

**White paper drafted under the  
European Markets in Crypto-  
Assets Regulation (EU)  
2023/1114 for FFG T9QLIZT5D**

## Preamble

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## **01. Date of notification**

This white paper was notified on 2026-09-01.

## **02. Statement in accordance with Article 6(3) of Regulation (EU) 2023/1114**

This crypto-asset white paper has not been approved by any competent authority in any Member State of the European Union. The person seeking admission to trading of the crypto-asset is solely responsible for the content of this crypto-asset white paper.

## **03. Compliance statement in accordance with Article 6(6) of Regulation (EU) 2023/1114**

This crypto-asset white paper complies with Title II of Regulation (EU) 2023/1114 of the European Parliament and of the Council and, to the best of the knowledge of the management body, the information presented in the crypto-asset white paper is fair, clear and not misleading and the crypto-asset white paper makes no omission likely to affect its import.

## **04. Statement in accordance with Article 6(5), points (a), (b), (c), of Regulation (EU) 2023/1114**

The crypto-asset referred to in this crypto-asset white paper may lose its value in part or in full, may not always be transferable and may not be liquid.

## **05. Statement in accordance with Article 6(5), point (d), of Regulation (EU) 2023/1114**

As defined in Article 3(9) of Regulation (EU) 2023/1114 of the European Parliament and of the Council of 31 May 2023 on Markets in Crypto-Assets – amending Regulations (EU) No 1093/2010 and (EU) No 1095/2010 and Directives 2013/36/EU and (EU) 2019/1937 – a utility token is “a type of crypto-asset that is only intended to provide access to a good or a service supplied by its issuer”. This crypto-asset does not qualify as a utility token, as its intended use goes beyond providing access to a good or service supplied solely by the issuer.

## **06. Statement in accordance with Article 6(5), points (e) and (f), of Regulation (EU) 2023/1114**

The crypto-asset referred to in this white paper is not covered by the investor compensation schemes under Directive 97/9/EC of the European Parliament and of the Council or the deposit guarantee schemes under Directive 2014/49/EU of the European Parliament and of the Council.

## **Summary**

## **07. Warning in accordance with Article 6(7), second subparagraph, of Regulation (EU) 2023/1114**

Warning: This summary should be read as an introduction to the crypto-asset white paper. The prospective holder should base any decision to purchase this crypto-asset on the content of the crypto-asset white paper as a whole and not on the summary alone. The offer to the public of this crypto-asset does not constitute an offer or solicitation to purchase financial instruments and any such offer or solicitation can be made only by means of a prospectus or other offer documents pursuant to the applicable national law. This crypto-asset white paper does not constitute a prospectus as referred to in Regulation (EU) 2017/1129 of the European Parliament and of the Council or any other offer document pursuant to Union or national law.

## **08. Characteristics of the crypto-asset**

The ZEN crypto-asset referred to in this white paper is a crypto-asset other than an e-money token and an asset-referenced token, and is implemented on the Base and Horizen networks as a token under the ERC-20 token standard, according to the DTI FFG shown in section F.14. The first activity of the token on Base (the so-called "mint") took place on 2025-07-23 (see <https://basescan.org/tx/0x7e79b7bb55bdc3614635ded21b93c67400ac88f7ff3c68671702547208c3461a>, accessed 2025-08-06). The first activity of the crypto-asset on Horizen took place on 2025-12-15 (transaction hash: 0x58007e2c9e59d79632c0974cd05df8f650c11f2032dfbe1b0c1979e912a116f3, source: <https://explorer.horizen.io/tx/0x58007e2c9e59d79632c0974cd05df8f650c11f2032dfbe1b0c1979e912a116f3>, accessed 2026-08-06). The crypto-asset has a maximum supply of 21,000,000 tokens.

Horizen is a crypto-asset ecosystem that migrated from its former proof-of-work blockchain to Base following a Horizen DAO governance decision. The project also includes the Horizen Chain, an EVM-compatible Layer-3 network based on the OP Stack that settles through Base onto Ethereum, together with components for confidential data processing and zero-knowledge proof verification.

The ZEN crypto-asset is used for participation in Horizen DAO governance and may also be used within a value-routing mechanism under which ecosystem payments are applied to acquire ZEN for destruction or ecosystem development. ZEN may also be staked on the Horizen Chain for rewards paid in ZEN, which are variable and not guaranteed. Staking does not contribute to consensus: ZEN is not used for transaction fees, block production, slashing or network security. Fees on Base and the Horizen Chain are denominated in ETH, and ZEN may be bridged to the Horizen Chain through a LayerZero Omnichain Fungible Token mechanism.

The crypto-asset does not grant any legally enforceable or contractual rights or obligations to its holders or purchasers. Any functionalities accessible through the underlying technology are purely technical or operational in nature and do not confer rights comparable to ownership, profit participation, governance, or similar entitlements known from traditional financial instruments.

## **09. Information about the quality and quantity of goods or services to which the utility tokens give access and restrictions on the transferability**

As defined in Article 3(9) of Regulation (EU) 2023/1114 of the European Parliament and of the Council of 31 May 2023 on Markets in Crypto-Assets – amending Regulations (EU) No 1093/2010 and (EU) No 1095/2010 and Directives 2013/36/EU and (EU) 2019/1937 – a utility token is “a type of crypto-asset that is only intended to provide access to a good or a service supplied by its issuer”. This crypto-asset does not qualify as a utility token, as its intended use goes beyond providing access to a good or a service supplied solely by the issuer.

## **10. Key information about the offer to the public or admission to trading**

Crypto Risk Metrics GmbH is seeking admission to trading on the Payward Global Solutions LTD (“Kraken”) platform in the European Union in accordance with Article 5 of Regulation (EU) 2023/1114 of the European Parliament and of the Council of 31 May 2023 on Markets in Crypto-Assets, and amending Regulations (EU) No 1093/2010 and (EU) No 1095/2010 and Directives 2013/36/EU and (EU) 2019/1937. The admission to trading is not accompanied by a public offer of the crypto-asset.

## Part A – Information about the offeror or the person seeking admission to trading

### A.1 Name

Crypto Risk Metrics GmbH is the person seeking admission to trading.

### A.2 Legal form

The legal form of Crypto Risk Metrics GmbH is 2HBR, which corresponds to "Gesellschaft mit beschränkter Haftung".

### A.3 Registered address

The registered address of Crypto Risk Metrics GmbH is Lange Reihe 73, 20099 Hamburg, Germany,  
federal state of Hamburg.

### A.4 Head office

The head office is identical to the registered address.

### A.5 Registration date

Crypto Risk Metrics GmbH was registered on 2018-12-03.

### A.6 Legal entity identifier

The Legal Entity Identifier (LEI) of Crypto Risk Metrics GmbH is 39120077M9TG001FE242.

### A.7 Another identifier required pursuant to applicable national law

The national identifier of Crypto Risk Metrics GmbH is HRB 154488.

### A.8 Contact telephone number

+4915144974120

### A.9 E-mail address

info@crypto-risk-metrics.com

### A.10 Response time (Days)

Crypto Risk Metrics GmbH will respond to investor enquiries within 30 calendar days.

### A.11 Parent company

Crypto Risk Metrics GmbH has no parent company.

### A.12 Members of the management body

| Identity   | Function | Business Address                       |
|------------|----------|----------------------------------------|
| Tim Zölitz | Chairman | Lange Reihe 73, 20099 Hamburg, Germany |

### **A.13 Business activity**

Crypto Risk Metrics GmbH is a technical service provider that supports regulated entities in fulfilling their regulatory requirements. Among other services, Crypto Risk Metrics GmbH acts as a data provider for ESG data under Article 66(5). In light of the requirements set out in Articles 4(7), 5(4) and 66(3) of Regulation (EU) 2023/1114 of the European Parliament and of the Council of 31 May 2023 on Markets in Crypto-Assets, and amending Regulations (EU) No 1093/2010 and (EU) No 1095/2010 and Directives 2013/36/EU and (EU) 2019/1937, Crypto Risk Metrics GmbH aims to provide central services for crypto-asset white papers.

### **A.14 Parent company business activity**

Crypto Risk Metrics GmbH does not have a parent company. Accordingly, no business activity of a parent company is to be reported in this section.

### **A.15 Newly established**

Crypto Risk Metrics GmbH has been established since 2018-12-03 and is therefore not newly established (i.e. more than three years).

