Hedera Hashgraph (HBAR)
White paper

In accordance with Title II of Regulation (EU) 2023/1114 (MiCA)

N	Field	Content
0	Table of content	

01	Date of notification	2025-07-14
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 operator of the trading platform 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 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 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	False
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. 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.

<table>
<tr><td colspan="3">Summary</td></tr>
<tr><td>07</td><td>Warning in accordance with Article 6(7), second subparagraph of Regulation (EU) 2023/1114</td><td>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 admission to trading 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.</td></tr>
<tr><td>08</td><td>Characteristics of the crypto-asset</td><td>Hedera Hashgraph (HBAR) is the native cryptocurrency of the Hedera public distributed ledger network. It is used within the Hedera platform for network services and security and does not represent any equity or ownership interest in a legal entity.

The token has a fixed maximum supply of 50 000 000 000 HBAR, which were created at network launch.

Initial token allocation as follows:
<table>
<tr><th>Category</th><th>Allocation</th></tr>
<tr><td>Hedera Treasury (unreleased reserve)</td><td>54.91 %</td></tr>
<tr><td>RCU Grants & Future Employee Incentives</td><td>16.30 %</td></tr>
<tr><td>Investors - SAFT purchasers (2017-2018)</td><td>14.50 %</td></tr>
<tr><td>Swirlds, Inc. (licence & service agreement)</td><td>5.00 %</td></tr>
<tr><td>Management - SAFT (founders & 2017 executives)</td><td>2.90 %</td></tr>
<tr><td>Investors - Swirlds equity holders</td><td>2.02 %</td></tr>
<tr><td>2020 Coin-Purchase Agreement*</td><td>2.67 %</td></tr>
<tr><td>Ecosystem Reserve</td><td>1.20 %</td></tr>
</table></td></tr>
</table>

		<table><tr><td>Developer Community Funds</td><td>0.50 %</td></tr></table> HBAR tokens are freely transferable, in whole or in part, to third parties, and all associated usage rights and obligations follow the token upon transfer.
09	Information about the quality and quantity of goods or services to which the utility tokens give access and restrictions on the transferability	N/A
10	Key information about the offer to the public or admission to trading	Kraken seeks admission to trading of the HBAR token so as to be compliant with MiCA and in keeping with its mission to make available for trading to its clients a wide range of assets.
Part I – Information on risks		
I.1	Offer-Related Risks	**General Risk Factors Associated with Crypto-Asset Offerings** The admission to trading of crypto-assets, including HBAR, is subject to general risks inherent to the broader cryptocurrency market. **Market Volatility** The value of HBAR may experience substantial fluctuations driven by investor sentiment, macroeconomic developments, and market conditions. **Regulatory Risks** Changes in legislation, applicable laws, compliance requirements or the implementation of new regulatory frameworks could affect the availability, trading, or use of such assets. **Security Risks** The risk of exploitation, hacking or security vulnerabilities of the underlying protocol and/or contracts of the token leading to a loss. **Reputational Risks** The potential for damage to an organization’s credibility or public trust, which

		can negatively impact stakeholder confidence and overall business viability**.**
I.2	Issuer-Related Risks	**Regulatory and Legal Risks** Hedera Hashgraph, LLC (the issuer) operates in an evolving regulatory landscape for digital assets. There is a risk that regulatory authorities could determine that the issuer's activities or HBAR constitute regulated activities, which would require compliance or restrict operations. Changes in law or enforcement priorities may increase compliance costs or limit the issuer's ability to support the network. **Financial Sustainability** The issuer's operations and network development are funded by finite resources. If those funds are depleted before the network becomes self-sustaining, the issuer's capacity to maintain and develop Hedera could be impaired. A lack of ongoing revenue streams means the project's long-term viability relies on careful treasury management and ecosystem growth. **Dependence on Key Personnel** The development and success of Hedera depend on its core team and leadership. Hedera was co-founded by key individuals and the loss of any founding team member or other critical staff could slow technical progress or undermine confidence in the project. Similarly, the Hedera Governing Council's engagement is important for governance; if major Council members were to disengage, it could pose operational or reputational risks. **Concentration of Holdings** A portion of HBAR tokens was allocated to the project treasury, early investors, and other insiders. This concentration means that those parties could, intentionally or inadvertently, exert significant influence on the token's market. Investors face the risk that future token unlocks or sales by major holders may put downward pressure on HBAR's price.
I.3	Crypto-Assets-related Risks	**Market Volatility** The crypto-asset market is subject to significant price volatility, which may affect the value of HBAR. Prices can fluctuate rapidly and unpredictably due to various factors, including market sentiment, economic indicators, technological developments, regulatory news, and macroeconomic trends. This high level of volatility may lead to sudden gains or losses and can impact the liquidity and tradability of the crypto-asset. **Liquidity** Liquidity refers to the ability to buy or sell a crypto-asset without causing significant price impact. HBAR may experience periods of low liquidity, meaning that it could be difficult to enter or exit positions at desired prices or volumes.

