Virtual Protocol (VIRTUAL)
White paper

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

N	Field	Content
0	Table of content	

01	Date of notification	2025-06-19
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.

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 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.
08	Characteristics of the crypto-asset	VIRTUAL is the governance and ecosystem token of the VIRTUAL Protocol project. VIRTUAL is designed as the native crypto-asset for a decentralized platform enabling co-owned AI agents to operate autonomously on-chain. Holders may use their tokens to transact with AI agents, participate in Genesis Launches for new agent tokens, pay platform-level transaction fees, and stake to earn ecosystem privileges such as Virgen Points, referral bonuses, and access to agent token allocations. While governance via veVIRTUAL is planned, it is not yet live; once implemented, staked tokens are expected to grant holders proposal and voting rights in protocol governance. VIRTUAL is deployed on the Base (Ethereum Layer-2) network and bridged to Solana, where it can be freely traded and transferred by users holding compatible wallets. Tokens are fully transferable, subject to standard network conditions and applicable legal restrictions. VIRTUAL's initial supply was 1 000 000 000, distributed as follows: _table below_ VIRTUAL tokens are freely transferable, in whole or in part, to third parties, and all associated usage rights and obligations follow the token upon transfer.

Category	Allocation
Community Distribution	60%
Ecosystem Treasury	35%
Protocol Liquidity	5%

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 VIRTUAL 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 VIRTUAL, is subject to general risks inherent to the broader cryptocurrency market. **Market Volatility** The value of VIRTUAL 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	**Centralization of Holdings** A significant portion of VIRTUAL is held by the project's treasury (35%) and possibly by the founders and early backers. This concentration can pose risks. **Reliance on Project Team**

		The success of VIRTUAL is heavily dependent on the VIRTUAL Protocol team's execution and integrity. The core team (offeror) is responsible for continuous development of the platform. If key team members were to leave, or if the team failed to deliver promised features, the project could stagnate, adversely affecting token value. **Centralized Operational Control** Until on-chain governance via veVIRTUAL is fully implemented, control over treasury allocations, contract upgrades, and strategic direction resides with the core contributor group. This centralization may conflict with the expectations of decentralized governance and introduces the risk of unilateral or non-transparent decisions.
I.3	Crypto-Assets-related Risks	**Market Volatility** The crypto-asset market is subject to significant price volatility, which may affect the value of VIRTUAL. 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. VIRTUAL 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** The risk associated with the project not achieving its goals leading to lower than expected adoption and use within the ecosystem, the impact leading to a reduced utility and 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	**Ecosystem Dependencies** The project relies on external technologies (e.g., the Base blockchain, Solana network, and the Wormhole bridge). Any performance, governance, or security issues in these layers could disrupt agent operations, token bridging, or user access. Similarly, off-chain AI services may be subject to licensing, availability, or model performance issues outside the team's direct control. **Adoption and Network Effects** The value of VIRTUAL is directly tied to adoption of the Virtuals ecosystem. If developers, builders, or users fail to engage meaningfully with the protocol's tools or agents, demand for the token may remain low. The novelty of an "agentic economy" may present educational or usability barriers that limit network growth. **Roadmap Execution Risk** The project has published a long-term roadmap, including future agent clusters (e.g., Autonomous Media House, Autonomous Hedge Fund). These initiatives require sustained coordination, development, and funding. Execution shortfalls or unmet milestones may diminish user trust, reduce engagement, and negatively impact the token's perceived utility.
I.5	Technology-Related Risks	**Smart contract risks** VIRTUAL 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** VIRTUAL 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 VIRTUAL. **Risk of Cryptographic Vulnerabilities** Technological advancements, such as quantum computing, could pose potential risks to cryptocurrencies.