### **A.16 Financial condition for the past three years**

Crypto Risk Metrics GmbH, founded in 2018 and based in Hamburg (HRB 154488), has undergone several strategic shifts in its business focus since incorporation. Due to these changes in business model and operational direction over time, the financial figures from earlier years are only comparable to a limited extent with the company's current commercial activities. The present business model – centred on regulatory technology and risk analytics in the context of the MiCA framework – has been developed progressively and can realistically be considered fully operational since approximately 2024.

The company's financial trajectory over the past three years reflects the transition from exploratory development towards market-ready product delivery. Profit or loss after tax for the last three financial years is as follows:

2024 (unaudited): loss of EUR 50,891.81

2023 (unaudited): loss of EUR 27,665.32

2022: profit of EUR 104,283.00

The profit in 2022 resulted primarily from legacy consulting activities, which were discontinued as part of the company's repositioning.

The losses in 2023 and 2024 resulted from strategic investments in the development of proprietary software infrastructure, regulatory frameworks, and compliance technology for the MiCA ecosystem. During those periods, no substantial commercial revenues were expected, as resources were directed towards preparing the platform for market entry in a regulated environment.

A fundamental repositioning of the company occurred in 2023 and especially in 2024, when the focus shifted towards providing risk management, regulatory reporting, and supervisory compliance solutions for financial institutions and crypto-asset service providers. This marked a material shift in business operations and monetisation strategy.

Based on preliminary unaudited management information for the financial year 2025, revenues are expected to have exceeded EUR 800,000, while preliminary net profit is expected to exceed EUR 100,000.

These figures are not audited and are not based on a finalised annual financial statement. Accordingly, they remain subject to finalisation and may differ from the figures ultimately reported in the annual financial statements.

With the regulatory environment now taking shape and the platform commercially validated, it is assumed that the effects of the strategic developments will continue to materialise in 2026. The company foresees further scalability of its technology and growing market demand for regulatory compliance tools in the European crypto-asset sector.

No public subsidies or governmental grants have been received to date; all operations have been financed through shareholder contributions and internally generated resources. Crypto Risk Metrics GmbH has never accepted any payments in tokens from projects it has worked with and – due to its internal Conflicts of Interest Policy – never will.

## **A.17 Financial condition since registration**

Not applicable

## **Part B – Information about the issuer, if different from the offeror or person seeking admission to trading**

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

Yes, the issuer is different from the person seeking admission to trading.

### **B.2 Name**

The Horizen Foundation

### **B.3 Legal form**

The legal form of The Horizen Foundation is K575, which corresponds to "foundation company".

### **B.4 Registered address**

The registered address of The Horizen Foundation is c/o Leeward Management Limited, 3119 9 Forum Lane, P.O. Box 144, Grand Cayman, KY1-9006, George Town,

Cayman Islands,

KY1

### **B.5 Head office**

The head office is identical to the registered address.

### **B.6 Registration date**

The Horizen Foundation was registered on 2023-09-11.

### **B.7 Legal entity identifier**

The Legal Entity Identifier (LEI) of The Horizen Foundation is 25490025UDB7IZN7JM76.

### **B.8 Another identifier required pursuant to applicable national law**

Not applicable.

### **B.9 Parent company**

Not applicable.

### **B.10 Members of the management body**

| <b>Name</b>   | <b>Function</b> | <b>Business address</b>                                                                                              |
|---------------|-----------------|----------------------------------------------------------------------------------------------------------------------|
| Glenn Kennedy | Director        | c/o Leeward Management Limited, 3119 9 Forum Lane, P.O. Box 144, Grand Cayman, KY1-9006, George Town, Cayman Islands |

### **B.11 Business activity**

The Horizen Foundation administers DAO governance and treasury-backed ecosystem initiatives, including the funding of development and other activities intended to support the Horizen ecosystem.

### **B.12 Parent company business activity**

Not applicable.

## **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**

Not applicable since Crypto Risk Metrics GmbH is not a trading platform.

### **C.2 Legal form**

Not applicable since Crypto Risk Metrics GmbH is not a trading platform.

### **C.3 Registered address**

Not applicable since Crypto Risk Metrics GmbH is not a trading platform.

#### **C.4 Head office**

Not applicable since Crypto Risk Metrics GmbH is not a trading platform.

#### **C.5 Registration date**

Not applicable since Crypto Risk Metrics GmbH is not a trading platform.

#### **C.6 Legal entity identifier**

Not applicable since Crypto Risk Metrics GmbH is not a trading platform.

#### **C.7 Another identifier required pursuant to applicable national law**

Not applicable since Crypto Risk Metrics GmbH is not a trading platform.

#### **C.8 Parent company**

Not applicable since Crypto Risk Metrics GmbH is not a trading platform.

#### **C.9 Reason for crypto-asset white paper preparation**

Not applicable since Crypto Risk Metrics GmbH is not a trading platform.

#### **C.10 Members of the management body**

Not applicable since Crypto Risk Metrics GmbH is not a trading platform.

#### **C.11 Operator business activity**

Not applicable since Crypto Risk Metrics GmbH is not a trading platform.

#### **C.12 Parent company business activity**

Not applicable since Crypto Risk Metrics GmbH is not a trading platform.

#### **C.13 Other persons drawing up the crypto-asset white paper according to Article 6(1), second subparagraph, of Regulation (EU) 2023/1114**

Not applicable since Crypto Risk Metrics GmbH is not a trading platform.

#### **C.14 Reason for drawing the white paper by persons referred to in Article 6(1), second subparagraph, of Regulation (EU) 2023/1114**

Not applicable since Crypto Risk Metrics GmbH is not a trading platform.

### **Part D – Information about the crypto-asset project**

#### **D.1 Crypto-asset project name**

Long Name: "Horizen", Short Name: "ZEN" according to the Digital Token Identifier Foundation ([www.dtif.org](http://www.dtif.org), DTI see F.13, FFG DTI see F.14 as of 2026-08-13).

#### **D.2 Crypto-assets name**

Long Name: "Horizen" according to the Digital Token Identifier Foundation ([www.dtif.org](http://www.dtif.org), DTI see F.13, FFG DTI see F.14 as of 2026-08-13).

### D.3 Abbreviation

Short Name: "ZEN" according to the Digital Token Identifier Foundation ([www.dtif.org](http://www.dtif.org), DTI see F.13, FFG DTI see F.14 as of 2026-08-13).

### D.4 Crypto-asset project description

Horizen is a blockchain project centred on the development of an EVM-compatible Layer-3 network built on the OP Stack and settling on Base. The Horizen Chain provides an Ethereum-compatible execution environment for decentralised applications and is designed to support applications that require confidentiality, verifiability or application-level compliance mechanisms.

According to public information (source: <https://docs.horizen.io/horizen-chain/overview/what-is-horizen>, accessed 2026-08-13), the project also develops tools that can be integrated by applications operating within or alongside the network. These include Vela, which uses trusted execution environments for confidential computation and cryptographic attestation, and zkVerify, which provides verification of zero-knowledge proofs. Such mechanisms are implemented at the application or supporting infrastructure level rather than providing inherent transaction anonymity across the Horizen Chain.

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

| Name of person         | Type of person                          | Business address of person                                                                                           | Domicile of company |
|------------------------|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------|---------------------|
| The Horizen Foundation | Other person involved in implementation | c/o Leeward Management Limited, 3119 9 Forum Lane, P.O. Box 144, Grand Cayman, KY1-9006, George Town, Cayman Islands | Cayman Islands      |
| Horizen Labs, Inc.     | Other person involved in implementation | 4425 S Mopac Expy Bldg 3 Suite 507, Austin, TX 78735 - 4076                                                          | United States       |
| Rob Viglione           | Other person involved in implementation | 4425 S Mopac Expy Bldg 3 Suite 507, Austin, TX 78735 - 4076                                                          | United States       |
| Rosario Pabst          | Other person involved in implementation | 4425 S Mopac Expy Bldg 3 Suite 507, Austin, TX 78735 - 4076                                                          | United States       |
| Zain Cheng             | Other person involved in implementation | 4425 S Mopac Expy Bldg 3 Suite 507, Austin, TX 78735 - 4076                                                          | United States       |
| Andy Bryant            | Other person involved in implementation | 4425 S Mopac Expy Bldg 3 Suite 507, Austin, TX 78735 - 4076                                                          | United States       |

| <b>Name of person</b> | <b>Type of person</b>                   | <b>Business address of person</b>                           | <b>Domicile of company</b> |
|-----------------------|-----------------------------------------|-------------------------------------------------------------|----------------------------|
| Tommaso Gagliardoni   | Other person involved in implementation | 4425 S Mopac Expy Bldg 3 Suite 507, Austin, TX 78735 - 4076 | United States              |
| Gwendolyn Regina      | Other person involved in implementation | 4425 S Mopac Expy Bldg 3 Suite 507, Austin, TX 78735 - 4076 | United States              |
| John Camardo          | Other person involved in implementation | 4425 S Mopac Expy Bldg 3 Suite 507, Austin, TX 78735 - 4076 | United States              |
| Erica Palaia          | Other person involved in implementation | 4425 S Mopac Expy Bldg 3 Suite 507, Austin, TX 78735 - 4076 | United States              |