		Reduced liquidity may result from limited market participation, exchange restrictions, or broader market conditions. This can lead to increased price volatility, slippage, and difficulty in executing transactions. **Cybersecurity & Technology Risks** Risks arising from vulnerabilities in the blockchain technology used by the project or platforms. Example risks include smart contract exploits, compromise of platforms, forking scenarios, compromise of cryptographic algorithms. **Adoption Risks** If the project fails to achieve its goals, adoption and usage may be lower than expected. This could reduce the token's utility and overall value proposition. **Custody & Ownership Risk** The risk related to the inadequate safekeeping and control of crypto-assets e.g. loss of private keys, custodian insolvency leading to a loss.
I.4	Project Implementation-Related Risks	**Development Delays or Shortfalls** The Hedera roadmap includes ongoing improvements. There is a risk that some planned features or milestones may be delayed, reduced in scope, or not achieved at all. Such setbacks in development or technological challenges could slow the network's growth and affect user and developer confidence. **Third-Party Dependency** The success of the project also relies on external participants such as application developers, node operators, and service providers building on Hedera. If third-party development in the ecosystem is slower than anticipated or key partnerships fail to materialize, the usage of the network and HBAR could suffer. Additionally, a failure or security issue in third-party integrations could disrupt the project's implementation and user trust. **Operational Risk** As with any complex technology project, Hedera may face operational risks including software bugs, infrastructure outages, or cyber-attacks. New updates or features could introduce unforeseen vulnerabilities or performance issues that impact network functionality. The project's ability to respond quickly and effectively to such issues will be critical in mitigating prolonged network disruptions.
I.5	Technology-Related Risks	**Smart contract risks** HBAR uses smart contracts to facilitate automated transactions and processes. While these contracts enhance efficiency and decentralization, they also introduce specific technical risks. Vulnerabilities such as coding errors, design flaws, or security loopholes within the smart contract code may be exploited by malicious actors. Such exploits could result in the loss of assets, unauthorized

		access to sensitive information, or unintended and irreversible execution of transactions. **Blockchain Network Risks** HBAR operates on a public blockchain infrastructure, which is maintained by a decentralized network of participants. The functionality and reliability of the crypto-asset are dependent on the performance and security of the underlying blockchain. Risks may include network congestion, high transaction fees, delayed processing times, or, in extreme cases, outages and disruptions. Additionally, vulnerabilities or failures in the consensus mechanism, attacks on the network (e.g., 51% attacks), or protocol-level bugs could impact the operation and availability of HBAR. **Risk of Cryptographic Vulnerabilities** Technological advancements, such as quantum computing, could pose potential risks to cryptocurrencies. **Privacy** Transactions involving HBAR are recorded on a public blockchain, where transaction data is transparent and permanently accessible. While public addresses do not directly reveal personal identities, transaction histories can be analyzed and, in some cases, linked to individuals through data aggregation or external information sources. This transparency may pose privacy concerns for users seeking confidentiality in their financial activity. Transaction data on public blockchains is not inherently private and could be subject to scrutiny by third parties, including regulators, analytics firms, or malicious actors.
I.6	Mitigation measures	**Diversified Governance** Hedera's governance is intended to mitigate centralization and key-person risks. No single entity can unilaterally control the network, and Council members are from various industries and jurisdictions, which provides a system of checks and balances for major decisions. **Security Audits and Testing** The Hedera codebase and platform components have undergone third-party security audits (e.g., by FP Complete and NCC Group) - ongoing code review, a public bug bounty program, and formal verification efforts contribute to identifying and reducing vulnerabilities. **aBFT Consensus Reliability** The hashgraph consensus mechanism is asynchronous Byzantine Fault Tolerant, ensuring that as long as less than 1/3 of total stake is malicious, the network should reach correct consensus. This property provides theoretical protection against coordinated attacks, as an attacker would need a large