		Privacy Transactions involving VIRTUAL 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. **Technology Development Risk** Virtual Protocol aims to integrate AI agents with blockchain infrastructure through components like the Agent Commerce Protocol (ACP) and the GAME agent framework. These systems are complex and experimental. Delays, underperformance, or technical challenges in deploying key components (e.g., multi-agent coordination, smart contract reliability, or AI reasoning) may affect platform functionality, adoption, and confidence in the token
I.6	Mitigation measures	**Security Audits** Virtuals Protocol smart contracts have been independently audited by PeckShield in March 2024 and again in October 2024. All critical issues identified were resolved prior to deployment. Audit reports are publicly available. **Bug Bounty Program** An ongoing public bug bounty program incentivizes external security researchers to identify vulnerabilities. As of January 2025, the project has paid out over $30,000 in rewards for validated reports, indicating a continued commitment to code security and resilience. **Multi-Signature Treasury Control** The ecosystem treasury (35% of token supply) is secured via a multi-signature wallet, requiring approvals from multiple signers for any token movement. This structure reduces the risk of unilateral control or malicious internal actions and enforces collective decision-making. **Use of Well-Tested Infrastructure** VIRTUAL is deployed on Base (an Ethereum Layer-2 secured by Ethereum PoS) and bridged to Solana via the Wormhole protocol. These platforms are widely used, continuously monitored, and regularly updated by external core development teams. By building on known standards (ERC-20, SPL), the project avoids unnecessary custom code risk. **Progressive Decentralization Strategy** Governance is designed to transition gradually toward community control via veVIRTUAL. While not yet live, this

		mechanism will eventually allow VIRTUAL holders to propose and vote on treasury spending, upgrades, and protocol parameters, shifting control away from the core contributor group 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	Not available
B.3	Legal form	Not available

B.4	Registered address	Not available
B.5	Head office	N/A
B.6	Registration Date	Not available
B.7	Legal entity identifier	Not available
B.8	Another identifier required pursuant to applicable national law	Not available
B.9	Parent Company	N/A
B.10	Members of the Management body	N/A
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
C.9		
	Reason for Crypto-Asset White Paper Preparation	Kraken seeks admission to trading of the VIRTUAL 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.
C.10		
	Members of the Management body	(see table below)

Full Name	Business Address	Function
Shannon Kurtas	70 Sir John Rogerson's Quay, Dublin 2, Ireland	Board Member
Andrew Mulvenny	70 Sir John Rogerson's Quay, Dublin 2, Ireland	Board Member
Shane O'Brien	70 Sir John Rogerson's Quay, Dublin 2, Ireland	Board Member
Laura Walsh	70 Sir John Rogerson's Quay, Dublin 2, Ireland	Board Member
Michael Walsh	70 Sir John Rogerson's Quay, Dublin 2, Ireland	Board Member

C.11	Operator Business Activity	PGSL is the operator of a Trading Platform for Crypto Assets, in accordance with Article 3(1)(18) of Regulation (EU) 2023/1114 (MiCA).
C.12	Parent Company Business Activity	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 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	Virtuals Project
D.2	Crypto-assets name	Virtuals Project (VIRTUAL)
D.3	Abbreviation	VIRTUAL
D.4	Crypto-asset project description	Virtuals Protocol is an open, decentralized platform for creating, owning, and coordinating AI agents that operate autonomously on-chain. Its core mission is to build an "agentic economy" where communities co-launch intelligent agents that transact, learn, and earn as independent digital entities. Each agent can issue its own token, deliver services, and interact via the Agent Commerce Protocol (ACP), a standardized on-chain system for multi-agent negotiation, escrow, and evaluation. VIRTUAL (the governance and ecosystem token) acts as the base currency for agent launches, staking, and transactions across the network.
D.5	Details of all natural or legal persons involved in the implementation of the crypto-asset project	**Legal persons** No incorporated legal entity has been publicly disclosed for Virtuals Protocol. The project is developed and operated by a decentralized core contributor group. The following external contributors are involved: Aikoi.ai (Global): AI technology partner supporting agent development and content generation. Nillion AG (Zug, Switzerland): Decentralized data infrastructure partner providing privacy-preserving storage and secure data-sharing for AI agents.
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	**Key past milestones involving VIRTUAL include:** Q4 2023: Rebrand and migration from PathDAO to Virtuals Protocol. Q4 2023: Genesis Launch and public distribution of VIRTUAL (60% of total supply).