## D.6 Utility Token Classification

As defined in Article 3(1)(9) of Regulation (EU) 2023/1114 of the European Parliament and of the Council of 31 May 2023 on Markets in Crypto-Assets – amending Regulations (EU) No 1093/2010 and (EU) No 1095/2010 and Directives 2013/36/EU and (EU) 2019/1937 – a utility token is “a type of crypto-asset that is only intended to provide access to a good or a service supplied by its issuer”. This crypto-asset does not qualify as a utility token, as its intended use goes beyond providing access to a good or a service supplied solely by the issuer.

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

As defined in Article 3(9) of Regulation (EU) 2023/1114 of the European Parliament and of the Council of 31 May 2023 on Markets in Crypto-Assets – amending Regulations (EU) No 1093/2010 and (EU) No 1095/2010 and Directives 2013/36/EU and (EU) 2019/1937 – a utility token is “a type of crypto-asset that is only intended to provide access to a good or a service supplied by its issuer”. This crypto-asset does not qualify as a utility token, as its intended use goes beyond providing access to a good or a service supplied solely by the issuer.

## D.8 Plans for the token

This section provides an overview of the historical developments related to the ZEN crypto-asset and a description of planned or anticipated project milestones as publicly communicated. All forward-looking elements are subject to significant uncertainty. They do not constitute commitments, assurances, or guarantees, and may be modified, delayed, or discontinued at any time. The implementation of past milestones cannot be assumed to continue in the future, and future changes may have adverse effects for token holders.

There is a formally published roadmap for the ZEN crypto-asset and/or the Horizen protocol. Based on the official roadmap and other public sources (source: <https://www.horizen.io/roadmap>, <https://blog.horizen.io/>, <https://docs.horizen.io/>; accessed 2026-08-13), several protocol upgrades, ecosystem initiatives, and crypto-asset-related developments have been communicated that affect the evolution of the Horizen protocol and the role of the ZEN crypto-asset.

#### Past milestones:

- Fair Launch (2017): ZEN was launched through a proof-of-work distribution without a pre-mine or initial coin offering.
- EON, Foundation and DAO Development (2023): The project entered its EON sidechain phase, and the Horizen Foundation and Horizen DAO were formally established.
- Approval of the Move to Base (Q1 2025): The Horizen DAO approved the proposal to move ZEN and the project infrastructure to Base.
- Token Claim Development and Security Review (Q2 2025): The project developed the ZEN claim mechanism, released an extension supporting ZEND deprecation and conducted security reviews of the claim and migration tools.
- ZEN Migration and Legacy-Network Deprecation (23 July 2025): ZEN migrated from the legacy Horizen mainchain to Base as an ERC-20 crypto-asset. The legacy ZEND mainchain and EON were subsequently deprecated, and the Horizen Layer-3 testnet was launched during Q3 2025.
- Horizen Chain Mainnet Launch (Q4 2025): Horizen Chain launched as an EVM-compatible Layer-3 network on Base, and the first applications became available.
- Vela Developer Release (March 2026): The confidential compute environment formerly referred to as HCCE was renamed Vela and made available as a local development environment, with dedicated testnet instances available to selected developers on request.
- ZEN Staking Relaunch (July 2026): A Foundation-operated ZEN staking programme became available on Horizen Chain, enabling eligible participants to commit ZEN and receive variable, discretionary rewards. The programme does not secure the chain.

#### Future milestones:

- Wider Vela Testnet Access (Date not specified): Wider testnet access is planned following the implementation of multi-application support and self-deployment functionality.
- Confidential Execution and Compliance Toolkit (Date not specified): Phase 2 of the protocol plan contemplates confidential execution together with tools supporting know-your-customer checks, accreditation and privacy-preserving identity mechanisms.
- Governance, Transparency and Adoption Initiatives (2026–2028): The issuer has communicated plans to publish quarterly Token Holder Relations Reports, expand DAO funding through the ZEN Sustainability Initiative and support the adoption of ZEN in decentralised-finance applications across Base and Ethereum.

Note: All future milestones are subject to significant uncertainty, including technical feasibility, regulatory developments, market adoption and community governance decisions. The project may modify, delay or discontinue any of these initiatives at any time. Past implementation or performance outcomes do not constitute an indication of future results, and any such changes may materially affect the characteristics, availability or perceived value of the ZEN crypto-asset for its holders.

## **D.9 Resource allocation**

Based on information from various third-party and industry sources, it is reported that the crypto-asset project associated with the ZEN token has conducted multiple funding rounds involving private seed financing for Horizen Labs, Inc.

According to publicly referenced information, Horizen Labs completed a seed funding round of approximately USD 3.75 million in 2019. Public reporting indicates that Digital Currency Group and Liberty City participated in and led this financing round. Further details regarding the individual investment amounts, valuation, or contractual terms of the round were not disclosed in the referenced information.

Further public reporting indicates that Horizen Labs closed an additional seed funding round of approximately USD 7 million in August 2021. The round was reportedly led by Kenetic Capital and included Digital Currency Group and Liberty City, each of which was reported to have contributed approximately USD 2 million. Sound Ventures, Deribit, Artist Capital, Deus and LionTree were also reported as participants. According to the reporting, the financing was intended to support the continued development of Horizen Labs' blockchain and decentralised application technology and the expansion of its operations and engineering resources.

However, all such information is derived exclusively from public announcements, portfolio disclosures, press releases, transparency reports, and third-party publications. The issuer, foundation, or entities associated with the ZEN crypto-asset have not independently confirmed the occurrence, precise amounts, valuation, legal structure, or contractual terms of these reported financing rounds. As a result, the referenced investment amounts, investor participation, and any implied cumulative funding figures cannot be independently verified and should be considered indicative only.

## **D.10 Planned use of collected funds or crypto-assets**

Not applicable, as this white paper serves the purpose of admission to trading and is not associated with any fundraising activity for the crypto-asset project.

# **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**

Crypto Risk Metrics GmbH is the person seeking admission to trading.

## **E.2 Reasons for public offer or admission to trading**

The purpose of seeking admission to trading is to enable the crypto-asset to be listed on a regulated platform in accordance with the applicable provisions of Regulation (EU) 2023/1114 and Commission Implementing Regulation (EU) 2024/2984. The white paper has been drawn up to comply with the transparency requirements applicable to trading venues.

### **E.3 Fundraising target**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

### **E.4 Minimum subscription goals**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

### **E.5 Maximum subscription goals**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

### **E.6 Oversubscription acceptance**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

### **E.7 Oversubscription allocation**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

### **E.8 Issue price**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

### **E.9 Official currency or any other crypto-assets determining the issue price**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

### **E.10 Subscription fee**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

### **E.11 Offer price determination method**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

### **E.12 Total number of offered/traded crypto-assets**

The total number of ZEN crypto-assets is set at 21,000,000 units. Investors should note that changes in the effective supply, including changes in the number of circulating units or token burns, may affect the token's price and liquidity. The effective amount of units available on the market

depends on the number of units in circulation at any given time, as well as potential reductions through burning. As a result, the circulating supply may differ from the total supply.

### **E.13 Targeted holders**

The admission of the crypto-asset to trading is open to all types of investors.

### **E.14 Holder restrictions**

Holder restrictions are subject to the rules applicable to the crypto-asset service provider, as well as to any additional restrictions such provider may impose.