		portion of HBAR to compromise consensus. **Gradual Token Release** To reduce market disruption and undue influence, HBAR's issuance follows a fixed, long-term release schedule rather than a single large token release. This predictable allocation of tokens helps mitigate sudden dilution and allows the market to absorb new supply over time.
Part A - Information about the offeror or the person seeking admission to trading		
A.1	Name	N/A
A.2	Legal form	N/A
A.3	Registered address	N/A
A.4	Head office	N/A
A.5	Registration Date	N/A
A.6	Legal entity identifier	N/A
A.7	Another identifier required pursuant to applicable national law	N/A
A.8	Contact telephone number	N/A
A.9	E-mail address	N/A

A.10	Response Time (Days)	N/A
A.11	Parent Company	N/A
A.12	Members of the Management body	N/A
A.13	Business Activity	N/A
A.14	Parent Company Business Activity	N/A
A.15	Newly Established	N/A
A.16	Financial condition for the past three years	N/A
A.17	Financial condition since registration	N/A
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	true
B.2	Name	Hedera Hashgraph, LLC

<table>
<tr><td>B.3</td><td>Legal form</td><td>Not available</td></tr>
<tr><td>B.4</td><td>Registered address</td><td>c/o Capitol Services, INC., 108 Lakeland Ave., Dover, 19901, United States of America</td></tr>
<tr><td>B.5</td><td>Head office</td><td>N/A</td></tr>
<tr><td>B.6</td><td>Registration Date</td><td>2017-09-08</td></tr>
<tr><td>B.7</td><td>Legal entity identifier</td><td>25490049T42L118ZYK52</td></tr>
<tr><td>B.8</td><td>Another identifier required pursuant to applicable national law</td><td>Delaware identification number 6536557</td></tr>
<tr><td>B.9</td><td>Parent Company</td><td>Not available</td></tr>
<tr><td>B.10</td><td>Members of the Management body</td><td>
<table>
<tr><th>Full Name</th><th>Business Address</th><th>Function</th></tr>
<tr><td>Brett McDowell</td><td>10845 W Griffith Peak Drive, Suite 200, Las Vegas, NV 89135, USA</td><td>Chair, Board of Directors</td></tr>
<tr><td>Tom Sylvester</td><td>10845 W Griffith Peak Drive, Suite 200, Las Vegas, NV 89135, USA</td><td>Interim President & General Counsel</td></tr>
</table>
</td></tr>
</table>

B.11	Business Activity	Not available
B.12	Parent Company Business Activity	N/A
Part C- Information about the operator of the trading platform in cases where it draws up the crypto-asset white paper and information about other persons drawing the crypto-asset white paper pursuant to Article 6(1), second subparagraph, of Regulation (EU) 2023/1114		
C.1	Name	Payward Global Solutions LTD
C.2	Legal form	N/A
C.3	Registered address	N/A
C.4	Head office	N/A
C.5	Registration Date	2023-07-11
C.6	Legal entity identifier of the operator of the trading platform	9845003D98SCC2851458
C.7	Another identifier required pursuant to applicable national law	N/A
C.8	Parent Company	N/A

