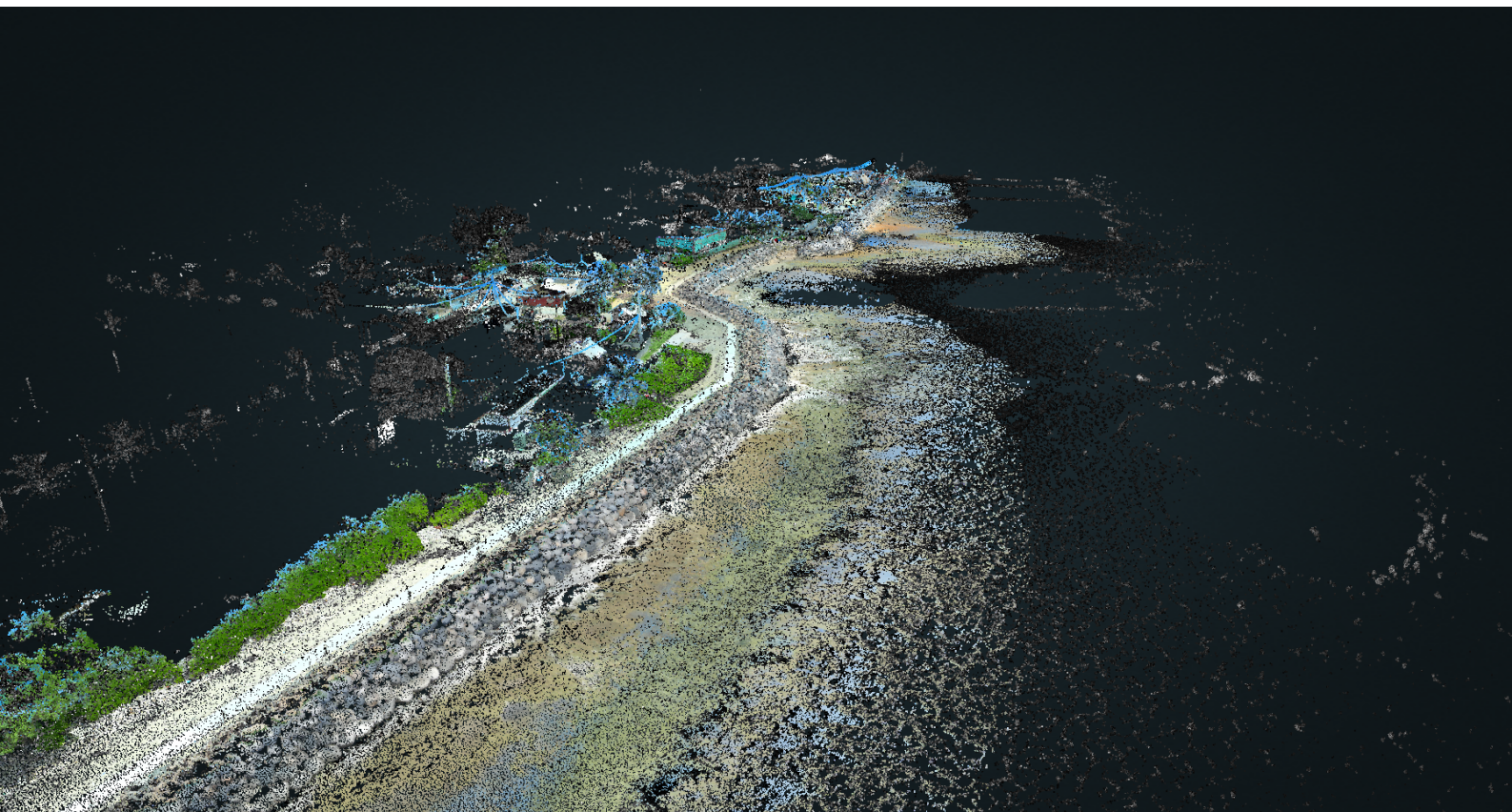


MULTI-MAP MERGE, EXPLAINED

Orbis Atlas

Connect the captures. Understand the whole site.

Bring overlapping recording sessions into a common spatial view. Align the observations, refine the trajectories and retain the evidence behind the combined map.



vectra_denoised · alignment unvalidated. atlas_seam_complete_20260914 · full denoised cloud with PaintCloud colours and intensity fallback.
New screenshots captured 15 September 2026.

4 original recordings

Capture history preserved through the workflow.

17 processing agents

Continuous recordings and selected recovery sections.

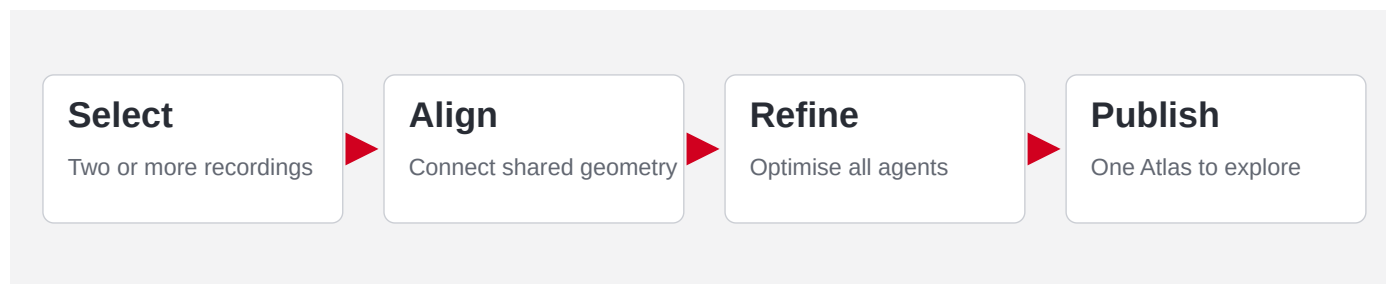
1.819 billion points

The full denoised cloud shown throughout this brochure.

01 / WHAT ATLAS IS

One mapping workflow across multiple captures.

Atlas is Orbis's multi-map alignment and merging capability. It relates separate observations of a place and builds a shared spatial result.



The normal end-to-end aim: select, align, refine and publish. A review preview is an intermediate artifact, with its own status.

Combine coverage

A large site or corridor may need several recording sessions. Atlas uses their overlapping observations to bring that coverage into one map that can be navigated and reviewed together.

Use the geometry between scans

Shared walls, terrain, roofs and other stable features provide relationships between trajectories. Those relationships help the processing reconcile drift and differences between local recording frames.

Refine a connected solution

The joint global stage uses observations from multiple agents together. It can refine their motion histories before dense points are written into the resulting spatial frame.

Retain the source context

A useful Atlas has more than a cloud file. Recording membership, agent identity, retained time intervals, processing configuration and coordinate information explain where the result came from.

Review before acceptance

Point-cloud viewers make it possible to inspect coverage and shared features at several scales. Integrity checks and geometric quality checks answer different questions and should be assessed together.

Choose the appropriate output

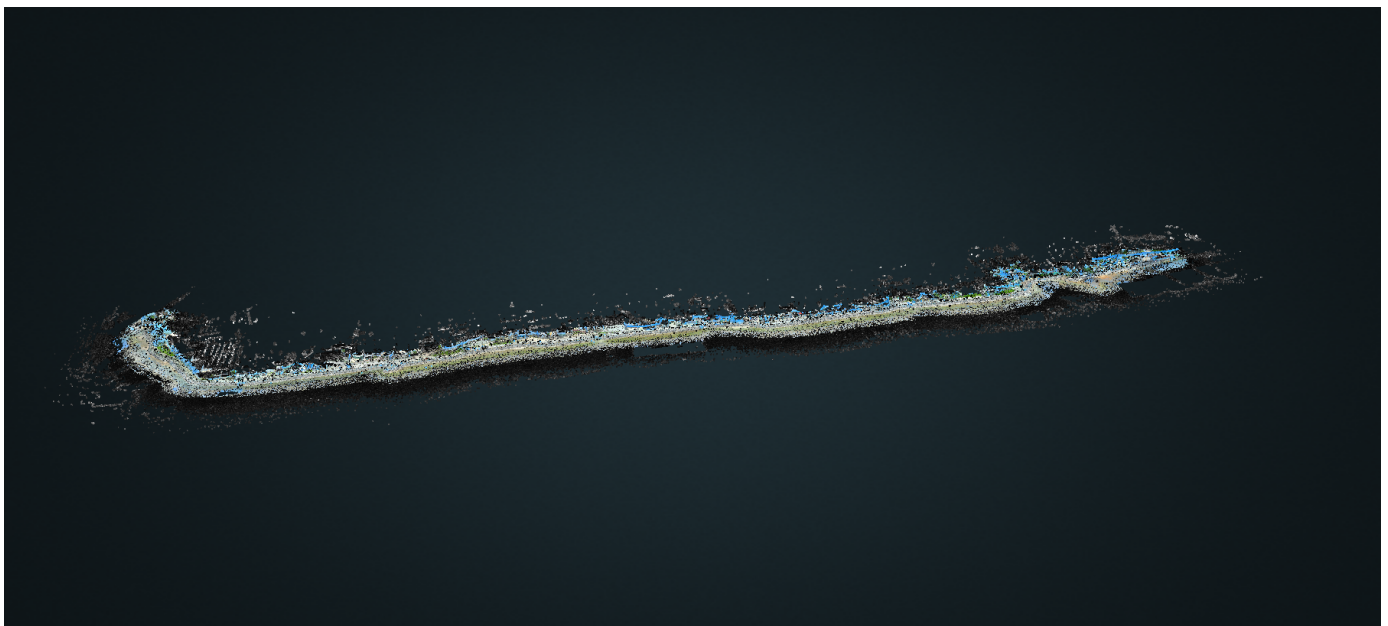
AtlasMerge creates a combined cloud. The related AtlasRegistration workflow can produce separate recording exports in a common frame. The supplied case illustrates a combined cloud whose alignment remains under review.