### **E.15 Reimbursement notice**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

### **E.16 Refund mechanism**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

### **E.17 Refund timeline**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

### **E.18 Offer phases**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

### **E.19 Early purchase discount**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

### **E.20 Time-limited offer**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

### **E.21 Subscription period beginning**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

### **E.22 Subscription period end**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

### **E.23 Safeguarding arrangements for offered funds/crypto-assets**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

#### **E.24 Payment methods for crypto-asset purchase**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

#### **E.25 Value transfer methods for reimbursement**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

#### **E.26 Right of withdrawal**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

#### **E.27 Transfer of purchased crypto-assets**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

#### **E.28 Transfer time schedule**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

#### **E.29 Purchaser's technical requirements**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

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

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

#### **E.31 CASP identifier**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

#### **E.32 Placement form**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

#### **E.33 Trading platforms name**

The admission to trading is sought on Payward Global Solutions LTD ("Kraken").

#### **E.34 Trading platforms Market identifier code (MIC)**

The Market Identifier Code (MIC) of Payward Global Solutions LTD ("Kraken") is PGS�.

#### **E.35 Trading platforms access**

The token is intended to be listed on the trading platform operated by Payward Global Solutions LTD ("Kraken"). Access to this platform depends on regional availability and user eligibility under

Kraken's terms and conditions. Investors should consult Kraken's official documentation to determine whether they meet the requirements for account creation and token trading.

### **E.36 Involved costs**

The costs involved in accessing the trading platform depend on the specific fee structure and terms of the respective crypto-asset service provider. These may include trading fees, deposit or withdrawal charges, and network-related transaction fees. Investors are advised to consult the applicable fee schedule of the chosen platform before engaging in trading activities.

### **E.37 Offer expenses**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

### **E.38 Conflicts of interest**

MiCA-compliant crypto-asset service providers shall have strong measures in place in order to manage conflicts of interest. Due to the broad audience this white paper addresses, potential investors should always check the conflicts-of-interest policy of their respective counterparty.

Crypto Risk Metrics GmbH has established, implemented, and documented comprehensive internal policies and procedures for the identification, prevention, management, and documentation of conflicts of interest in accordance with applicable regulatory requirements. These internal measures are actively applied within the organisation. For the purposes of this specific assessment and the crypto-asset covered by this white paper, a token-specific review has been conducted by Crypto Risk Metrics GmbH. Based on this individual review, no conflicts of interest relevant to this crypto-asset have been identified at the time of preparation of this white paper.

### **E.39 Applicable law**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

### **E.40 Competent court**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

## **Part F – Information about the crypto-assets**

### **F.1 Crypto-asset type**

The crypto-asset described in the white paper is classified as a crypto-asset under the Markets in Crypto-Assets Regulation (MiCA) but is neither classified as an electronic money token (EMT) nor an asset-referenced token (ART). It is a digital representation of value that can be stored and transferred using distributed ledger technology (DLT) or similar technology, without embodying or conferring any rights to its holder. The crypto-asset does not aim to maintain a stable value by

referencing an official currency, a basket of assets, or any other underlying rights. Instead, its valuation is entirely market-driven, based on supply and demand dynamics, and it is not subject to any stabilisation mechanism. It is neither pegged to any fiat currency nor backed by any external assets, which distinguishes it from EMTs and ARTs. Furthermore, the crypto-asset is not categorised as a financial instrument, deposit, insurance product, pension product, or any other regulated financial product under EU law. It does not grant financial rights, corporate voting rights, or any contractual claims to its holders, and therefore remains outside the scope of regulatory frameworks applicable to traditional financial instruments.

## **F.2 Crypto-asset functionality**

ZEN is a fungible ERC-20 crypto-asset issued on Base and bridged to Horizen Chain through an omnichain token arrangement. It may be transferred between compatible wallets and used within applications and services that integrate ZEN. ZEN itself does not provide confidential or anonymous transaction functionality. Confidentiality on Horizen Chain is instead provided, where applicable, through separate application-level tools and integrations.

Within the Horizen ecosystem, ZEN functions primarily as a governance and coordination crypto-asset. ZEN holders may vote on proposals through the Horizen DAO, while holders meeting the applicable token-holding thresholds may submit technical or non-technical improvement proposals. Approved proposals may concern matters including technical development, treasury use and the administration of the ecosystem.

ZEN may also be committed to a staking arrangement on Horizen Chain, authorised by the Horizen DAO, under which staked ZEN earns rewards paid in ZEN. The arrangement is non-custodial and settles on-chain. The rewards pool is funded from DAO allocations and from fees and emissions contributed by participating ecosystem applications, protocols and infrastructure, several of which were not yet contributing as at the date of this white paper. Rewards are variable, several funding sources are discretionary or subject to ongoing DAO review, and no level of reward is promised or guaranteed. Staking does not create any claim against the Horizen Foundation or any other entity.

ZEN is not used to pay transaction fees on Base or Horizen Chain, and staked ZEN performs no block-production, sequencing, validation or network-security function on either network; the security of Horizen Chain derives from Base. Holding or staking ZEN does not confer ownership, equity, profit-participation or other economic rights in the Horizen Foundation or any related entity.

The availability and usability of ZEN depend on factors including the continued availability and operation of compatible applications, services and infrastructure, the further development of the Horizen ecosystem, governance decisions of the Horizen DAO, and the operational conditions of Base and Horizen Chain. These factors are outside the control of individual ZEN holders, and no assurance can be given that any particular functionality, application or service will remain available or operate without interruption.

## **F.3 Planned application of functionalities**

Future milestones:

- Wider Vela Testnet Access (Date not specified): Wider testnet access is planned following the implementation of multi-application support and self-deployment functionality.
- Confidential Execution and Compliance Toolkit (Date not specified): Phase 2 of the protocol plan contemplates confidential execution together with tools supporting know-your-customer checks, accreditation and privacy-preserving identity mechanisms.
- Governance, Transparency and Adoption Initiatives (2026–2028): The issuer has communicated plans to publish quarterly Token Holder Relations Reports, expand DAO funding through the ZEN Sustainability Initiative and support the adoption of ZEN in decentralised-finance applications across Base and Ethereum.

Note: All future milestones are subject to significant uncertainty, including technical feasibility, regulatory developments, market adoption and community governance decisions. The project may modify, delay or discontinue any of these initiatives at any time. Past implementation or performance outcomes do not constitute an indication of future results, and any such changes may materially affect the characteristics, availability or perceived value of the ZEN crypto-asset for its holders.

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

**F.4 Type of crypto-asset white paper**

The white paper type is "Other crypto-assets" (i.e. OTHR).

**F.5 The type of submission**

The type of submission is MODI (Modified white paper).

**F.6 Crypto-asset characteristics**

The crypto-asset referred to herein is a crypto-asset other than EMT and ART. ZEN is an ERC-20 token issued on the Base and the Horizen networks, fungible up to 18 digits after the decimal point. The crypto-asset constitutes a digital representation recorded on distributed-ledger technology and does not confer ownership, governance, profit participation, or any other legally enforceable rights. Any functionalities associated with the token are limited to potential technical features within the relevant platform environment. These functionalities do not represent contractual entitlements and may depend on future development decisions, technical design choices, and operational conditions. The crypto-asset does not embody intrinsic economic value; instead, its value, if any, is determined exclusively by market dynamics such as supply, demand, and liquidity in secondary markets.

**F.7 Commercial name or trading name**

Long Name: "Horizen" according to the Digital Token Identifier Foundation ([www.dtif.org](http://www.dtif.org), DTI see F.13, FFG DTI see F.14 as of 2026-08-13).

**F.8 Website of the issuer**

<https://www.horizen.io/>

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

2025-09-10

**F.10 Publication date**

2025-09-10

**F.11 Any other services provided by the issuer**

No such services are currently known to be provided by the issuer. However, it cannot be excluded that additional services exist or may be offered in the future outside the scope of Regulation (EU) 2023/1114.

**F.12 Language or languages of the crypto-asset white paper**

EN

**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**

47W406ZZS; KL03F6N2L

**F.14 Functionally fungible group digital token identifier**

T9QL1ZT5D

**F.15 Voluntary data flag**

This white paper has been submitted on a mandatory basis under Regulation (EU) 2023/1114.

**F.16 Personal data flag**

Yes, this white paper contains personal data as defined in Regulation (EU) 2016/679 (the GDPR).

**F.17 LEI eligibility**

The issuer is eligible for a Legal Entity Identifier (LEI).