<table>
<tr><td>C.9</td><td>Reason for Crypto-Asset White Paper Preparation</td><td>Kraken seeks admission to trading of the HBAR token so as to be compliant with MiCA and in keeping with its mission to make available for trading to its clients a wide range of assets.</td></tr>
<tr><td>C.10</td><td>Members of the Management body</td><td>
<table>
<tr><th>Full Name</th><th>Business Address</th><th>Function</th></tr>
<tr><td>Shannon Kurtas</td><td>70 Sir John Rogerson's Quay, Dublin 2, Ireland</td><td>Board Member</td></tr>
<tr><td>Andrew Mulvenny</td><td>70 Sir John Rogerson's Quay, Dublin 2, Ireland</td><td>Board Member</td></tr>
<tr><td>Shane O'Brien</td><td>70 Sir John Rogerson's Quay, Dublin 2, Ireland</td><td>Board Member</td></tr>
<tr><td>Laura Walsh</td><td>70 Sir John Rogerson's Quay, Dublin 2, Ireland</td><td>Board Member</td></tr>
<tr><td>Michael Walsh</td><td>70 Sir John Rogerson's Quay, Dublin 2, Ireland</td><td>Board Member</td></tr>
</table>
</td></tr>
<tr><td>C.11</td><td>Operator Business Activity</td><td>PGSL is the operator of a Trading Platform for Crypto Assets, in accordance with Article 3(1)(18) of Regulation (EU) 2023/1114 (MiCA).</td></tr>
<tr><td>C.12</td><td>Parent Company Business Activity</td><td>Payward, Inc., a Delaware, USA corporation, is the parent company of a worldwide group of subsidiaries (the following paragraphs use the term "Payward" or “Payward Group” to refer to the group) collectively doing business as “Kraken.” Payward’s primary business is the operation of an online virtual</td></tr>
</table>

		asset platform that enables clients to buy and sell virtual assets on a spot basis, including the transfer of crypto-assets to and from external wallets. Payward, through its various affiliates, offers a number of other services and products, including: * A trading platform for futures contracts on virtual assets (“Kraken Derivatives”); * A platform for buying and selling NFTs; * An over-the-counter (“OTC”) desk; * Extensions of margin to support spot trading of virtual assets; * A benchmark administrator; and * Staking services.
C.13	Other persons drawing up the crypto-asset white paper according to Article 6(1), second subparagraph, of Regulation (EU) 2023/1114	N/A
C.14	Reason for drawing the white paper by persons referred to in Article 6(1), second subparagraph, of Regulation (EU) 2023/1114	N/A
Part D- Information about the crypto-asset project		
D.1	Crypto-asset project name	Hedera Hashgraph
D.2	Crypto-assets name	N/A

D.3	Abbreviation	N/A
D.4	Crypto-asset project description	Hedera Hashgraph is a distributed ledger technology (DLT) network that aims to provide a fast, fair, and secure infrastructure for decentralized applications. Hedera uses a Hashgraph consensus algorithm instead of mining blocks. The project was founded in 2018 by Dr. Leemon Baird and Mance Harmon, and the public mainnet launched in 2019. Hedera is governed by the Hedera Governing Council, a body of up to 39 global organizations that jointly make decisions on network governance, software upgrades, and node operation. This council-based governance model is intended to ensure decentralization and trust in decision-making. Hedera's platform offers several integrated services, including cryptocurrency transfers, smart contracts, and file storage, with an emphasis on high throughput and low, predictable fees.
D.5	Details of all natural or legal persons involved in the implementation of the crypto-asset project	**Issuer / Developer** Hedera Hashgraph, LLC (c/o Capitol Services, INC., 108 Lakeland Ave., Dover, 19901, United States of America) **Core founders & executives:** Dr Leemon Baird — Co-Founder & Chief Scientist, Swirlds Labs; • Mance Harmon — Co-Founder & Co-CEO, Swirlds Labs; • Brett McDowell — Chair, Hedera Governing Council & Board of Directors; • Tom Sylvester — Interim President & General Counsel, Hedera Hashgraph, LLC These individuals direct protocol research and engineering, corporate strategy, network governance, and legal / operational oversight for the Hedera Hashgraph public ledger and the HBAR token. Supporting developer Swirlds Labs Inc **Key executives** • Eric Piscini – Chief Executive Officer; • Dr Leemon Baird – Co-Founder & Chief Scientist; • Mance Harmon – Co-Founder & Chairman; • Lionel Chocron – Chief Product Officer