This brochure explains the general Atlas capability, then follows the supplied Seam example. The full Vectra cloud is shown throughout, with its unresolved alignment status retained.

02 / THE EXAMPLE CASE

Four recordings. One richly detailed view.

The same seventeen processing agents contribute to a dense, camera-coloured Vectra result.



vectra_denoised · alignment unvalidated. Site overview of the full denoised cloud. Closer views follow throughout the brochure.

1.819 bn

Denoised points

1,818,991,794 points in the full Vectra cloud and browser metadata.

3 cm

Denoise setting

Isolated points removed; retained coordinates remain unchanged.

61.85 GB

Full LAS

61,845,721,425 bytes. The browser streams a tree of detail levels.

Capture history retained

Four original recordings become six earlier agents and eleven late recovery windows. The denoised result retains contributions from all seventeen.

Colour and quality are distinct

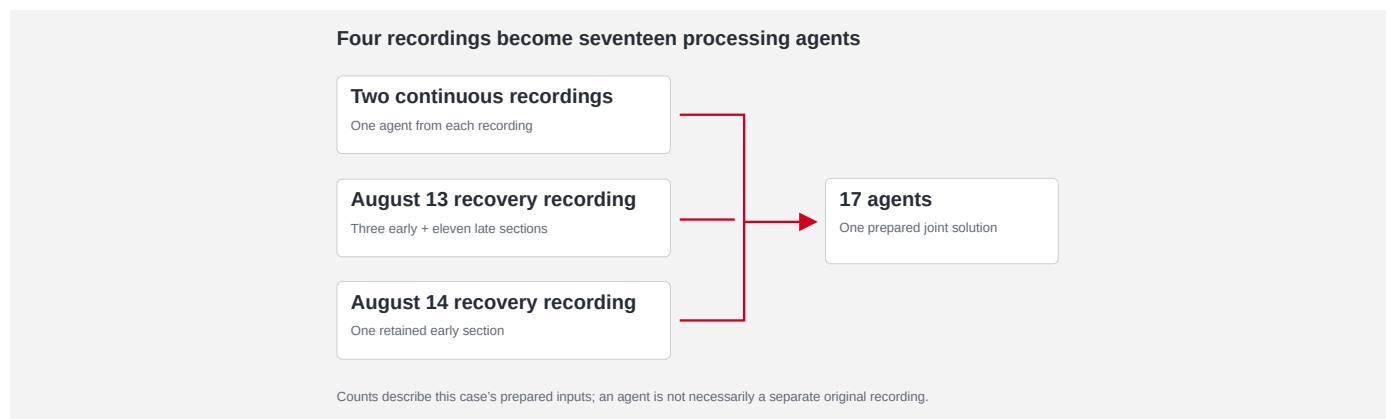
PaintCloud colours help interpret the scene, with intensity fallback where colour is unavailable. The original alignment remains unvalidated.

Source: [Open the full Vectra Atlas](#). Only vectra_denoised is visible in the new screenshots.

03 / RECORDING VERSUS AGENT

A recording is the capture. An agent is a processing unit.

An agent can represent a whole recording or a selected section. The table preserves the initial 10 cm preview counts.



Case-specific input structure, derived from the section manifest.

Original recording	Agents	Initial preview points
2026_08_13_23_28_50Z	1	10,610,530
2026_08_14_00_19_20Z	1	5,871,491
2026_08_13_22_31_53Z	14	35,465,001
2026_08_14_20_34_26Z	1	5,837,931

Preserve the capture history

All fourteen agents from the August 13 recovery recording still trace to the same original capture. Splitting it does not create fourteen independent surveys.

Make difficult sections manageable

Prepared sections allow accepted local trajectories and retained intervals to be handled explicitly. This case used specialist recovery preparation; the catalogue does not automatically create these sections.

The original recordings remain the source evidence. Agent names and source IDs describe the prepared merge inputs, rather than scanner count, field crew count or a claim of independent coverage.

04 / TRACE THE CONTRIBUTIONS

Trace the original sections through the processing.

The initial 10 cm preview manifest identifies the seventeen agents. These historical counts precede dense colourisation and denoising.

Source ID	Agent / retained section	Group	Initial preview points
1	2026_08_13_23_28_50Z	Early	10,610,530
2	2026_08_14_00_19_20Z	Early	5,871,491
3	s13_0000_1700	Early	11,051,608
4	s13_1700_2200	Early	2,526,678
5	s13_2100_2400	Early	1,729,501
6	s14_0000_0646	Early	5,837,931
7	fine235	Late	2,038,512
8	fine27	Late	1,598,523
9	fine295	Late	1,820,387
10	fine325	Late	2,124,359
11	fine355	Late	1,874,221
12	fine385	Late	2,310,547
13	fine415	Late	2,128,113
14	fine445safe	Late	1,839,453
15	fine4819	Late	408,809
16	fine4915	Late	1,303,060
17	fine515	Late	2,711,230
All 17 sections			57,784,953

Earlier group

Six sections contribute **37,627,739 preview points**. These include two continuous captures, three earlier August 13 recovery sections and the retained August 14 prefix.

Late recovery group

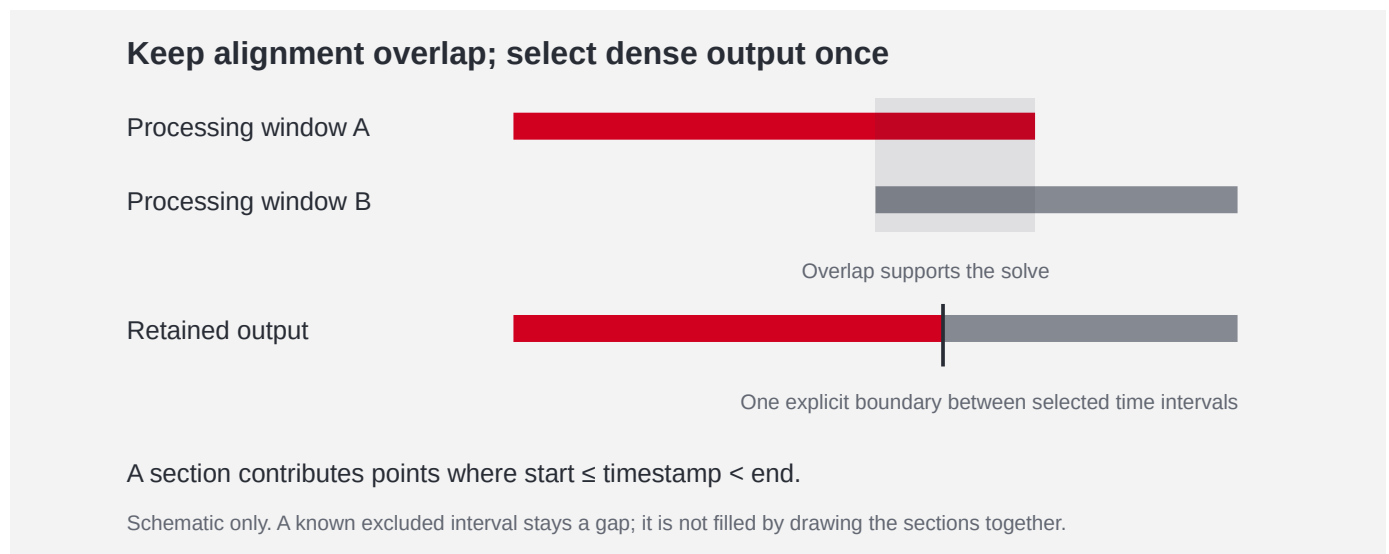
Eleven windows contribute **20,157,214 preview points**. Their contribution is explicit, so the late recovery can be traced through the combined preview.

Section colours are a visual aid. The current renderer cycles its colour palette after ten source IDs, so a colour alone cannot uniquely identify all seventeen agents. Use the IDs and manifest for exact provenance.

05 / RETAINED TIME INTERVALS

Use overlap to align. Choose what to retain.

Processing overlap and final point selection serve different purposes in a prepared recovery merge.



