth and token utility.
- Smart Contract or Node-Level Vulnerabilities:Although audited, smart contracts and validator node software could still contain undiscovered vulnerabilities. Exploits may compromise staking, governance, or reward mechanisms essential to the TRAC economy.
- Team and Governance Risk:Shifts in core team composition, funding constraints, or governance disagreements within the OriginTrail ecosystem could delay development or misalign strategic direction with tokenholder interests.
- Regulatory and Legal Implementation Barriers:Real-world deployments—especially in sectors like supply chain, healthcare, or government—may face legal or regulatory hurdles that affect integration timelines and limit platform adoption.

I.5 Technology-Related Risks

The OriginTrail (TRAC) token and its underlying decentralized infrastructure are exposed to several technology-related risks that could affect network reliability, security, and long-term functionality. As OriginTrail integrates multiple layers—including blockchain protocols (such as Ethereum, Gnosis, and Polygon), smart contracts, and the Decentralized Knowledge Graph (DKG)—any flaw, bug, or incompatibility in these components may result in operational disruptions or data integrity failures. The reliance on public blockchain networks introduces risks related to network congestion, consensus failures, or validator centralization. Smart contract vulnerabilities, despite ongoing audits, may still lead to unintended outcomes such as fund loss or logic malfunction. Additionally, TRAC holders are indirectly exposed to vulnerabilities in third-party tools and infrastructure (e.g., RPC nodes, wallets, explorers), which can impact usability and trust. Finally, as cryptographic standards evolve, the system could face obsolescence or new threats, such as those arising from quantum computing, requiring proactive upgrades to maintain secure operations. While mitigation measures are in place,

including audits, open-source peer review, and security monitoring, residual technical risks remain inherent to decentralized systems.

- Smart Contract Vulnerabilities:Despite audits, smart contracts used for staking, publishing, and reward distribution may contain bugs or exploitable logic that could compromise network operations or user funds.

- Blockchain Network Dependencies:TRAC relies on external blockchains like Ethereum and Gnosis for transaction processing and data anchoring; congestion or downtime on these networks may disrupt core functions.

- Consensus Layer Risks:Any consensus failure, 51% attack, or validator outage on the underlying blockchains could affect data finality, transaction confirmation, or integrity of anchored knowledge assets.

- Third-Party Infrastructure Weaknesses:Users and network components often depend on external services like wallets, RPC endpoints, and explorers, which if compromised or offline, can cause access issues or data misrepresentation.

- Data Integrity Failures in the DKG:Although cryptographically verifiable, errors in the decentralized knowledge graph's logic or node synchronization could lead to incorrect or inconsistent data being published or retrieved.

- Cross-Chain and Interoperability Risks:As OriginTrail expands its multi-chain functionality, bugs or failures in bridges and cross-chain interactions could introduce risk of token duplication, loss, or security lapses.

I.6 Mitigation Measures

To address the various risks associated with its decentralized infrastructure and token economy, the OriginTrail project has implemented multiple technical, operational, and governance-based mitigation measures. Core smart contracts and protocol updates are subjected to third-party audits by recognized security firms, and the codebase remains open-source to enable continuous peer review by the global developer community. The use of established public blockchains such as Ethereum and Gnosis ensures a high degree of network resilience, while multi-chain deployment helps mitigate reliance on any single network. TRAC incorporates staking and incentivization mechanisms that encourage honest behavior among network participants, and mechanisms like slashing and collateralization deter malicious actions. The community-driven governance framework fosters transparency and responsiveness, and the project team actively monitors cryptographic developments to remain prepared for future threats, such as quantum computing. Collectively, these measures strengthen the project's operational integrity, enhance security, and promote long-term sustainability in alignment with MiCA compliance expectations.

- Smart Contract Audits:OriginTrail's smart contracts have undergone third-party audits by security firms such as Hosho and Cyberscope to identify and resolve vulnerabilities before deployment.

- Open-Source Codebase:All core protocol components are publicly available, allowing for continuous peer review and community-led security contributions.

- Multi-Chain Deployment:TRAC operates across multiple blockchains (e.g., Ethereum, Gnosis, Polygon), reducing reliance on a single network and improving operational resilience.

- Staking and Incentive Mechanisms:The protocol uses staking, rewards, and slashing to promote honest participation and deter malicious behavior by nodes and publishers.

- Community Governance Participation:OriginTrail’s decentralized governance model engages the community in key protocol decisions, enhancing transparency and adaptability.

- Data Integrity through Anchoring:The Decentralized Knowledge Graph (DKG) anchors data hashes on-chain, ensuring tamper resistance and verifiability of information.

J. PART J - INFORMATION ON THE SUSTAINABILITY INDICATORS IN RELATION TO ADVERSE IMPACT ON THE CLIMATE AND OTHER ENVIRONMENT-RELATED ADVERSE IMPACTS

Adverse impacts on climate and other environment-related adverse impacts.