		Swirlds Labs leads core code-base engineering, product innovation and technical support for Hedera. Ecosystem grant-maker HBAR Foundation Ltd. (re-branding to Hedera Foundation) **Principal officers** • Charles Adkins – Chief Executive Officer; • Shayne Higdon – Co-Founder & Board Member, former CEO; • David Cramer – Chief Operating Officer & Treasurer The Foundation administers the HBAR treasury earmarked for ecosystem grants, partnerships and community development.
D.6	Utility Token Classification	False
D.7	Key Features of Goods/Services for Utility Token Projects	N/A
D.8	Plans for the token	Past milestones 16 September 2019 – Mainnet “Open Access.” The Hedera network opened to the public; anyone could create an account, and HBAR distribution commenced. 2020–2021 – New core services launched. Hedera introduced the Token Service (native token issuance), the Consensus Service (timestamping & logging) and an upgraded Smart Contract Service integrating the Ethereum Virtual Machine. July 2021 – Ecosystem allocation. The Governing Council earmarked 10.7 billion HBAR (~20 % of supply) for ecosystem growth and created the independent HBAR Foundation to manage grants. February 2022 – Code open-sourced. Hedera’s platform codebase was released under the Apache 2.0 licence. Q2 2023 – Linux Foundation stewardship. Oversight of the Hashgraph core

		code and product roadmap transitioned to the Linux Foundation, formalising open governance. Refer to the project website and governance forum for updated roadmap items.
D.9	Resource Allocation	The development and expansion of Hedera have been financed through a combination of initial funding and allocated token resources. In 2018, Hedera raised approximately USD 124 million via SAFT (Simple Agreements for Future Tokens); In 2021 the Council approved an allocation of 10.7 billion HBAR (around 20% of the total supply).
D.10	Planned Use of Collected Funds or Crypto-Assets	The issuer has outlined the intended use of the funds and tokens dedicated to the project's growth - the fiat funds obtained from the 2018 token sale have been used primarily for core development, as well as for business operations and regulatory compliance. The HBAR tokens in the Hedera treasury are being deployed to further the network's expansion. According to the issuer, Hedera's purpose is to "support the orderly development and ongoing maintenance of the Hedera network," including software upgrades, network operations, treasury management, and ecosystem growth.
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	Making secondary trading available to the consumers on the Kraken Trading platform in compliance with the MiCA regulatory framework
E.3	Fundraising Target	N/A
E.4	Minimum Subscription Goals	N/A
E.5	Maximum Subscription Goal	N/A

E.6	Oversubscription Acceptance	N/A
E.7	Oversubscription Allocation	N/A
E.8	Issue Price	N/A
E.9	Official currency or other crypto-assets determining the issue price	N/A
E.10	Subscription fee	N/A
E.11	Offer Price Determination Method	N/A
E.12	Total Number of Offered/Traded crypto-assets	Maximum supply is 50,000,000,000 HBAR.
E.13	Targeted Holders	ALL
E.14	Holder restrictions	N/A
E.15	Reimbursement Notice	N/A
E.16	Refund Mechanism	N/A

E.17	Refund Timeline	N/A
E.18	Offer Phases	N/A
E.19	Early Purchase Discount	N/A
E.20	Time-limited offer	N/A
E.21	Subscription period beginning	N/A
E.22	Subscription period end	N/A
E.23	Safeguarding Arrangements for Offered Funds/crypto-assets	N/A
E.24	Payment Methods for crypto-asset Purchase	N/A
E.25	Value Transfer Methods for Reimbursement	N/A
E.26	Right of Withdrawal	N/A

E.27	Transfer of Purchased crypto-assets	N/A
E.28	Transfer Time Schedule	N/A
E.29	Purchaser's Technical Requirements	N/A
E.30	Crypto-asset service provider (CASP) name	N/A
E.31	CASP identifier	N/A
E.32	Placement form	NTAV
E.33	Trading Platforms name	Payward Global Solutions Ltd t/a Kraken.com
E.34	Trading Platforms Market Identifier Code (MIC)	PGSL
E.35	Trading Platforms Access	Kraken.com
E.36	Involved costs	N/A
E.37	Offer Expenses	N/A