Conceptual explanation of time selection. The section manifest supplies the actual boundaries for this case.

Give the solver common observations

Neighbouring windows can share observations so their local solutions have connecting evidence. This overlap helps establish a consistent relationship across a restart or section boundary.

Apply exact output intervals

The preview publisher reads each native section and retains points whose timestamps lie within its selected interval: inclusive at the start and exclusive at the end.

Preserve intended exclusions

Known excluded intervals remain excluded. A merged display does not reconstruct observations that were never retained, nor does it fill a time gap with invented geometry.

Prevent duplicate time coverage

For this case's prepared windows, disjoint retained intervals avoid assembling the same portion of a recording twice merely because it helped both processing windows.

Keep separate captures distinct

Points observed by different recording sessions can remain in their shared spatial overlap. Time-window selection is not the same as removing all repeated observations of a surface.

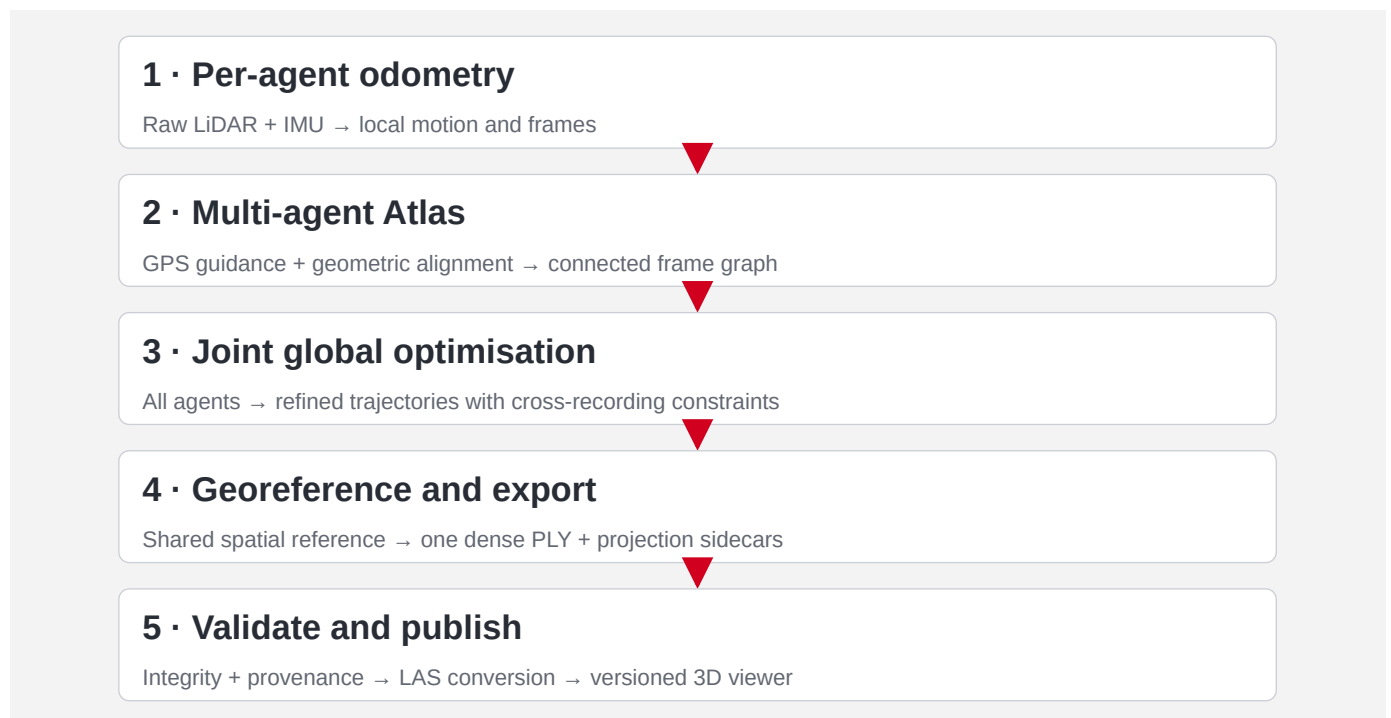
Carry selection into the audit

Counts, source IDs and timestamps are checked against the retained native previews during LAS conversion. These checks establish which data were assembled, independently of whether their alignment is accepted.

06 / THE NORMAL ATLAS PIPELINE

From local motion to a shared spatial map.

The standard GPS-assisted AtlasMerge workflow separates local motion estimation, inter-agent alignment and joint refinement.



General AtlasMerge sequence. The prepared Seam case reuses local priors and follows the specialised sequence described on page 10.

Local odometry

Process LiDAR and IMU data with the recording's calibration to estimate motion and create frames. Each agent initially has its own local motion history.

Atlas alignment

Use candidate overlap and geometric verification to connect observations from different agents. Place their relationships into a common Atlas frame graph.

Global refinement

Use the connected result to refine the agents together, including shared LiDAR surface constraints. Write retained points using the refined trajectories.

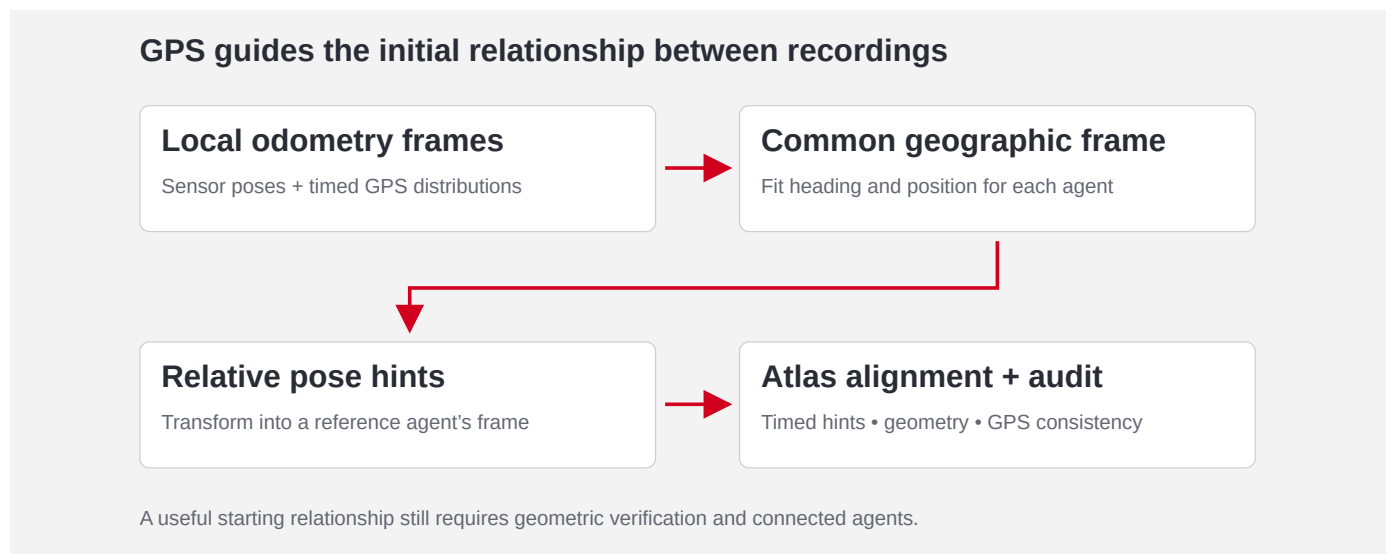
Georeference and publish

Apply the spatial reference, validate the output set and prepare a browser representation. A diagnostic preview can be exposed separately without promoting it to an accepted result.

07 / GPS AND INITIAL ALIGNMENT

Give the solver a supported starting relationship.

In the normal AtlasMerge path, GPS guides initial relationships while LiDAR geometry tests the shared scene.



General GPS-assisted initialization. It is not a claim that this prepared recovery case reran every agent through the default initializer.

Relate motion to geographic position

The initializer compares sensor positions in odometry frames with GPS distributions in a common geographic frame. Sensor offsets and frame timestamps are part of that relationship.

Estimate heading and translation

Each agent receives an initial relationship to the reference agent. At least three GPS distributions and enough movement to establish heading are required by the reviewed normal initializer.

Supply timed pose hints

Hints are submitted with actual frame times. They guide the search without replacing geometric matching, connectivity tests or the later refinement.

Verify the resulting arrangement

The normal path checks actual Atlas trajectories against GPS consistency and their motion health before continuing. It requires all selected agents to connect.

Interpret the guard correctly

The reviewed normal default rejects a median GPS consistency error above 5 m in any recording. This catches gross inconsistency; it is not a stated accuracy of the final cloud.