J.1 Information on principal adverse impacts on the climate and other environment-related adverse impacts of the consensus mechanism

The TRAC token runs on the Ethereum blockchain, leveraging its Proof of Stake (PoS) consensus for security. TRAC doesn't have a native consensus but uses Ethereum's. It powers OriginTrail's decentralized knowledge graph, enabling trusted data exchange and supply chain integrity. The TRAC annual energy consumption estimate of 236.77485 kWh. Through decentralized staking and validation practices that align with lower energy intensities

General information	
S.1 Name *Name reported in field A.1*	LCX
S.2 Relevant legal entity identifier Identifier referred to in field A.2	529900SN07Z6RTX8R418
S.3 Name of the crypto-asset Name of the crypto-asset, as reported in field D.2	Origintrail
S.4 Consensus Mechanism The consensus mechanism, as reported in field H.4	The crypto-asset's Proof-of-Stake (PoS) consensus mechanism, introduced with The Merge in 2022, replaces mining with validator staking. Validators must stake at least 32 ETH every block a validator is randomly chosen to propose the next block. Once proposed the other validators verify the blocks integrity. The network operates on a slot and epoch system, where a new block is proposed every 12 seconds, and finalization occurs after two epochs (~12.8 minutes) using Casper-FFG. The Beacon Chain coordinates validators, while the fork-choice rule (LMD-GHOST) ensures the chain follows the heaviest accumulated validator votes. Validators earn rewards for proposing and verifying blocks, but face slashing for malicious behavior or inactivity. PoS aims to improve energy efficiency, security, and scalability, with future upgrades like Proto-Danksharding enhancing transaction efficiency.
S.5 Incentive Mechanisms and Applicable Fees Incentive mechanisms to secure transactions and any fees applicable, as reported in field H.5	The crypto-asset's PoS system secures transactions through validator incentives and economic penalties. Validators stake at least 32 ETH and earn rewards for proposing blocks, attesting to valid ones, and participating in sync committees. Rewards are paid in newly issued

	ETH and transaction fees. Under EIP-1559, transaction fees consist of a base fee, which is burned to reduce supply, and an optional priority fee (tip) paid to validators. Validators face slashing if they act maliciously and incur penalties for inactivity. This system aims to increase security by aligning incentives while making the crypto-asset's fee structure more predictable and deflationary during high network activity.
S.6 Beginning of the period to which the disclosure relates	2024-05-18
S.7 End of the period to which the disclosure relates	2025-05-18
Mandatory key indicator on energy consumption	
S.8 Energy consumption Total amount of energy used for the validation of transactions and the maintenance of the integrity of the distributed ledger of transactions, expressed per calendar year	236.77485 kWh per annum
Sources and methodologies	
S.9 Energy consumption sources and Methodologies Sources and methodologies used in relation to the information reported in field S.8	The energy consumption of this asset is aggregated across multiple components: To determine the energy consumption of a token, the energy consumption of the network(s) ethereum is calculated first. Based on the crypto asset's gas consumption per network, the share of the total consumption of the respective network that is assigned to this asset is defined. When calculating the energy consumption, we used - if available - the Functionally Fungible Group Digital Token Identifier (FFG DTI) to determine all implementations of the asset of question in scope and we update the mappings regulary, based on data of the Digital Token Identifier Foundation.

J.2 Supplementary information on principal adverse impacts on the climate and other environment-related adverse impacts of the consensus mechanism

Supplementary key indicators on energy and GHG emissions	
S.10 Renewable energy consumption Share of energy used generated from renewable sources, expressed as a percentage of the total amount of energy used per calendar year, for the validation of	14.770208242%

transactions and the maintenance of the integrity of the distributed ledger of transactions.	
S.11 Energy intensity Average amount of energy used per validated transaction	0.00000 kWh
S.12 Scope 1 DLT GHG emissions – Controlled Scope 1 GHG emissions per calendar year for the validation of transactions and the maintenance of the integrity of the distributed ledger of transactions	0.00 tCO2e per year
S.13 Scope 2 DLT GHG emissions – Purchased Scope 2 GHG emissions, expressed in tCO2e per calendar year for the validation of transactions and the maintenance of the integrity of the distributed ledger of transactions	1873.14310 tCO2e/a
S.14 GHG intensity Average GHG emissions (scope 1 and scope 2) per validated transaction	0.00000 kgCO2e per transaction
Sources and methodologies	
S.15 Key energy sources and methodologies Sources and methodologies used in relation to the information reported in fields S.10 and S.11	To determine the proportion of renewable energy usage, the locations of the nodes are to be determined using public information sites, open-source crawlers and crawlers developed in-house. If no information is available on the geographic distribution of the nodes, reference networks are used which are comparable in terms of their incentivization structure and consensus mechanism. This geo-information is merged with public information from the European Environment Agency (EEA) and thus determined.
S.16 Key GHG sources and methodologies Sources and methodologies used in relation to the information reported in fields S.12, S.13 and S.14	To determine the GHG Emissions, the locations of the nodes are to be determined using public information sites, open-source crawlers and crawlers developed in-house. If no information is available on the geographic distribution of the nodes, reference networks are used which are comparable in terms of their incentivization structure and consensus mechanism. This geo-information is merged with public information from the European Environment Agency (EEA) and thus determined.