E.38	Conflicts of Interest	All listings decisions made by Payward Global Solution Ltd are made independently by staff of the entity in line with internal policies. PGSL publishes a conflict of interest disclosure on its website advising of potential conflicts that may arise.
E.39	Applicable law	Any dispute relating to this white paper shall be governed by and construed and enforced in accordance with the laws of Ireland without regard to conflict of law rules or principles (whether of Ireland or any other jurisdiction) that would cause the application of the laws of any other jurisdiction, irrespective of whether HBAR tokens qualify as right or property under the applicable law.
E.40	Competent court	Any disputes or claims arising out of this white paper will be subject to the exclusive jurisdiction of the Irish courts.
Part F - Information about the crypto-assets		
F.1	Crypto-Asset Type	HBAR is classified as a crypto-asset other than an asset referenced token or e-money token under MiCA, (EU) 2023/1114.
F.2	Crypto-Asset Functionality	HBAR serves several functions within the Hedera network: First, it is used as “fuel” for network services - anyone transacting on Hedera or using its smart contracts must pay transaction fees in HBAR. This includes transferring value, invoking smart contracts, or storing data via Hedera’s services. Second, HBAR contributes to securing the network through Hedera’s proof-of-stake model. Nodes on the network stake HBAR to participate in consensus, with voting power weighted by the amount of HBAR staked. Regular HBAR holders can also proxy stake their tokens to trusted nodes; while doing so, their HBAR remains in their control, but it increases the node’s consensus weight and can earn the holder a small reward for supporting network security.
F.3	Planned Application of Functionalities	Not available
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 white paper	OTHR
F.5	The type of submission	NEWT
F.6	Crypto-Asset Characteristics	HBAR is a fungible, divisible digital token native to the Hedera network. Holders can (i) pay predictable fees for value transfers, smart-contract execution, token issuance and data logging; (ii) stake or proxy-stake their tokens to consensus nodes to secure the network and earn staking rewards with no lock-up or slashing; and (iii) store or transfer HBAR freely between Hedera accounts, wallets and exchanges.
F.7	Commercial name or trading name	Hedera Hashgraph, LLC
F.8	Website of the issuer	https://hedera.com/
F.9	Starting date of offer to the public or admission to trading	2019-09-16
F.10	Publication date	2025-08-12
F.11	Any other services provided by the issuer	N/A
F.12	Identifier of operator of the trading platform	PGSL
F.13	Language or languages of the white paper	English

F.14	Digital Token Identifier	2WWB8QS47
F.15	Functionally Fungible Group Digital Token Identifier	N/A
F.16	Voluntary data flag	False
F.17	Personal data flag	True
F.18	LEI eligibility	N/A
F.19	Home Member State	Ireland
F.20	Host Member States	Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, 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	Rights - An HBAR holder may: - Store and transfer HBAR between Hedera accounts or through supporting wallets / exchanges; every transaction is final once consensus is reached; - Access Hedera network services - e.g., cryptocurrency transfers, Token Service operations and EVM smart-contract calls - by submitting a properly signed transaction and paying the published fee in HBAR; - Stake or proxy-stake HBAR to a consensus node; the full account balance is counted as stake, remains liquid at all times and can be moved or re-staked without lock-up or slashing; - Earn staking rewards if the account elects to receive them. Obligations of HBAR Holders: There are no mandatory obligations imposed on HBAR purchasers beyond the general terms of use of the platform.

G.2	Exercise of Rights and obligations	Transfers & service use The holder creates a Hedera transaction, signs it with the account's key and submits it to any consensus node via gRPC, REST or JSON-RPC. The network orders the transaction through Hashgraph consensus and deducts the published HBAR fee; finality is typically reached within 3–5 s. All transactions must include enough HBAR to cover the fee or they fail validation. Staking To stake, the holder updates the account's staked Node Id. The entire balance is staked; "the staked account balance is liquid at all times and there is no lock-up period"; Changing or removing the stake is done with another signed AccountUpdate and takes effect immediately. Conditions Transactions must be correctly signed and comply with Hedera's published API rules; oversized or malformed messages are rejected by nodes. No additional issuer-imposed restrictions, lock-ups, or slashing mechanisms apply to HBAR transfers or staking.
G.3	Conditions for modifications of rights and obligations	The rights and obligations attached to HBAR as described in this white paper reflect information available at the time of issuance. This white paper is issued by Kraken and does not constitute a commitment or guarantee by Hedera Hashgraph or any other party regarding future modifications. No promises, warranties, or assurances are made herein regarding future token functionality, and this section is provided solely for informational purposes.
G.4	Future Public Offers	No future public offers of HBAR have been announced
G.5	Issuer Retained Crypto-Assets	Approximately 7,600,000,000 HBAR (unreleased tokens held in Hedera's treasury accounts, as of mid-2025).
G.6	Utility Token Classification	False
G.7	Key Features of Goods/Services of Utility Tokens	False