Recognise prepared workflows

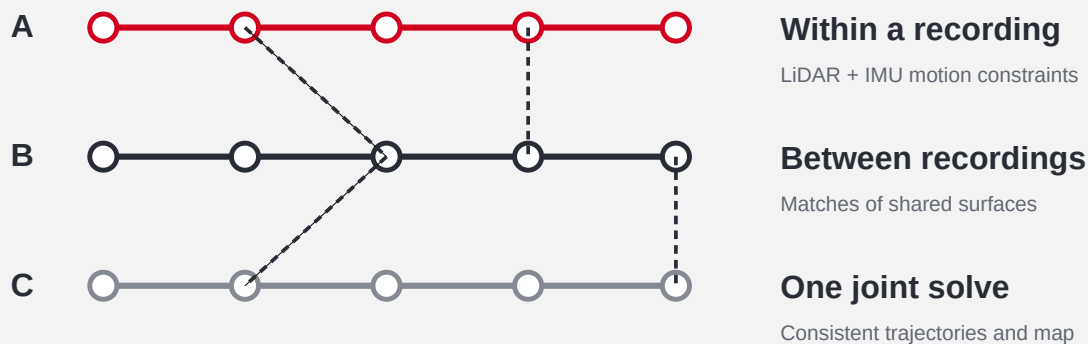
The Seam case starts from reviewed local recovery priors and has its own native joint configuration and shape checks. Its acceptance status comes from those checks, not a presumed pass of the normal catalogue workflow.

08 / JOINT OPTIMISATION

Shared surfaces constrain the trajectories.

The value of a joint solution comes from using relationships within and between captures.

Cross-recording constraints tie the solution together



Schematic graph • circles represent poses/frames; dashed links represent shared observations.

Conceptual graph of local and cross-recording constraints. This is not the measured graph of the Seam job.

Find plausible common places

Position information and existing priors provide candidate relationships. Repeated observations of stable geometry are then useful evidence that two sections see the same place.

Match surface geometry

The native configurations use LiDAR surface features and their orientations for alignment and global constraints. Fine matching and overlap checks reduce reliance on position hints alone.

Connect the network

Agents can connect through other agents. Direct overlap between every possible pair is not necessary, but the overall selected network needs supported connections.

Refine all agents together

The multi-agent global pipeline consumes raw observations and prior results. It refines motion using shared-surface and motion constraints across the joint problem.

Write the map from the trajectories

Point positions depend on where the sensor was estimated to be when each return was recorded. Refining that history can alter the relative arrangement of surfaces over a recording.

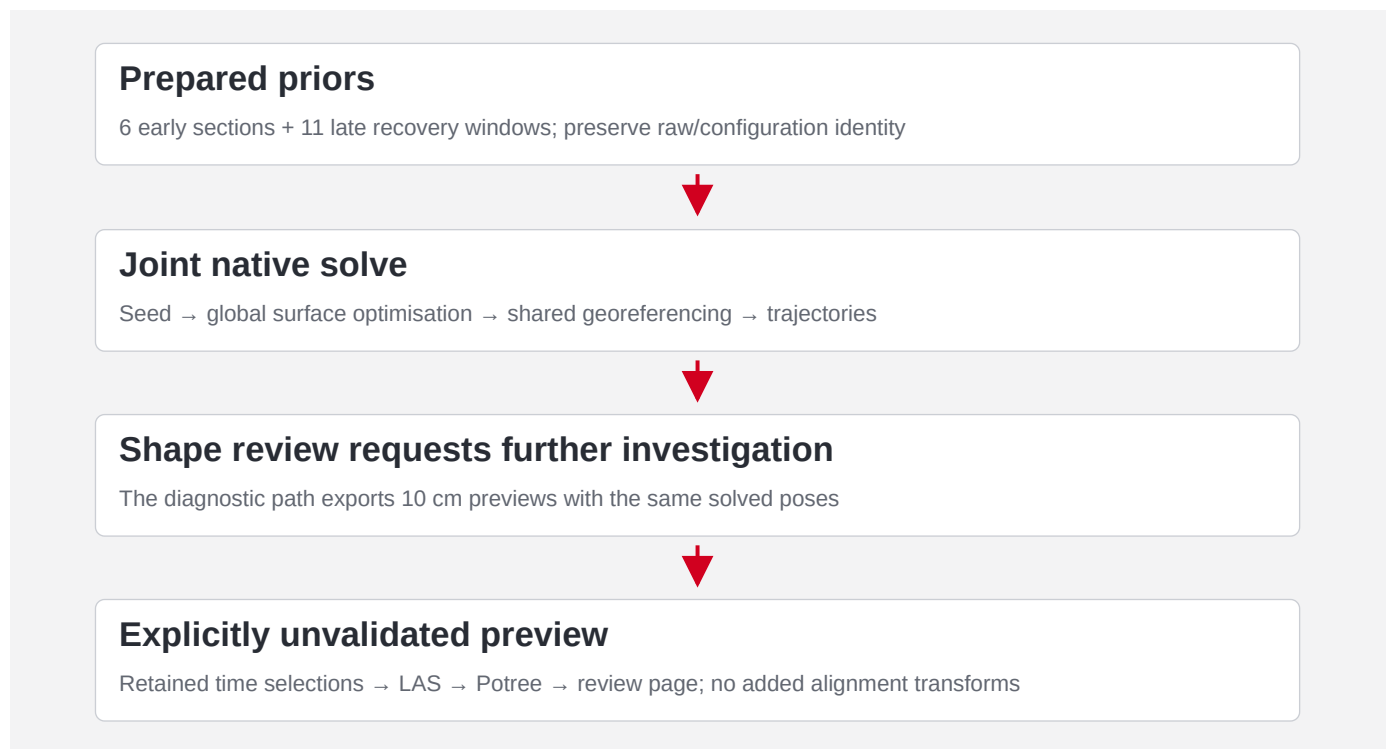
Review ambiguous geometry

Vegetation, moving objects, repetitive structures and weak overlap can still produce uncertain relationships. A visually coherent overview does not establish every local join or absolute position.

09 / THIS CASE'S PREPARATION

A prepared recovery merge with an explicit review path.

The supplied Seam example uses earlier local solutions and carefully selected recovery windows as inputs to a fresh joint native solve.



Observed specialised workflow from the case preparation, runner and diagnostic publisher. The production validation gates were not changed to label the preview accepted.

Reuse identified local priors

The preparation combines six earlier sections with eleven validated late-window priors. Raw file identities, calibration and prior artifacts are recorded before the joint processing stages.

Refine the shared result

Native seed, global, georeference and trajectory stages produce the candidate geometry. Shape comparisons then assess the result against independent local reference solutions.

Expose geometry for investigation

After the shape checks required further review, the diagnostic workflow exported reduced-density sections using those solved poses. It assembled them without adding alignment transforms.

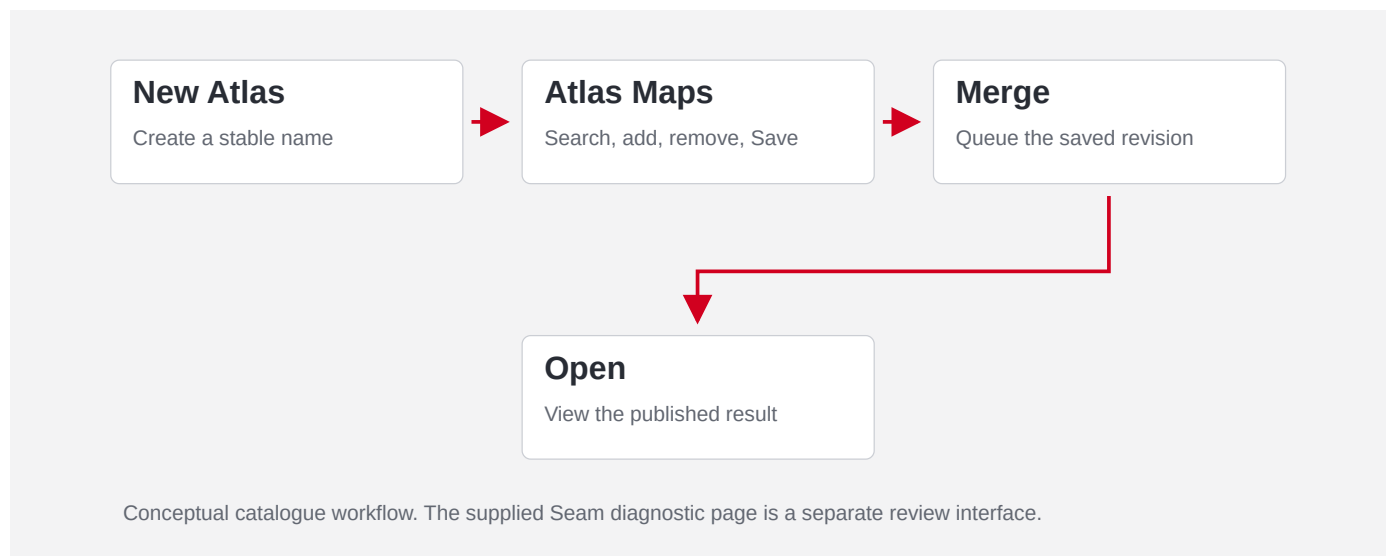
Retain the distinction

The later dense stage adds PaintCloud colours and Vectra denoising. File checks pass while the original geometric acceptance remains unresolved.