**F.18 Home Member State**

Germany

**F.19 Host Member States**

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

**Part G – Information on the rights and obligations attached to the crypto-assets****G.1 Purchaser rights and obligations**

The crypto-asset does not grant any legally enforceable or contractual rights or obligations to its holders or purchasers. Any functionalities accessible through the underlying technology are of a purely technical or operational nature and do not constitute rights comparable to ownership, profit

participation, governance, or similar entitlements known from traditional financial instruments. Accordingly, holders do not acquire any legally enforceable claim against the issuer of the crypto-asset or any third party.

## **G.2 Exercise of rights and obligations**

As the crypto-asset does not confer any legally enforceable rights or obligations, there are no applicable procedures or conditions for their exercise. Any interaction or functionality that may be available within the project's technical infrastructure – such as participation mechanisms or protocol-level features – serves operational purposes only and does not create, evidence, or constitute any contractual or statutory entitlement.

## **G.3 Conditions for modifications of rights and obligations**

As the crypto-asset does not confer any legally enforceable rights or obligations, there are no conditions or mechanisms for modifying such rights or obligations. Adjustments to the technical protocol, smart contract logic, or related systems may occur in the ordinary course of development or maintenance. Such changes do not alter the legal position of holders, as no contractual rights exist and no rights arise under applicable law or regulation. Holders should not interpret technical updates or governance-related changes as amendments to legally binding entitlements.

## **G.4 Future public offers**

Information on future offers to the public of crypto-assets was not available at the time of writing this white paper (2026-08-13).

## **G.5 Issuer retained crypto-assets**

As at 14 August 2026, the Foundation's publicly identified ZEN balances amounted to approximately 1,236,847 ZEN. This comprised approximately 1,098,442 ZEN held in the Foundation's designated vesting contract (0x45c5652387BaD70e9868e59aBffa9333bCE97ceb) and approximately 138,405 ZEN held in the Foundation Treasury (0x57Ea5Db2f794f4FeA8cd4E3F3135B12ecE24bEa4) and operations wallet (0x2dCe406A45e264c2D171Bc4f8b4F34207643839D). These balances relate to the ZEN token deployed on Base at 0xf43eB8De897Fbc7F2502483B2Bef7Bb9EA179229.

The ZEN held in the vesting contract is allocated to the Foundation but remains subject to the applicable release schedule and is not immediately transferable by the Foundation. Amounts released from the vesting contract are transferred through the designated beneficiary arrangement to the Foundation Treasury and may subsequently be applied towards the Foundation's operations.

The separate ZEN allocations and balances held through the Horizen DAO's vesting contract and treasury are not included in the amount attributed to the Foundation. The management and application of these allocations are subject to the applicable governance arrangements and approved governance decisions. The corresponding balances may change as ZEN is released under the vesting schedules, transferred or otherwise applied, including pursuant to governance-approved decisions.

## **G.6 Utility token classification**

No – the crypto-asset project does not concern utility tokens as defined in Article 3(9) of Regulation (EU) 2023/1114.

## **G.7 Key features of goods/services of utility tokens**

Not applicable, as the crypto-asset described herein is not a utility token.

## **G.8 Utility tokens redemption**

Not applicable, as the crypto-asset described herein is not a utility token.

## **G.9 Non-trading request**

The admission to trading is sought.

## **G.10 Crypto-assets purchase or sale modalities**

Not applicable, as this white paper is written to seek admission to trading, not for the initial offer to the public.

## **G.11 Crypto-assets transfer restrictions**

The crypto-assets themselves are not subject to any technical or contractual transfer restrictions and are generally freely transferable. However, crypto-asset service providers may impose restrictions on buyers or sellers in accordance with applicable laws, internal policies or contractual terms agreed with their clients.

## **G.12 Supply adjustment protocols**

No – there are no fixed protocols that can increase or decrease the supply of the crypto-asset in response to changes in demand as of 2026-08-13.

However, it is possible to decrease the circulating supply by transferring crypto-assets to so-called "burn addresses". These are addresses from which the tokens are no longer intended to be transferred or accessed, effectively removing them from circulation.

## **G.13 Supply adjustment mechanisms**

Not applicable.

## **G.14 Token value protection schemes**

No – the crypto-asset does not have any mechanisms or schemes in place that aim to stabilise or protect its market value. Its value is determined solely by market supply and demand, and may be subject to significant volatility.

## **G.15 Token value protection schemes description**

Not applicable, as the crypto-asset in scope does not have any value protection scheme in place.

## **G.16 Compensation schemes**

No – the crypto-asset does not have any compensation scheme.

## **G.17 Compensation schemes description**

Not applicable, as the crypto-asset in scope does not have any compensation scheme in place.

## **G.18 Applicable law**

This white paper is submitted in the context of an application for admission to trading on a trading platform established in the European Union. Accordingly, this white paper shall be governed by the laws of the Federal Republic of Germany.

## **G.19 Competent court**

Any disputes arising in relation to this white paper or the admission to trading may be brought before the competent courts in Hamburg, Germany.

# **Part H – information on the underlying technology**

## **H.1 Distributed ledger technology (DLT)**

The crypto-asset in scope is implemented on the Base and the Horizen networks following the standards described below.

## **H.2 Protocols and technical standards**

The crypto-asset in scope is implemented on the Base and the Horizen networks following the standards described below.

The following applies to Base:

Base is an Ethereum Layer-2 rollup introduced by Coinbase and launched in 2023 using Optimism's OP Stack. On 2026-02-18, Base announced a migration towards a unified, Base-operated technology stack. Base does not operate a separate decentralised consensus mechanism comparable to a Layer-1 blockchain. Transactions are currently ordered by a centralised sequencer, while transaction data and state commitments are posted to Ethereum, whose Proof-of-Stake consensus secures the underlying data availability and settlement layer. Since the Azul upgrade in May 2026, Base uses a multi-proof system in which state commitments may be verified by trusted execution environment (TEE) proofs or permissionless zero-knowledge (ZK) proofs, with the ZK path able to override an invalid TEE-backed proposal. If the sequencer becomes unavailable, users may submit transactions through Ethereum Layer-1 for inclusion, subject to the protocol's applicable delay mechanisms.

The following applies to Horizen:

Horizen Chain is an EVM-compatible Optimism Stack Layer-3 rollup deployed on Base. Horizen settles on Base, while Base in turn settles on Ethereum. Horizen uses the OP Stack's data-availability, sequencing, derivation, execution and settlement components. Transaction batches are compressed and submitted to a Batch Inbox contract on Base. State-output proposals are

submitted to the applicable settlement contracts on Base. Horizen supports the standard Ethereum JSON-RPC interface over HTTP and WebSocket. The network uses ETH as its gas currency.

### H.3 Technology used

The crypto-asset in scope is implemented on the Base and the Horizen networks following the standards described below.

The following applies to Base:

1. Base-compatible wallets: The tokens are supported by wallets compatible with the Ethereum Virtual Machine (EVM), including MetaMask, Coinbase Wallet and Trust Wallet. These wallets interact with Base in the same manner as with other EVM-compatible networks through standard Web3 interfaces.
2. Distributed ledger: Base operates as a Layer-2 network on Ethereum and maintains its own distributed ledger for recording token transactions. Transaction batches and corresponding state commitments are periodically posted to Ethereum Layer 1, allowing the Layer-2 state to be anchored to Ethereum and verified through the network's security mechanisms.
3. ERC-20 token standard: Base supports crypto-assets implemented using the ERC-20 token standard. As an EVM-compatible network, Base supports the same token interface standards commonly used on Ethereum.
4. Scalability and transaction efficiency: As an optimistic rollup Layer-2 network, Base executes transactions on the Layer-2 network and periodically posts transaction data and state commitments to Ethereum Layer 1. This architecture is intended to reduce the amount of data processed directly on Ethereum Layer 1 and may result in lower transaction costs compared to executing transactions directly on Ethereum Layer 1.

The following applies to Horizen:

1. Distributed ledger architecture: Horizen maintains a Layer-3 distributed ledger for recording transactions and state changes. Transaction data is published to Base, from which nodes may derive and reproduce the Layer-3 transaction sequence and state.
2. EVM-compatible execution: Horizen uses a near-standard Ethereum Virtual Machine with OP Stack extensions. It supports Solidity smart contracts and standard Ethereum development tools and interfaces.
3. Bridging and settlement technology: The native OP Stack bridge enables transfers of ETH between Base and Horizen. Deposits are processed after confirmation on Base; withdrawals require a state-output proposal and completion of the applicable challenge period before being claimed on Base.