G.8	Utility Tokens Redemption	N/A
G.9	Non-Trading request	This white paper reflects a request to admit the token to trading.
G.10	Crypto-Assets purchase or sale modalities	N/A
G.11	Crypto-Assets Transfer Restrictions	Kraken may, in accordance with applicable laws and internal policies and terms, impose restrictions on buyers and sellers of these tokens.
G.12	Supply Adjustment Protocols	False
G.13	Supply Adjustment Mechanisms	N/A
G.14	Token Value Protection Schemes	False
G.15	Token Value Protection Schemes Description	N/A
G.16	Compensation Schemes	False
G.17	Compensation Schemes Description	N/A
G.18	Applicable law	Any dispute relating to this white paper shall be governed by and construed and enforced in accordance with the laws of Ireland without regard to conflict of law

		rules or principles (whether of Ireland or any other jurisdiction) that would cause the application of the laws of any other jurisdiction, irrespective of whether HBAR tokens qualify as right or property under the applicable law.
G.19	Competent court	Any disputes or claims arising out of this white paper will be subject to the exclusive jurisdiction of the Irish courts.
Part H – information on the underlying technology		
H.1	Distributed ledger technology	HBAR is implemented on the Hedera Hashgraph public network. Hedera employs an asynchronous Byzantine Fault-Tolerant (aBFT) Hashgraph consensus algorithm, with transaction ordering weighted by proof-of-stake. Consensus nodes are operated by Hedera Governing-Council members (permissioned at the infrastructure layer but public for user access). This technology ensures that HBAR transactions are recorded, validated, and secured in a decentralised and highly performant manner.
H.2	Protocols and technical standards	The HBAR token is native to the Hedera network, which relies on the Hashgraph distributed-ledger protocol. Core services are exposed via gRPC and REST APIs, while a JSON-RPC relay provides full EVM compatibility for Solidity smart contracts. Transactions are signed with Ed25519 or ECDSA-secp256k1 keys, and the network's native Hedera Token Service (HTS) and Smart-Contract Service (EVM) ensure that HBAR integrates smoothly with standard wallets, exchanges and decentralised applications.
H.3	Technology Used	The HBAR token uses the native Hedera Token Service (HTS) standard on the Hedera network. A separate "mirror-node" layer streams all consensus data so that anyone can run a read-only node for historical queries without burdening consensus nodes with archival storage.
H.4	Consensus Mechanism	Hedera Hashgraph employs an asynchronous Byzantine Fault-Tolerant (aBFT) proof-of-stake model. Consensus nodes "gossip" signed events, then use virtual voting, weighted by the amount of HBAR staked to each node, to finalise a total order of transactions. Finality is normally achieved within 3–5 seconds, and compromising consensus would require control of more than one-third of all staked HBAR, providing strong security and high throughput.
H.5	Incentive Mechanisms and Applicable Fees	Hedera relies on its own incentive model: all transaction fees are paid in HBAR, and each fee is split into a node fee (to the submitting node), a network fee (shared among all consensus nodes), and a service fee (for the specific Hedera service used). Consensus nodes and their proxy-stakers earn HBAR rewards daily, proportional to the stake and uptime they contribute; rewards are drawn from the Hedera treasury, with no new HBAR minted and no slashing penalties. Thus, users pay predictable HBAR fees when transferring HBAR or invoking Hedera services, while node operators and stakers are compensated in HBAR