10 / MANAGE ATLAS IN ORBIS

Define the membership. Track the result by revision.

The main Orbis Atlas catalogue manages named merge definitions and their published results.



General catalogue controls, illustrated. The separate Seam review page is not a screenshot of this catalogue.

Feature	Practical use
New Atlas	Create a stable name that also identifies the output folder.
Search, sorting and paging	Find named Atlases and compare their identifiers, status and completed PLY size.
Atlas Maps	Search recordings, add or remove membership, review the whole selection and Save.
Merge and Pipeline	Queue at least two recordings using the saved revision, then follow progress in Pipeline.
Open	View the published result. A previous result remains identified when membership has changed.

Protect a running selection

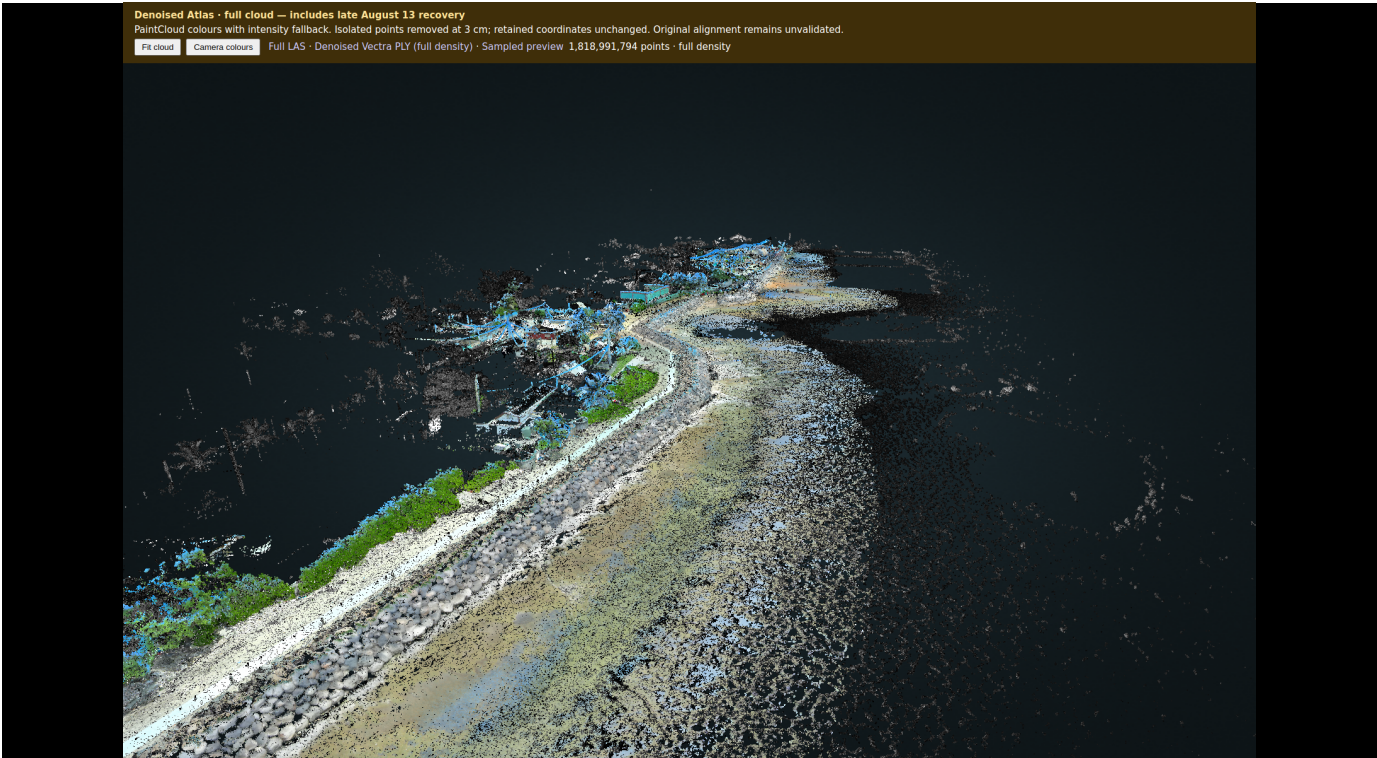
Membership is locked while queued or running. Revision checks refuse stale edits, and repeated submission for the same request can reuse the existing job.

Keep originals available

Remove changes Atlas membership rather than deleting the recording. Administrators manage definitions and processing; view-only users can inspect available results.

Open the full cloud. Explore at your own scale.

The dedicated Vectra viewer streams the dense result and keeps its processing status visible.



vectra_denoised · alignment unvalidated. Actual full-cloud viewer, including its controls, point count and alignment status.

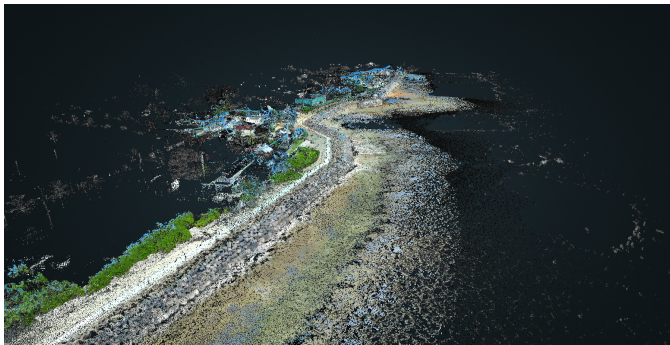
Control	What it does
Fit cloud	Refits the cloud bounds. Zoom closer to inspect local surfaces.
Camera colours	Displays stored PaintCloud RGB, with intensity-derived fallback where needed.
Full LAS / Denoised Vectra PLY	Downloads the full denoised dataset in the chosen format.
Sampled preview	Opens the separate 18,189,918-point sampled version. It is not used for these screenshots.

Orbit, pan and zoom to move from site context to local detail. These display actions do not rerun alignment or change the geometric acceptance status.

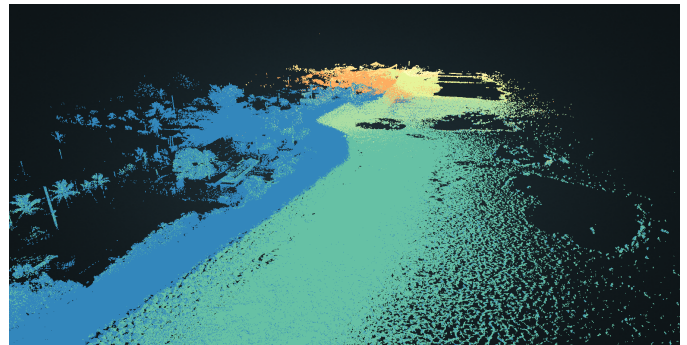
12 / TWO WAYS TO READ THE SCENE

Read the scene. Then trace the sources.

The same Vectra geometry can be read through its captured colour or its source-section identifiers.



vectra_denoised · alignment unvalidated. Camera colours show the scene appearance.



vectra_denoised · alignment unvalidated. Same viewpoint, rendered by source section.

Camera colours: recognize the scene

Stored PaintCloud RGB makes surface appearance, vegetation, structures and paths easier to relate to one another while exploring the geometry.

Understand the fallback

Where the native colour result was black, the publisher supplied greyscale derived from LiDAR intensity. The resulting view combines camera colour and fallback shading.

Keep colour separate from shape

RGB is not a material classification or an accuracy score. Colour artifacts and geometric discrepancies need their own checks.

Section colours: trace contributions

The alternate native renderer view uses the stored source ID. It helps show which contributions occupy different parts of the same scene.

Use IDs for exact identification

The palette repeats after ten IDs. The source manifest identifies all seventeen agents; colour alone does not uniquely identify them.