4. Optional application-level confidentiality tools: Standard Horizen transactions and smart-contract interactions are public. Applications may independently integrate confidentiality tools. Vela is a separate trusted-execution-environment coprocessor, currently in developer testing, and is not a mandatory component of Horizen Chain. zkVerify is a separate protocol that applications may use to verify zero-knowledge proofs.

5. ZEN token implementation: ZEN is an ERC-20 token on Base and may be bridged to Horizen using the LayerZero Omnichain Fungible Token framework. ZEN is not the network's gas token.

## **H.4 Consensus mechanism**

The crypto-asset in scope is implemented on the Base and the Horizen networks following the standards described below.

The following applies to Base:

Base does not operate a decentralised validator set comparable to a Layer-1 blockchain. Transaction ordering is currently performed by a single sequencer, while transaction data and state commitments are posted to Ethereum and ultimately benefit from Ethereum's Proof-of-Stake consensus. Following the Azul upgrade, Base uses a multi-proof system for Layer-2 checkpoints associated with withdrawals to Ethereum: TEE proofs support the normal path, while permissionless zero-knowledge proofs provide an independent verification and challenge path. The sequencer remains a central component of transaction ordering.

The following applies to Horizen:

Horizen does not operate a separate decentralised consensus mechanism or validator set comparable to a Layer-1 blockchain. A dedicated sequencer receives and orders transactions, executes them, produces Layer-3 blocks and prepares transaction batches for submission to Base. This sequencing function provides soft confirmation after transaction inclusion but does not constitute decentralised consensus.

Horizen is an optimistic rollup. A proposer submits Layer-3 state-output commitments to Base. Those commitments are treated as valid unless successfully challenged during the applicable dispute period. The final settlement of Horizen transactions and withdrawals depends on the Base settlement layer and, indirectly, Ethereum's settlement and Proof-of-Stake consensus.

## **H.5 Incentive mechanisms and applicable fees**

The crypto-asset in scope is implemented on the Base and the Horizen networks following the standards described below.

The following applies to Base:

Base uses ETH for transaction fees and does not issue a separate Base network token or operate a staking or validator-reward mechanism. Fees comprise a charge for Layer-2 execution and a

component reflecting the cost of posting transaction data to Ethereum. The checkpoint-verification system also uses proposal bonds, which may reward a successful challenge to an invalid checkpoint proposal.

The following applies to Horizen:

Horizen does not use a separate native gas token. Transaction fees are paid in ETH. Each transaction includes an execution fee for processing on Horizen and a data fee for publishing the relevant transaction data to Base. The data fee is calculated by the OP Stack and varies with the applicable Base data-publication cost. A withdrawal from Horizen to Base requires a transaction on Horizen to initiate the withdrawal and a separate transaction on Base to claim the funds after the challenge period.

## **H.6 Use of distributed ledger technology**

Yes – DLT is operated by the issuer, the offeror, the person seeking admission to trading, or any third party acting on their behalf.

## **H.7 DLT functionality description**

This description concerns the Horizen Layer-3 network only. ZEN is implemented as an ERC-20 token on Base, which is not operated by the issuer. ZEN may also be transferred and stored on Horizen Chain, an OP Stack Layer-3 rollup deployed on Base.

Horizen Chain is operated by the Horizen Foundation, or by a service provider acting on its behalf. The network's software is developed and maintained by Horizen Labs for the Horizen ecosystem under arrangements with the Foundation. The Layer-3 infrastructure comprises a dedicated sequencer, batcher and proposer. The sequencer is the central transaction-ordering component: it receives transactions through the network's RPC interfaces, orders and executes them, and produces Layer-3 blocks. The batcher compresses transaction data and submits batches to the data-availability layer on Base. The proposer submits Layer-3 state-output commitments to the applicable settlement contracts on Base.

## **H.8 Audit**

Given the breadth of the term "technology", it cannot be confirmed that all elements or aspects of the technology employed have undergone a comprehensive and systematic technical examination. Accordingly, no comprehensive audit of the technology used can be confirmed. This white paper focuses primarily on risk-related aspects and therefore does not imply, nor should it be interpreted as implying, that a full assessment or audit of all technological elements has been conducted.

## **H.9 Audit outcome**

Not applicable, as no comprehensive audit of the technology used has been conducted or can be confirmed.

# **Part I – Information on risks**

## **I.1 Offer-related risks**

## 1. Regulatory and Compliance

Regulatory frameworks applicable to crypto-asset services in the European Union and in third countries are evolving. Supervisory authorities may introduce, interpret, or enforce rules that affect (i) the eligibility of this crypto-asset for admission to trading, (ii) the conditions under which a crypto-asset service provider may offer trading, custody, or transfer services for it, or (iii) the persons or jurisdictions to which such services may be provided. As a result, the crypto-asset service provider admitting this crypto-asset to trading may be required to suspend, restrict, or terminate trading or withdrawals for regulatory reasons, even if the crypto-asset itself continues to function on its underlying network.

## 2. Trading venue and connection risk

Trading in the crypto-asset depends on the uninterrupted operation of the trading venues on which it is listed and, where applicable, on its technical connections to external liquidity sources or venues. Interruptions such as system downtime, maintenance, faulty integrations, API changes, or failures at an external venue can temporarily prevent order placement, execution, deposits, or withdrawals, even when the underlying blockchain is functioning. In addition, trading platforms in emerging markets may operate under differing governance, compliance, and oversight standards, which can increase the risk of operational failures or disorderly market conditions.

## 3. Market formation and liquidity conditions

The price and tradability of the crypto-asset depend on actual trading activity on the venues to which the service provider is connected, whether centralised exchanges (CEXs) or decentralised exchanges (DEXs). Trading volumes may at times be low, order books thin, or liquidity concentrated on a single venue. In such conditions, buy or sell orders may not be executed in full or may be executed only at a less favourable price, resulting in slippage.

**Volatility:** The market price of the crypto-asset may fluctuate significantly over short periods, including for reasons that are not linked to changes in the underlying project or protocol. Periods of limited liquidity, shifts in overall market sentiment, or trading on only a small number of CEXs or DEXs can amplify these movements and lead to higher slippage when orders are executed. As a result, investors may be unable to sell the crypto-asset at or close to a previously observed price, even where no negative project-specific event has occurred.

## 4. Counterparty and service provider dependence

The admission of the crypto-asset to trading may rely on several external parties, such as connected centralised or decentralised trading venues, liquidity providers, brokers, custodians, or technical integrators. If any of these counterparties fail to perform, suspend their services, or apply internal restrictions, the trading, deposit, or withdrawal of the crypto-asset on the listing crypto-asset service provider can be interrupted or halted.

**Quality of counterparties:** Trading venues and service providers in certain jurisdictions may operate under regulatory or supervisory standards that are lower or differently enforced than those applicable in the European Union. In such environments, deficiencies in governance, risk

management, or compliance may remain undetected, which increases the probability of abrupt service interruptions, investigations, or forced wind-downs.

**Delisting and service suspension:** The crypto-asset's availability may depend on the internal listing decisions of these counterparties. A delisting or suspension on a key connected venue can materially reduce liquidity or make trading temporarily impossible on the admitting service provider, even if the underlying crypto-asset continues to function.

**Insolvency of counterparties:** If a counterparty involved in holding, routing, or settling the crypto-asset becomes insolvent, enters restructuring, or is otherwise subject to resolution measures, assets held or processed by that counterparty may be frozen, become temporarily unavailable, or be recoverable only in part or not at all, which can result in losses for clients whose positions were maintained through that counterparty. This risk applies in particular where client assets are held on an omnibus basis or where segregation is not fully recognised in the counterparty's jurisdiction.

## 5. Operational and information risks

Due to the irrevocability of blockchain transactions, incorrect transaction approvals or the use of wrong networks or addresses will typically make the transferred funds irrecoverable. Because trading may also rely on technical connections to other venues or service providers, downtime or faulty code in these connections can temporarily block trading, deposits, or withdrawals even when the underlying blockchain is functioning. In addition, different groups of market participants may have unequal access to technical, governance, or project-related information, which can lead to information asymmetry and place less informed investors at a disadvantage when making trading decisions.

## 6. Market access and liquidity concentration risk

If the crypto-asset is only available on a limited number of trading platforms or through a single market-making entity, this may result in reduced liquidity, greater price volatility, or periods of inaccessibility for retail holders.

