



# CarbonOps Sustainability Evidence Schema (SES) – Proprietary Specification

Internal Proprietary Standard | CarbonOps Evidence & Assurance Suite

CarbonOps Evidence & Assurance Suite

## 1. Introduction

The CarbonOps Sustainability Evidence Schema (SES) is a proprietary, internal standard developed exclusively for the CarbonOps platform. SES is designed to ensure robust, traceable, and actionable sustainability evidence management, distinct from any public ESG or open data frameworks. This specification outlines the unique SES Evidence Classes, metadata fields, validation lifecycle, evidence graph, and user interface representation—all aligned with CarbonOps' brand identity and operational excellence.

- Purpose: To provide a structured, auditable, and scalable schema for managing sustainability evidence within CarbonOps.
- Scope: Applicable across all CarbonOps modules that handle sustainability and assurance data.
- Proprietary Nature: This document and the SES are strictly confidential and not for external distribution.

## 2. SES Evidence Classes

CarbonOps SES introduces four proprietary Evidence Classes to categorise and manage evidence types with precision and control:

- SES-A (Activity Evidence): Captures direct records of sustainability activities, such as renewable energy generation, waste segregation, or conservation actions.
- SES-M (Measurement Evidence): Encompasses quantitative data streams, sensor outputs, and metered readings documenting sustainability metrics.
- SES-S (Statement Evidence): Includes signed attestations, certifications, or expert statements related to sustainability performance or compliance.
- SES-V (Verification Evidence): Comprises third-party or internal verification artefacts, audit trails, and validation logs supporting claims.



## 3. SES Metadata Fields

SES mandates the capture of the following 15 proprietary metadata fields for every evidence item. These fields ensure integrity, context, and traceability within CarbonOps:

1. SES Identifier (SES-ID): Unique, immutable identifier assigned to each evidence record.
2. Evidence Originator: Entity or system responsible for generating the evidence.
3. Acquisition Timestamp: Date and time (DD/MM/YYYY, 24-hour) evidence was first captured into CarbonOps.
4. Evidence Class: One of SES-A, SES-M, SES-S, SES-V.
5. Source Authenticity Level: Proprietary scale (1–5) measuring trust in the original source.
6. Contextual Scope: Narrative on the operational or geographic context of evidence generation.
7. Data Sensitivity Rating: Internal classification (Confidential, Restricted, General).
8. Chain of Custody Log: Hash-linked history of all evidence handling and transfers within CarbonOps.
9. Validation Status: Current state in SES Validation Lifecycle (see Section 4).
10. Linked Objectives: CarbonOps sustainability objectives or KPIs directly supported by this evidence.
11. Retention Directive: Custom policy for evidence retention, review, and archival.
12. Evidence Integrity Hash: Cryptographic hash ensuring record immutability.
13. Review Cycle Anchor: Scheduled date for next review or re-validation.
14. Associated Artefacts: List of files, images, or external documents linked to the evidence.
15. UI Display Tag: Proprietary CarbonOps visual cue for evidence type and urgency in the UI.

## 4. SES Validation Lifecycle

The SES introduces a five-stage, proprietary evidence validation cycle, ensuring rigorous control and auditability:

1. Discover: Evidence is ingested into CarbonOps from internal or external sources; preliminary metadata assigned.
2. Normalize: Evidence undergoes schema alignment, de-duplication, and standardisation of formats.
3. Validate: Automated and manual checks applied; evidence is cross-referenced with objectives and flagged for review.



4. Lock: Evidence is marked immutable; custody and validation logs are sealed.
5. Archive: Evidence is transitioned into long-term storage with restricted access, retention directives enforced.

## 5. CarbonOps SES Evidence Graph

The CarbonOps SES Evidence Graph is an exclusive, directed multigraph mapping all evidence records, their relationships, and provenance within the platform:

- Nodes: Represent SES evidence records, colour-coded by Evidence Class (forest green for SES-A and SES-M, midnight blue for SES-S and SES-V).
- Edges: Capture relationships such as ‘supports’, ‘verifies’, ‘supersedes’, and ‘references’ between evidence records.
- Graph Anchors: Root nodes tied to principal CarbonOps objectives, enabling traceability from top-level goals down to granular evidence.
- Temporal Layers: Evidence nodes are layered chronologically, supporting lifecycle tracking and audit trails.
- Integrity Checks: Graph-integrated cryptographic hash validation for each node and edge.

## 6. CarbonOps SES User Experience Specification

SES is visually and functionally represented in the CarbonOps UI through proprietary, branded components:

- Evidence Card: Modular widget displaying SES metadata, class badge, and validation lifecycle stage, with forest green and midnight blue accents.
- SES Timeline Strip: Interactive horizontal bar visualising evidence progression through the five validation stages.
- Custody Trail Viewer: Expandable panel rendering the Chain of Custody Log with real-time updates and status icons.
- Objective Link Matrix: Visual matrix mapping evidence to CarbonOps sustainability objectives, using brand colours for linkage strength.
- Evidence Graph Canvas: Embedded, interactive network visualisation of the SES Evidence Graph, supporting drill-down and filtering by metadata fields.
- Urgency Ribbon: Prominent UI tag (derived from UI Display Tag metadata) indicating evidence urgency and review status.



## 7. Branding & Proprietary Notices

All SES representations, digital or printed, must adhere to CarbonOps branding guidelines:

- Colour Palette: Primary colour accents are forest green (#1A4D29) and midnight blue (#16324F).
- Typography: Use CarbonOps' approved typefaces for all UI and documentation components.
- Proprietary Notice: "CarbonOps SES is a confidential, proprietary standard. Unauthorised disclosure or use is strictly prohibited."
- Footer Mark: Every page or screen must include the CarbonOps Evidence & Assurance Suite footer in midnight blue, with the proprietary notice in forest green.

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