Interpret the screenshot correctly

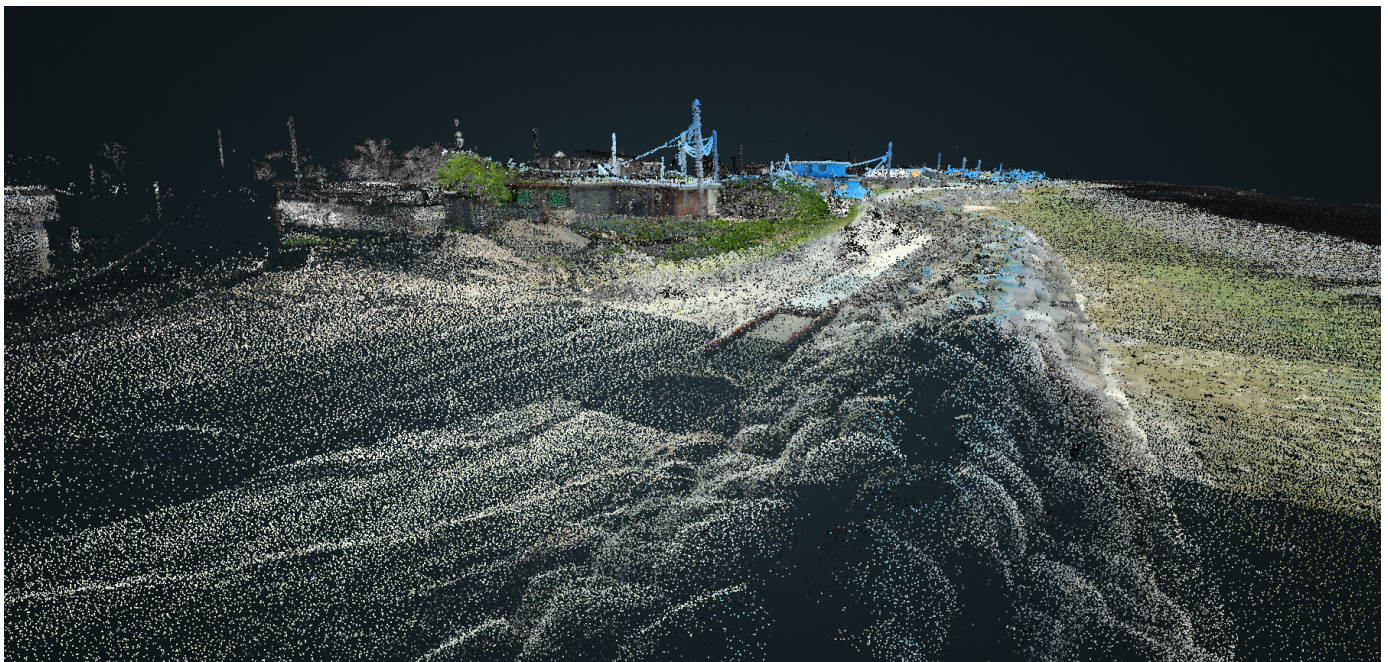
Both images show only vectra_denoised. The section view uses the renderer's source-ID attribute; the dedicated page itself has a Camera colours button.

Changing the display attribute changes how points are drawn. It does not apply a correction, create a new alignment or establish acceptance.

13 / REVIEW SHARED GEOMETRY

Inspect the joins from more than one angle.

A successful review looks at local surfaces as well as the overall shape of the corridor.



vectra_denoised · alignment unvalidated. Low oblique view of rockwork and nearby structures, with the original Vectra colour values.

Choose recognizable features

Compare stable edges, ground transitions, poles and other identifiable structures where sections share coverage. Look for doubled surfaces, offsets or inconsistent continuity.

Change the viewpoint

An apparent fit in plan can conceal a vertical discrepancy. Inspect from oblique and lower viewpoints, keeping enough surrounding geometry to understand what is being compared.

Sample several locations

One good-looking join does not establish the whole map. Review along the corridor, near section boundaries and across areas with different observation conditions.

Distinguish geometry from display

Point size, colour contrast and level of detail affect the screenshot. Apparent thickness or sparsity can change as nodes load or the camera moves.

Use numerical checks alongside it

Compare retained trajectories, shared surfaces and independent references using an agreed method. Record the comparison frame and any diagnostic transform that was removed.

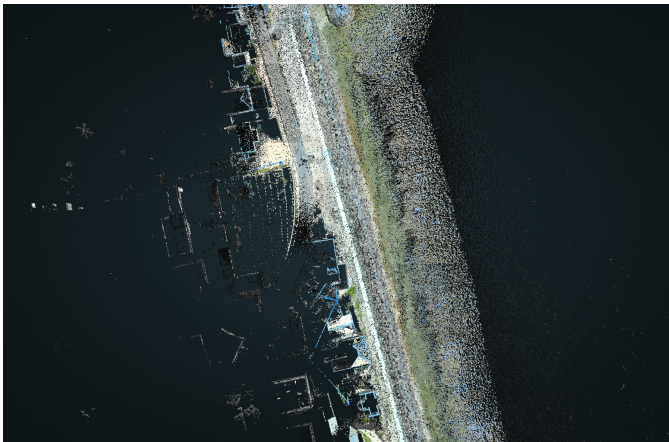
Carry findings forward

The supplied cloud retains its unresolved alignment status. Screenshots are evidence of what was displayed, rather than proof that every join satisfies project requirements.

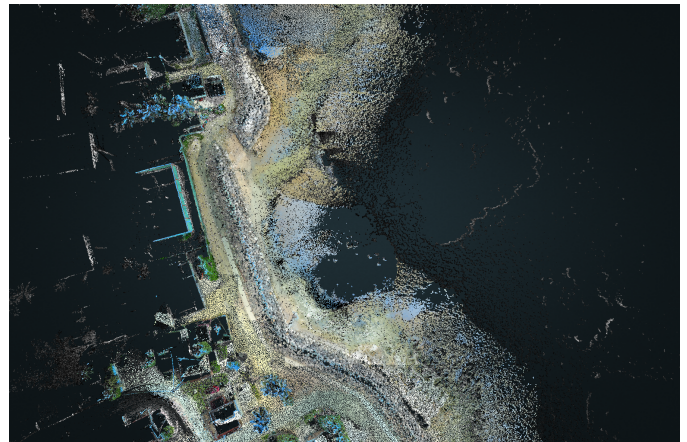
14 / COVERAGE AND NAVIGATION

Move between site context and local detail.

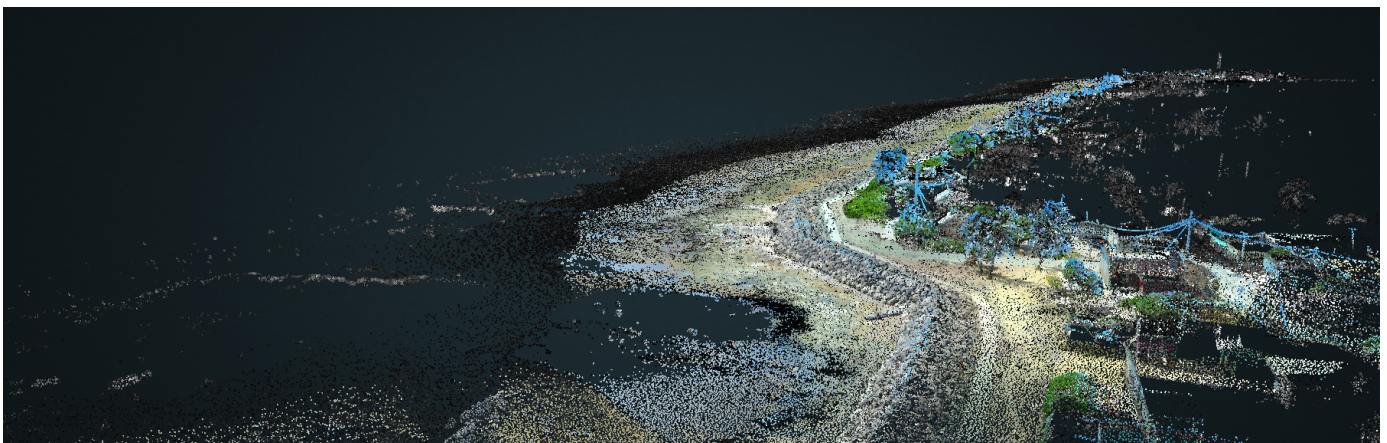
Different views help the reviewer ask different questions about the same dense candidate map.



vectra_denoised · alignment unvalidated. Overhead view of the middle corridor.



vectra_denoised · alignment unvalidated. Overhead view farther along the northern area.



vectra_denoised · alignment unvalidated. Reverse oblique view reveals the corridor and nearby structures from the other direction.

Plan: where does coverage go?

Follow the footprint, changes in direction and areas where observations meet. Distinguish missing observations from temporarily unloaded browser detail.

Oblique: how do surfaces relate?

Inspect height relationships and structure in depth. Compare both directions, then lower the camera to examine the local edge or path.

Dense detail. Deliberate noise removal.

Vectra denoising removes isolated observations while preserving the records that remain.

1,868,183,822

Dense input points



1,818,991,794

Retained denoised points

Remove isolated observations

49,192,028 points removed.

3 cm isolation-distance setting.

Preserve retained records

Coordinates, time, rays and RGB retained.

All seventeen sources still contribute.

Denoising is not geometric alignment or a 3 cm accuracy certificate.

Counts and retained-record checks from the Vectra processing manifests.

Start with the dense selection

The assembled input contains 1,868,183,822 points. Colourisation supplies camera RGB, with intensity fallback for observations without native colour.

Remove isolated observations

The denoised result retains 1,818,991,794 points after removing 49,192,028. The isolation distance is 3 cm; it does not describe a global one-point-per-voxel reduction.

Keep the retained data intact

The processing verification reports exact preservation of retained coordinates, timestamps, rays, RGB and alpha. Denoising does not introduce an alignment transform.