# **I.2 Issuer-related risks**

## 1. Insolvency of the issuer

As with any commercial entity, the issuer may face insolvency risks. These may result from insufficient funding, low market interest, mismanagement, or external shocks (e.g. pandemics, armed conflicts). In such a case, ongoing development, support, and governance of the project may cease, potentially affecting the viability and tradability of the crypto-asset.

## 2. Legal and regulatory risks

The issuer operates in a dynamic and evolving regulatory environment. Failure to comply with applicable laws or regulations in relevant jurisdictions may result in enforcement actions, penalties,

or restrictions on the project's operations. These may negatively impact the crypto-asset's availability, market acceptance, or legal status.

### 3. Operational risks

The issuer may fail to implement adequate internal controls, risk management, or governance processes. This can result in operational disruptions, financial losses, delays in updating the white paper, or reputational damage.

### 4. Governance and decision-making

The issuer's management body is responsible for key strategic, operational, and disclosure decisions. Ineffective governance, delays in decision-making, or lack of resources may compromise the stability of the project and its compliance with MiCA requirements. High concentration of decision-making authority or changes in ownership/control can amplify these risks.

### 5. Reputational risks

The issuer's reputation may be harmed by internal failures, external accusations, or association with illicit activity. Negative publicity can reduce trust in the issuer and impact the perceived legitimacy or value of the crypto-asset.

### 6. Counterparty dependence

The issuer may depend on third-party providers for certain core functions, such as technology development, marketing, legal advice, or infrastructure. If these partners discontinue their services, change ownership, or underperform, the issuer's ability to operate the project or maintain investor communication may be impaired. This could disrupt project continuity or undermine market confidence, ultimately affecting the crypto-asset's value.

## **I.3 Crypto-assets-related risks**

### 1. Valuation risk

The crypto-asset does not represent a claim, nor is it backed by physical assets or legal entitlements. Its market value is driven solely by supply and demand dynamics and may fluctuate significantly. In the absence of fundamental value anchors, such assets can lose their entire market value within a very short time. Historical market behaviour has shown that some types of crypto-assets have become worthless. Investors should be aware that this crypto-asset may lose all of its value.

### 2. Market volatility risk

Crypto-asset prices can fluctuate sharply due to changes in market sentiment, macroeconomic conditions, regulatory developments, or technology trends. Such volatility may result in rapid and significant losses. Holders should be prepared for the possibility of losing the full amount invested.

### 3. Liquidity and price-determination risk

Low trading volumes, fragmented trading across venues, or the absence of active market makers can restrict the ability to buy or sell the crypto-asset. In such situations, it is not guaranteed that an observable market price will exist at all times. Spreads may widen materially, and orders may only be executable under unfavourable conditions, which can make liquidation costly or temporarily impossible.

### 4. Crypto-asset security risk

Loss or theft of private keys, unauthorised access to wallets, or failures of custodial or exchange service providers can result in the irreversible loss of assets. Because blockchain transactions are final, recovery of funds after a compromise is generally impossible.

### 5. Fraud and scam risk

The pseudonymous and irreversible nature of blockchain transactions can attract fraudulent schemes. Typical forms include fake or unauthorised crypto-assets imitating established ones, phishing attempts, deceptive airdrops, or social-engineering attacks. Investors should exercise caution and verify the authenticity of counterparties and information sources.

### 6. Legal and regulatory reclassification risk

Legislative or regulatory changes in the European Union or in the Member State where the crypto-asset is admitted to trading may alter its legal classification, permitted uses, or tradability. In third countries, the crypto-asset may be treated as a financial instrument or security, which can restrict its offering, trading, or custody.

### 7. Absence of investor protection

The crypto-asset is not covered by investor-compensation or deposit-guarantee schemes. In the event of loss, fraud, or insolvency of a service provider, holders may have no access to recourse mechanisms typically available in regulated financial markets.

### 8. Counterparty risk

Reliance on third-party exchanges, custodians, or intermediaries exposes holders to operational failures, insolvency, or fraud of these parties. Investors should conduct due diligence on service providers, as their failure may lead to the partial or total loss of held assets.

### 9. Reputational risk

Negative publicity related to security incidents, misuse of blockchain technology, or associations with illicit activity can damage public confidence and reduce the crypto-asset's market value.

#### 10. Community and sentiment risk

Because the crypto-asset's perceived relevance and expected future use depend largely on community engagement and the prevailing sentiment, a loss of public interest, negative coverage or reduced activity of key contributors can materially reduce market demand.

#### 11. Macroeconomic and interest-rate risk

Fluctuations in interest rates, exchange rates, general market conditions, or overall market volatility can influence investor sentiment towards digital assets and affect the crypto-asset's market value.

#### 12. Taxation risk

Tax treatment varies across jurisdictions. Holders are individually responsible for complying with all applicable tax laws, including the reporting and payment of taxes arising from the acquisition, holding, or disposal of the crypto-asset.

#### 13. Anti-money-laundering and counter-terrorist financing risk

Wallet addresses or transactions connected to the crypto-asset may be linked to sanctioned or illicit activity. Regulatory responses to such findings may include transfer restrictions, reporting obligations, or the freezing of assets on certain venues.

#### 14. Market-abuse risk

Due to limited oversight and transparency, crypto-assets may be vulnerable to market-abuse practices such as spoofing, pump-and-dump schemes, or insider trading. Such activities can distort prices and expose holders to sudden losses.

#### 15. Legal ownership and jurisdictional risk

Depending on the applicable law, holders of the crypto-asset may not have enforceable ownership rights or effective legal remedies in cases of disputes, fraud, or service failure. In certain jurisdictions, access to exchanges or interfaces may be restricted by regulatory measures, even if on-chain transfer remains technically possible.

#### 16. Concentration risk

A large proportion of the total supply may be held by a small number of holders. This can enable market manipulation, governance dominance, or sudden large-scale liquidations that adversely affect market stability, price levels, and investor confidence.

## **I.4 Project implementation-related risks**

As this white paper relates to admission to trading of the crypto-asset, the risk description below reflects general implementation risks typically associated with crypto-asset projects and relevant for the crypto-asset service provider. The party admitting the crypto-asset to trading is not involved in the project's implementation and does not assume responsibility for its governance, funding, or execution.

Delays, failures, or changes in the implementation of the project as outlined in its public roadmap or technical documentation may negatively impact the perceived credibility or usability of the crypto-asset. This includes risks related to project governance, resource allocation, technical delivery, and team continuity.

Key-person risk: The project may rely on a limited number of individuals for development, maintenance, or strategic direction. The departure, incapacity, or misalignment of these individuals may delay or derail the implementation.

Timeline and milestone risk: Project milestones may not be met as announced. Delays in feature releases, protocol upgrades, or external integrations can undermine market confidence and affect the adoption, use, or value of the crypto-asset.

Delivery risk: Even if implemented on time, certain functionalities or integrations may not perform as intended or may be scaled back during execution, limiting the crypto-asset's practical utility.

## **I.5 Technology-related risks**

As this white paper relates to admission to trading of the crypto-asset, the following risks concern the underlying distributed ledger technology (DLT), its supporting infrastructure, and related technical dependencies. Failures or vulnerabilities in these systems may affect the availability, integrity, or transferability of the crypto-asset.

### **1. Blockchain dependency risk**

The functionality of the crypto-asset depends on the continuous and stable operation of the blockchain(s) on which it is issued. Network congestion, outages, or protocol errors may temporarily or permanently disrupt on-chain transactions. Extended downtime or degradation in network performance can affect trading, settlement, or the usability of the crypto-asset.

### **2. Smart contract vulnerability risk**

The smart contract that defines the crypto-asset's parameters or governs its transfers may contain coding errors or security vulnerabilities. Exploitation of such weaknesses can result in unintended

token minting, permanent loss of funds, or disruption of token functionality. Even after external audits, undetected vulnerabilities may persist due to the immutable nature of deployed code.

### 3. Wallet and key-management risk

The custody of crypto-assets relies on secure private key management. Loss, theft, or compromise of private keys results in irreversible loss of access. Custodians, trading venues, or wallet providers may be targeted by cyberattacks. Compatibility issues between wallet software and changes to the blockchain protocol (e.g. network upgrades) can further limit user access or the ability to transfer the crypto-asset.