		Q4 2023 – Q1 2024: Deployment of Agent Commerce Protocol (ACP) smart contracts on Base; live testing of autonomous agent transactions. Q1 2024: Launch of veVIRTUAL staking system for point accrual and ecosystem participation. **Planned milestones include:** These planned milestones have been publicly outlined in the official Virtuals Protocol whitepaper and team blog updates (e.g., Substack posts from July and August 2024) **Governance activation** On-chain governance via veVIRTUAL to enable proposal submission and voting (expected 2025). **Expanded agent clusters** Launch of vertical-specific autonomous agent collectives, such as the Autonomous Media House and Autonomous Hedge Fund. **Cross-chain support** Continued expansion of VIRTUAL utility across Solana, Ethereum L2s, and broader DeFi ecosystems. **Deeper AI integration** Enhanced use of multimodal agents powered by the GAME framework, supporting scalable agent-driven commerce.
D.9	Resource Allocation	**Financial resources** Virtuals Protocol did not conduct a private or public fundraising round. The project is entirely self-funded through token allocations established at genesis, with no external capital raised. Its operational runway for protocol development, contributor incentives, and ecosystem growth is supported by its on-chain treasury and community-distributed token supply. As of writing, no fiat-denominated financing or outside investment has been publicly disclosed. **Token allocation at genesis** 60% community distribution, 35% ecosystem treasury (subject to a 10% annual release cap), 5% protocol-owned liquidity.

D.10	Planned Use of Collected Funds or Crypto-Assets	Not available

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	1 000 000 000 maximum supply
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	N/A
E.34	Trading Platforms Market Identifier Code (MIC)	N/A
E.35	Trading Platforms Access	N/A
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 conflicts 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 VIRTUAL 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	VIRTUAL 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	VIRTUAL's primary function is to serve as the foundational currency of the Virtuals Protocol ecosystem and its network of co-owned AI agents. By holding VIRTUAL, participants can engage in on-chain interactions with agents, commit tokens to Genesis Launch events for new agent token distributions, and earn ecosystem rewards such as Virgen Points. VIRTUAL is also used to bootstrap liquidity for agent tokens and to access priority allocations.
F.3	Planned Application of Functionalities	Governance functionality for VIRTUAL is not yet live but is planned. Once implemented, holders who stake VIRTUAL into veVIRTUAL will be able to propose and vote on decisions such as treasury disbursements, protocol upgrades, and ecosystem agent approvals. This governance system is expected to activate following further decentralization milestones and smart contract deployments.

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	VIRTUAL allows holders to participate in agent launches, earn ecosystem rewards, and transfer their tokens freely.
F.7	Commercial name or trading name	Virtuals Protocol
F.8	Website of the issuer	https://www.virtuals.io/

F.9	Starting date of offer to the public or admission to trading	2023-12-22
F.10	Publication date	2025-07-17
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	4MRQJ9KZX
F.15	Functionally Fungible Group Digital Token Identifier	N/A
F.16	Voluntary data flag	Mandatory
F.17	Personal data flag	false
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, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Iceland, Liechtenstein, Norway

Part G - Information on the rights and obligations attached to the crypto-assets

G.1	Purchaser Rights and Obligations	**Governance** VIRTUAL holders will be able to propose and vote on protocol governance matters (e.g., treasury spending, agent cluster approvals, and protocol upgrades) once governance via veVIRTUAL is activated. **Ecosystem Rights** Holders may use their tokens to transact with AI agents, participate in Genesis Launches for new agent tokens, pay platform-level transaction fees, and stake to earn ecosystem privileges such as Virgen Points, referral bonuses, and access to agent token allocations. **Obligations of VIRTUAL Holders** There are no mandatory obligations imposed on VIRTUAL purchasers beyond the general terms of use of the platform and applicable blockchain network conditions. **Transferability and Trading** Holders have the ability to transfer their VIRTUAL tokens to others (on-chain) or to trade them on available markets at will. Ownership of VIRTUAL carries with it the aforementioned access and staking rights, and when a token is transferred, those rights pass to the new holder. The previous holder loses access once they no longer hold the token. This means all rights (which are usage rights) are fully transferable with the token.
G.2	Exercise of Rights and obligations	**Ecosystem Participation** Holders connect a compatible wallet (e.g., MetaMask for Base or Phantom for Solana) to the Virtuals Protocol app to participate in agent token launches, claim Virgen Points, or access staking features. These interactions are executed through smart contracts, and rights are triggered automatically upon confirmation of the on-chain transaction. **Governance** Governance via veVIRTUAL is planned but not yet active. Once live, holders will be able to stake VIRTUAL and vote on-chain using veVIRTUAL in a governance module to influence treasury spending, protocol upgrades, and agent approvals. **Transfer / Trading**