Stream the full result

The browser's tree contains the full denoised point count. Its point budget and camera determine which detail is drawn at once; a screenshot never displays all 1.819 billion points simultaneously.

Recognize separate previews

The 18,189,918-point sampled Vectra preview is a different file. The earlier 57,784,953-point 10 cm preview is also separate; its historical source counts remain on pages 4–5.

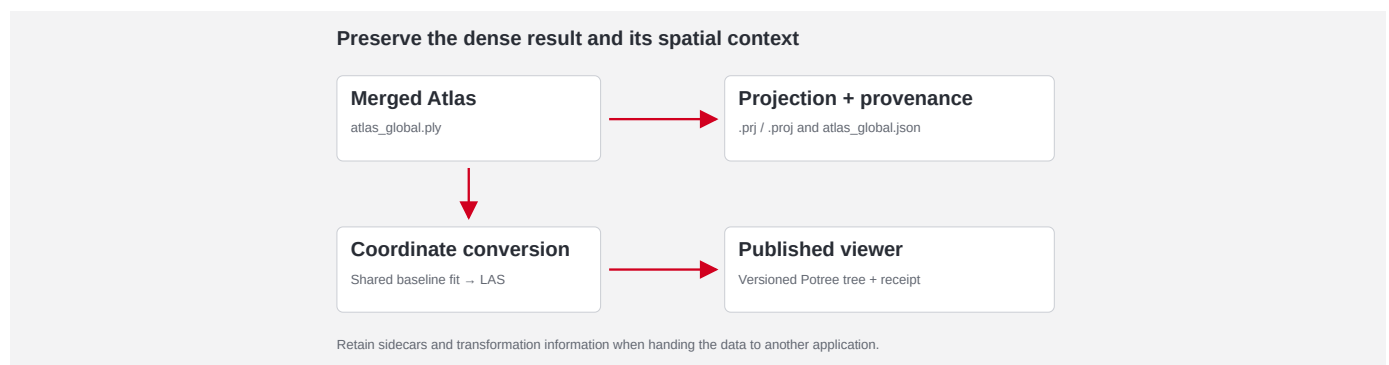
Keep acceptance explicit

Neither denoising nor colourisation resolves the underlying alignment questions. Sampling distances and file integrity checks are not survey accuracy claims.

16 / COORDINATES AND DELIVERABLES

Keep spatial context with every exported cloud.

A point file, its coordinate definition and its provenance belong together.



General Atlas output relationships. The Vectra artifacts below describe the current screenshot source.

Vectra artifact	Role
vectra_denoised.las	1,818,991,794 points; 61,845,721,425 bytes. LAS 1.4, point format 3.
vectra_denoised.ply	Full denoised Vectra records, including the retained ray and colour information.
LAS / denoising verification	Counts, hashes, complete readback and retained-record checks. Geometry remains unvalidated.
Potree metadata and tree	The full denoised browser representation, with source IDs and multiple detail levels.

Check coordinates before handoff

The live browser metadata has an empty projection field. Obtain and verify the native frame, units and required projection information before integrating the cloud into another project.

Preserve the source evidence

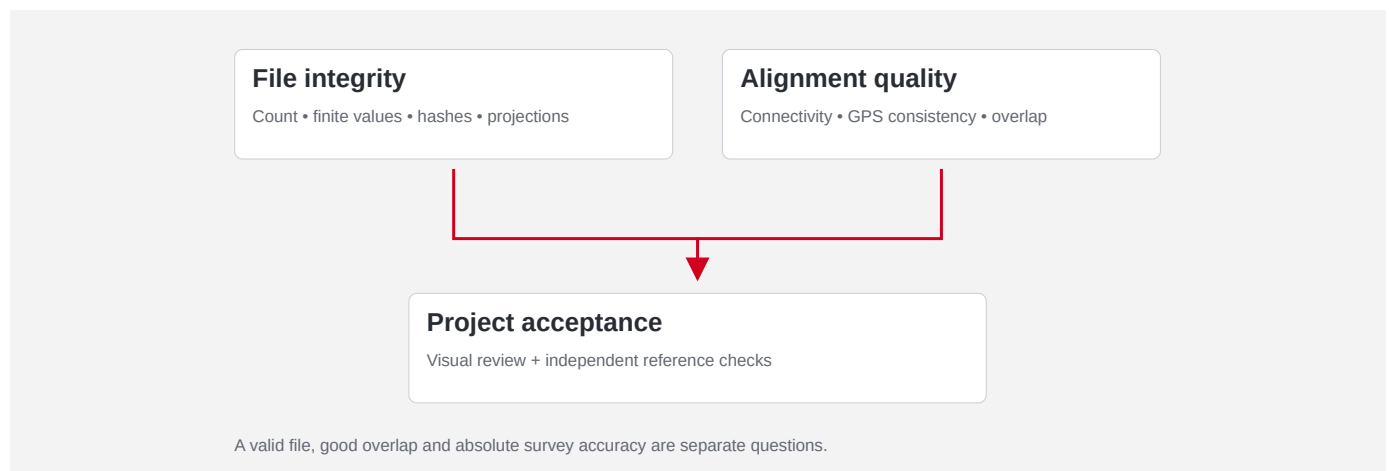
Keep original recordings, retained intervals, processing manifests and file identities with the export. The publisher reports exact colour, timestamp and source-ID preservation in LAS.

The normal AtlasMerge workflow produces atlas_global.ply and its projection and provenance records. The Vectra derivative has its own filenames and checks; file-format conversion does not establish geometric acceptance.

17 / QUALITY AND ACCEPTANCE

A checked file still needs geometric acceptance.

The current Vectra delivery separates successful data handling from unresolved alignment quality.



Integrity checks, alignment quality and project acceptance remain separate evidence.

Evidence	Recorded state	Meaning
LAS conversion	verified	Full readback and preservation checks passed.
Denoising	verified	Retained records preserved; isolated points removed.
geometry_validated	false	The original alignment is still unvalidated.
Appearance	Camera RGB + fallback	PaintCloud colour is present; missing colour uses intensity shading.

What the checks establish

The manifests reconcile point counts, file identities and retained attributes. Browser metadata agrees with the 1,818,991,794-point denoised total.

What they do not settle

The underlying candidate required further shape and alignment review. Colourisation, denoising and conversion do not turn that review into a pass.

Use independent evidence

Review shared surfaces and reference trajectories with an explicit comparison method. Absolute positioning requirements need appropriate independent survey control.

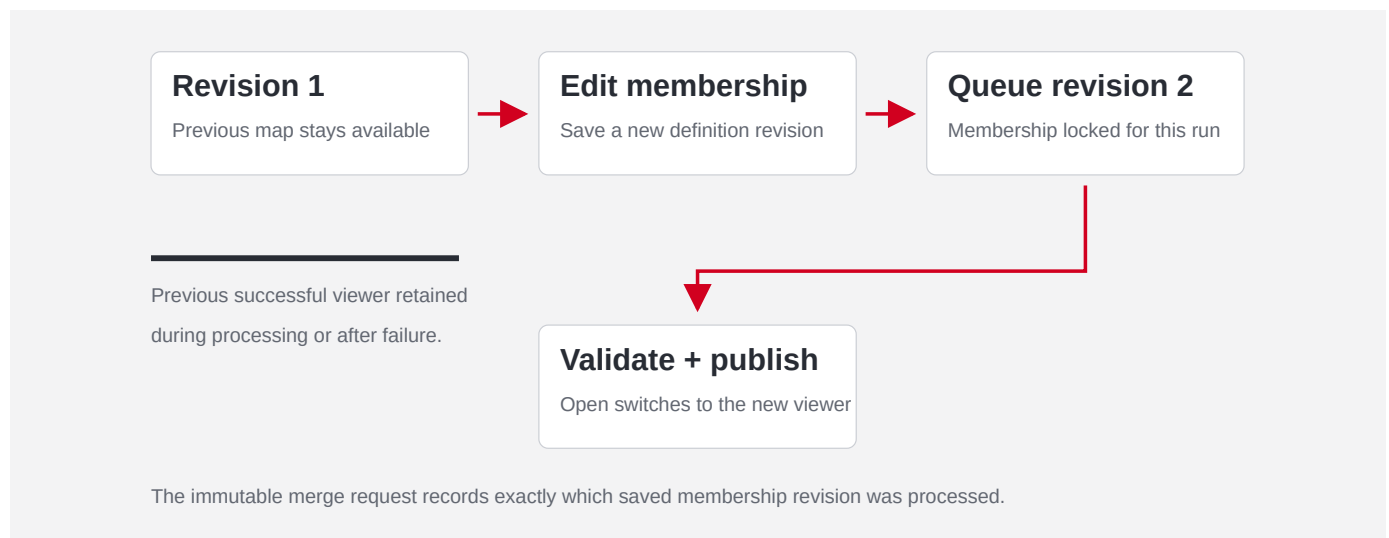
Keep a review record

Document the candidate, coordinates, feature and comparison method for each finding. The images in this brochure illustrate the displayed cloud, not a measured accuracy result.