#### Outdated or vulnerable wallet software:

Users relying on outdated, unaudited, or unsupported wallet software may face compatibility issues, security vulnerabilities, or failures when interacting with the blockchain. Failure to update wallet software in line with protocol developments can result in transaction errors, loss of access, or exposure to known exploits.

### 4. Network security risks

Attack risks: Blockchains may be subject to denial-of-service (DoS) attacks, 51% attacks, or other exploits targeting the consensus mechanism. These can delay transactions, compromise finality, or disrupt the accurate recording of transfers.

Centralisation concerns: Despite claims of decentralisation, a relatively small number of validators or a high concentration of stake may increase the risk of collusion, censorship, or coordinated network downtime, which can affect the resilience and operational reliability of the crypto-asset.

### 5. Bridge and interoperability risk

Where tokens can be bridged or wrapped across multiple blockchains, vulnerabilities in bridge protocols, validator sets, or locking mechanisms may result in loss, duplication, or misrepresentation of assets. Exploits or technical failures in these systems can instantly impact circulating supply, ownership claims, or token fungibility across chains.

### 6. Forking and protocol-upgrade risk

Network upgrades or disagreements among node operators or validators can result in blockchain “forks”, where the blockchain splits into two or more incompatible versions that continue separately from a shared past. This may lead to duplicate token representations or incompatibilities between exchanges and wallets. Until consensus stabilises, trading or transfers may be disrupted or misaligned. Such situations may be difficult for retail holders to navigate, particularly when trading platforms or wallets display inconsistent token information.

### 7. Economic-layer and abstraction risk

Mechanisms such as gas relayers, wrapped tokens, or synthetic representations may alter the transaction economics of the underlying token. Changes in transaction costs, token demand, or utility may reduce its usage and weaken both its economic function and perceived value within its ecosystem.

#### 8. Spam and network-efficiency risk

High volumes of low-value ("dust") or automated transactions may congest the network, slow validation times, inflate ledger size, and raise transaction costs. This can impair performance, reduce throughput, and expose address patterns to analysis, thereby reducing network efficiency and privacy.

#### 9. Front-end and access-interface risk

If users rely on centralised web interfaces or hosted wallets to interact with the blockchain, service outages, malicious compromises, or domain expiries affecting these interfaces may block access to the crypto-asset, even while the blockchain itself remains fully functional. Dependence on single web portals introduces a critical point of failure outside the DLT layer.

#### 10. Decentralisation claim risk

While the technical infrastructure may appear distributed, the actual governance or economic control of the project may lie with a small set of actors. This disconnect between marketing claims and structural reality can lead to regulatory scrutiny, reputational damage, or legal uncertainty – especially if the project is presented as 'community-governed' without substantiation.

### **I.6 Mitigation measures**

None

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

### **J.1 Adverse impacts on climate and other environment-related adverse impacts**

#### **S.1 Name**

Crypto Risk Metrics GmbH

#### **S.2 Relevant legal entity identifier**

39120077M9TG001FE242

#### **S.3 Name of the crypto-asset**

Horizen

#### **S.4 Consensus Mechanism**

The crypto-asset in scope is implemented on the Base and the Horizen networks following the standards described below.

The following applies to Base:

Base does not operate a decentralised validator set comparable to a Layer-1 blockchain. Transaction ordering is currently performed by a single sequencer, while transaction data and state commitments are posted to Ethereum and ultimately benefit from Ethereum's Proof-of-Stake consensus. Following the Azul upgrade, Base uses a multi-proof system for Layer-2 checkpoints associated with withdrawals to Ethereum: TEE proofs support the normal path, while permissionless zero-knowledge proofs provide an independent verification and challenge path. The sequencer remains a central component of transaction ordering.

The following applies to Horizen:

Horizen does not operate a separate decentralised consensus mechanism or validator set comparable to a Layer-1 blockchain. A dedicated sequencer receives and orders transactions, executes them, produces Layer-3 blocks and prepares transaction batches for submission to Base. This sequencing function provides soft confirmation after transaction inclusion but does not constitute decentralised consensus.

Horizen is an optimistic rollup. A proposer submits Layer-3 state-output commitments to Base. Those commitments are treated as valid unless successfully challenged during the applicable dispute period. The final settlement of Horizen transactions and withdrawals depends on the Base settlement layer and, indirectly, Ethereum's settlement and Proof-of-Stake consensus.

## **S.5 Incentive Mechanisms and Applicable Fees**

The crypto-asset in scope is implemented on the Base and the Horizen networks following the standards described below.

The following applies to Base:

Base uses ETH for transaction fees and does not issue a separate Base network token or operate a staking or validator-reward mechanism. Fees comprise a charge for Layer-2 execution and a component reflecting the cost of posting transaction data to Ethereum. The checkpoint-verification system also uses proposal bonds, which may reward a successful challenge to an invalid checkpoint proposal.

The following applies to Horizen:

Horizen does not use a separate native gas token. Transaction fees are paid in ETH. Each transaction includes an execution fee for processing on Horizen and a data fee for publishing the relevant transaction data to Base. The data fee is calculated by the OP Stack and varies with the applicable Base data-publication cost. A withdrawal from Horizen to Base requires a transaction on

Horizen to initiate the withdrawal and a separate transaction on Base to claim the funds after the challenge period.

### **S.6 Beginning of the period to which the disclosure relates**

2024-08-13

### **S.7 End of the period to which the disclosure relates**

2025-08-13

### **S.8 Energy consumption**

18.71872 kWh/a

### **S.9 Energy consumption sources and methodologies**

The energy consumption of this asset is aggregated across multiple components: To determine the energy consumption of a token, the energy consumption of the Base and Horizen networks is calculated first. For the energy consumption of the token, a fraction of the energy consumption of the network is attributed to the token, which is determined based on the activity of the crypto-asset within the network. When calculating the energy consumption, the Functionally Fungible Group Digital Token Identifier (FFG DTI) is used - if available - to determine all implementations of the asset in scope. The mappings are updated regularly, based on data from the Digital Token Identifier Foundation. The information regarding the hardware used and the number of participants in the network is based on assumptions that are verified to the best of our ability using empirical data. In general, participants are assumed to be largely economically rational. As a precautionary principle, we make assumptions on the conservative side when in doubt, i.e. making higher estimates for the adverse impacts.

### **S.10 Renewable energy consumption**

37.9124101186 %

### **S.11 Energy intensity**

0.00000 kWh

### **S.12 Scope 1 DLT GHG emissions – Controlled**

0.00000 tCO<sub>2</sub>e/a

### **S.13 Scope 2 DLT GHG emissions – Purchased**

0.00623 tCO<sub>2</sub>e/a

### **S.14 GHG intensity**

0.00000 kgCO<sub>2</sub>e

### **S.15 Key energy sources and methodologies**

To determine the proportion of renewable energy usage, the locations of the nodes are determined using public information sites, open-source and in-house-developed crawlers. Where no information is available on the geographic distribution of nodes, comparable reference networks

are used, taking into account similarities in incentivisation structure and consensus mechanism. This geographic information is then combined with publicly available data from Our World in Data. The resulting intensity is calculated as the marginal energy consumption with respect to one additional transaction.

Ember (2025); Energy Institute, Statistical Review of World Energy (2024), with major processing by Our World in Data. "Share of electricity generated by renewables - Ember and Energy Institute" [dataset]. Underlying sources: Ember, "Yearly Electricity Data Europe"; Ember, "Yearly Electricity Data"; Energy Institute, "Statistical Review of World Energy". Retrieved from: <https://ourworldindata.org/grapher/share-electricity-renewables>

## **S.16 Key GHG sources and methodologies**

To determine GHG emissions, the locations of the nodes are determined using public information sites, open-source crawlers, and crawlers developed in-house. Where no information is available on the geographic distribution of nodes, comparable reference networks are used, taking into account similarities in incentivisation structure and consensus mechanism. This geographic information is then combined with publicly available data from Our World in Data. The resulting intensity is calculated as the marginal emission intensity with respect to one additional transaction.

Ember (2025); Energy Institute, Statistical Review of World Energy (2024), with major processing by Our World in Data. "Carbon intensity of electricity generation - Ember and Energy Institute" [dataset]. Underlying sources: Ember, "Yearly Electricity Data Europe"; Ember, "Yearly Electricity Data"; Energy Institute, "Statistical Review of World Energy". Retrieved from: <https://ourworldindata.org/grapher/carbon-intensity-electricity>. Licensed under CC BY 4.0.