		To transfer VIRTUAL, holders sign an ERC-20 transaction on Base or an SPL transaction on Solana. Settlement typically finalizes in seconds on Base and sub-second on Solana. On-chain transfers require standard gas fees. Trading follows the rules of the venue used, including automated market maker (AMM) protocols on DEXs or order-book mechanics on centralized exchanges.
G.3	Conditions for modifications of rights and obligations	The rights and obligations attached to VIRTUAL 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 Virtual Protocol 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	There are no planned future public offers of VIRTUAL
G.5	Issuer Retained Crypto-Assets	350 000 000 VIRTUAL or 35% of the total supply was retained by the project as part of the ecosystem treasury at Genesis.
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 VIRTUAL 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	VIRTUAL is implemented on Base and Solana.
		Base is a public Layer-2 blockchain built on Ethereum, using Optimistic Rollup technology and inheriting Ethereum's Proof-of-Stake (PoS) consensus for final settlement.
		Solana is a public blockchain that uses a combination of Proof-of-Stake (PoS)

		and Proof-of-History (PoH) for consensus. These technologies ensure that VIRTUAL transactions can be recorded, validated, and secured in a decentralized manner.
H.2	Protocols and technical standards	The VIRTUAL token is based on the Base and Solana protocols, which utilize decentralized Distributed-Ledger Technology. These protocols provide the foundation for secure transactions and smart contracts. The SPL standard is a technical protocol for issuing and managing tokens, ensuring that the VIRTUAL token is compatible with most wallets, exchanges, and decentralized applications (DApps). ERC20 Token Standard: The ERC20 standard is a technical protocol for issuing and managing tokens, ensuring that the VIRTUAL token is compatible with most wallets, exchanges, and decentralized applications (DApps).
H.3	Technology Used	The VIRTUAL token uses the existing SPL token standard on Solana and the existing ERC20 standard on Base.
H.4	Consensus Mechanism	Base leverages optimistic rollups to scale Ethereum. VIRTUAL transactions are executed off-chain and submitted to Ethereum in batches, with finality usually taking 20-30 minutes. Transactions on Base typically confirm in about 2 seconds. Solana uses Proof-of-Stake with Tower BFT and Proof-of-History, where leaders are pre-selected by stake and transactions, including VIRTUAL transfers, receive sub-second confirmation and high throughput.
H.5	Incentive Mechanisms and Applicable Fees	Virtual relies on the existing incentive mechanisms and fee structures of the Base and Solana blockchains.
H.6	Use of Distributed Ledger Technology	false
H.7	DLT Functionality Description	N/A
H.8	Audit	true

H.9	Audit outcome	Audit #1 (Security Audit Report) by PeckShield; March 2024 0 Critical severity issues 0 High severity issues 3 Medium severity issues (fixed) 4 Low severity issues (fixed) Audit #2 (Security Audit Report) by PeckShield; October 2024 0 Critical severity issues 0 High severity issue 2 Medium severity issue (fixed) 2 Low severity issues (both fixed)
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	virtuals_protocol
S.4	Consensus Mechanism	The crypto-asset's Proof-of-Stake (PoS) consensus mechanism, introduced with The Merge in 2022, replaces mining with validator staking. Validators must stake at least 32 ETH every block a validator is randomly chosen to propose the next block. Once proposed the other validators verify the block's integrity. The network operates on a slot and epoch system, where a new block is proposed every 12 seconds, and finalization occurs after two epochs (~12.8 minutes) using Casper-FFG. The Beacon Chain coordinates validators, while the fork-choice rule (LMD-GHOST) ensures the chain follows the heaviest accumulated validator votes. Validators earn rewards for proposing and verifying blocks, but face slashing for malicious behavior or inactivity. PoS aims to improve energy efficiency, security, and scalability, with future upgrades like Proto-Danksharding enhancing transaction efficiency.
S.5	Incentive Mechanisms and Applicable Fees	The crypto-asset's PoS system secures transactions through validator incentives and economic penalties. Validators stake at least 32 ETH and earn rewards for proposing blocks, attesting to valid ones, and participating in sync committees. Rewards are paid in newly issued ETH and transaction fees. Under EIP-1559, transaction fees consist of a base fee, which is burned to reduce supply, and an optional priority fee (tip) paid to validators. Validators face slashing if they act maliciously and incur penalties for inactivity.

		This system aims to increase security by aligning incentives while making the crypto-asset's fee structure more predictable and deflationary during high network activity.
S.6	Beginning of the period to which the disclosure relates	2024-05-28
S.7	End of the period to which the disclosure relates	2025-05-28
S.8	Energy consumption	1520.21105 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 network(s) ethereum 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.