		for securing and operating the network.
H.6	Use of Distributed Ledger Technology	false
H.7	DLT Functionality Description	N/A
H.8	Audit	True
H.9	Audit outcome	July 2020; Hedera Platform Audit (FP Complete) The security audit reported: • 0 critical issues (none found) • 0 high issues • 0 medium issues • 4 low issues all subsequently addressed • several informational suggestions; acknowledged and tracked October 2024; “Hedera Blockchain Services ‘Modularization’ Code Review” (NCC Group) The assessment reported: • 0 critical issues (none found) • 0 high issues • 1 medium issue (resolved) • 2 low issues (resolved) • 3 informational notes (acknowledged)
Part J - Information on the suitability indicators in relation to adverse impact on the climate and other environment-related adverse impacts		
S.1	Name	Payward Global Solutions Limited
S.2	Relevant legal entity identifier	9845003D98SCC2851458
S.3	Name of the crypto-asset	Hedera HBAR
S.4	Consensus Mechanism	Hedera Hashgraph operates on a unique Hashgraph consensus algorithm, a directed acyclic graph (DAG) system that diverges from traditional blockchain technology. It uses Asynchronous Byzantine Fault Tolerance (aBFT) to secure the network.

		Core Components: 1. Hashgraph Consensus and aBFT: Hedera Hashgraph's consensus mechanism achieves aBFT, which allows the network to tolerate malicious nodes without compromising security, ensuring high levels of fault tolerance and stability. 2. Gossip about Gossip Protocol: The network employs a "Gossip about Gossip" protocol, where nodes share transaction information along with details of previous gossip events. This process allows each node to rapidly learn the entire network state, enhancing communication efficiency and minimizing latency. 3. Virtual Voting: Hedera does not rely on traditional miners or stakers. Instead, it uses virtual voting, where nodes reach consensus by analyzing the gossip history and simulating votes based on the order and frequency of transactions received. Virtual voting eliminates the need for actual voting messages, reducing network congestion and speeding up consensus. 4. Deterministic Finality: Once consensus is reached, transactions achieve deterministic finality instantly, making them irreversible and confirmed within seconds. This attribute is ideal for applications needing quick and irreversible transaction confirmations. 5. Staking for Network Security: Hedera incorporates staking to bolster network security. HBAR holders can stake their tokens to support validator nodes, contributing to the network's resilience and encouraging long-term engagement in consensus operations.
S.5	Incentive Mechanisms and Applicable Fees	Hedera Hashgraph incentivizes network participation through transaction fees and staking rewards, with a structured and predictable fee model designed for enterprise use. Incentive Mechanisms:

		1. Staking Rewards for Nodes: - HBAR Rewards for Node Operators: Node operators earn HBAR rewards for providing network security and processing transactions, incentivizing them to act honestly and support network stability. - User Staking: HBAR holders can stake their tokens to support nodes. Staking rewards offer an additional incentive for token holders to engage in network operations, although the structure may evolve with network growth. 2. Service-Based Node Rewards: Nodes receive rewards based on specific services they provide to the network, such as: - Consensus Services: Reaching consensus and maintaining transaction order. - File Storage: Storing data on the Hedera network. - Smart Contract Processing: Supporting contract executions for decentralized applications. Applicable Fees: 1. Predictable Transaction Fees: Hedera's fee structure is fixed and predictable, ensuring transparent costs for users and appealing to enterprise-grade applications. Transaction fees are paid in HBAR and are designed to be stable, making it easier for businesses to plan for usage costs. 2. Fee Allocation: All transaction fees collected in HBAR are distributed to network nodes as rewards, reinforcing their role in maintaining network integrity and processing transactions efficiently.
S.6	Beginning of the period to which the disclosure relates	2024-07-05
S.7	End of the period to which the disclosure relates	2025-07-05

S.8	Energy consumption	82133.21250 kWh/a
S.9	Energy consumption sources and methodologies	The energy consumption of this asset is aggregated across multiple components: For the calculation of energy consumptions, the so called 'bottom-up' approach is being used. The nodes are considered to be the central factor for the energy consumption of the network. These assumptions are made on the basis of empirical findings through the use of public information sites, open-source crawlers and crawlers developed in-house. The main determinants for estimating the hardware used within the network are the requirements for operating the client software. The energy consumption of the hardware devices was measured in certified test laboratories. 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. The information regarding the hardware used and the number of participants in the network is based on assumptions that are verified with best effort 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. To determine the energy consumption of a token, the energy consumption of the network(s) hedera_hbar 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 of 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 with best effort 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.