18 / REVISIONS AND RECOVERY

Preserve the last result. Trace the next attempt.

The general Atlas workflow separates the saved selection, processing run and published viewer.



General catalogue revision model. A separately published diagnostic preview retains its own status.

Make inputs repeatable

Record the source selection and configuration used by a run. The native workflow checks identities before reusing eligible stage checkpoints, rather than assuming any old completion marker is sufficient.

Retain a usable published revision

The catalogue can continue exposing the previous successful viewer while a new membership revision processes. The interface labels that earlier result when it differs from the current definition.

Recover the appropriate stage

Eligible completed work can be resumed. If a dense merge succeeded but viewer preparation failed, retrying can prepare the viewer from the checked cloud instead of solving again unnecessarily.

Keep a review artifact separate

This Seam page demonstrates a diagnostic route that exposes a candidate with explicit unvalidated labelling. The production validation gates remain a different decision path.

Plan storage and memory

Raw reads, native processing, dense export, temporary verification copies, LAS conversion and viewer indexing all consume resources. A small browser view does not describe the full processing footprint.

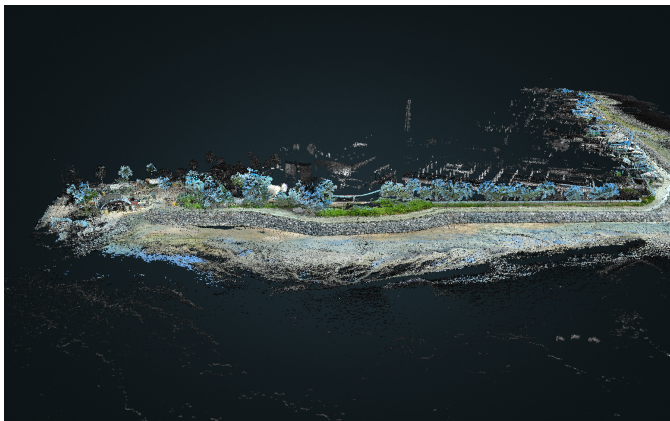
Preserve original evidence

Keep the original recordings, calibration, retained intervals and prior identities available. A recovery workflow is easier to assess when every selected section can be traced back to the capture.

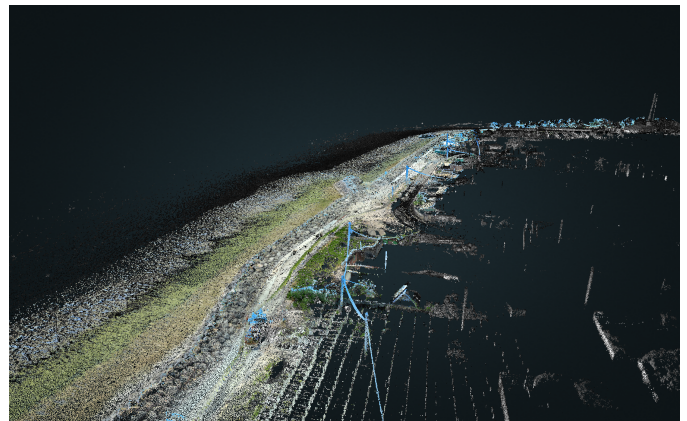
19 / A REPEATABLE REVIEW

Follow the evidence through the map.

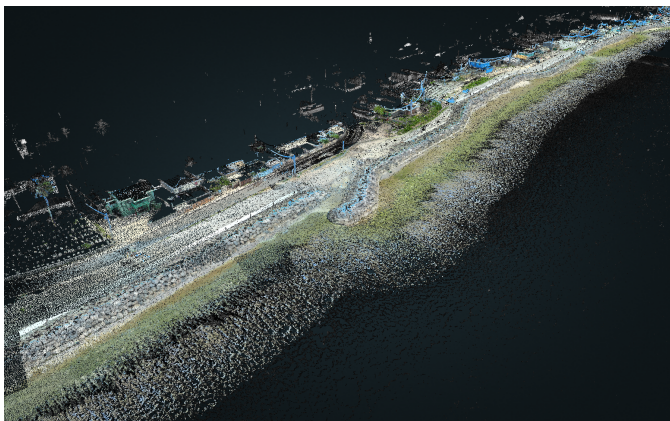
Move from corridor context to local geometry, changing direction and scale as you review.



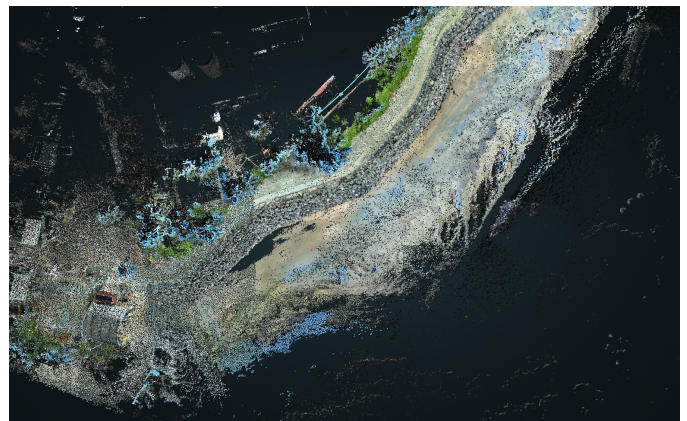
vectra_denoised · alignment unvalidated. 1. Orient yourself around the southern bend.



vectra_denoised · alignment unvalidated. 2. Look back along the middle corridor.



vectra_denoised · alignment unvalidated. 3. Relate rockwork, paths and nearby structures.



vectra_denoised · alignment unvalidated. 4. Check the footprint from above.

Keep context with each finding

Record the candidate name, location, viewpoint, feature and display mode so another reviewer can return to the same geometry.

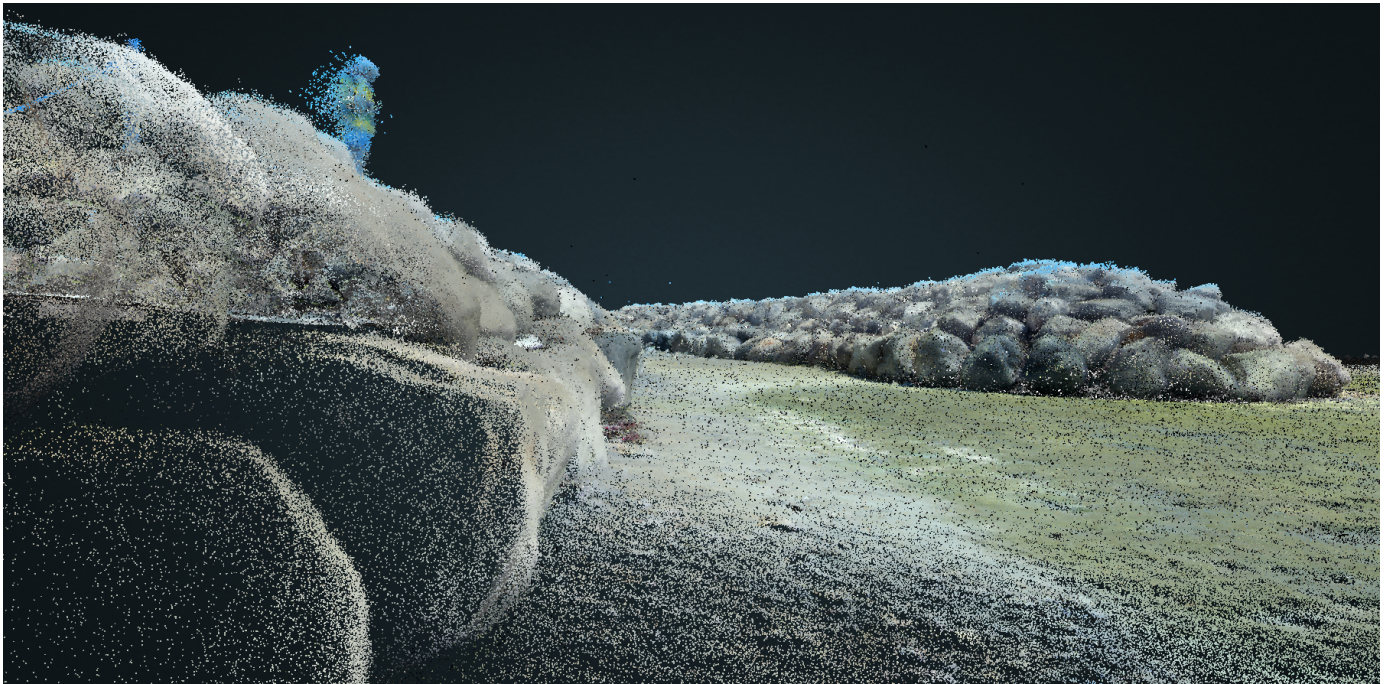
Make the next check specific

Use source IDs and retained intervals to trace inputs. Record the geometric question and reference evidence needed to resolve it.

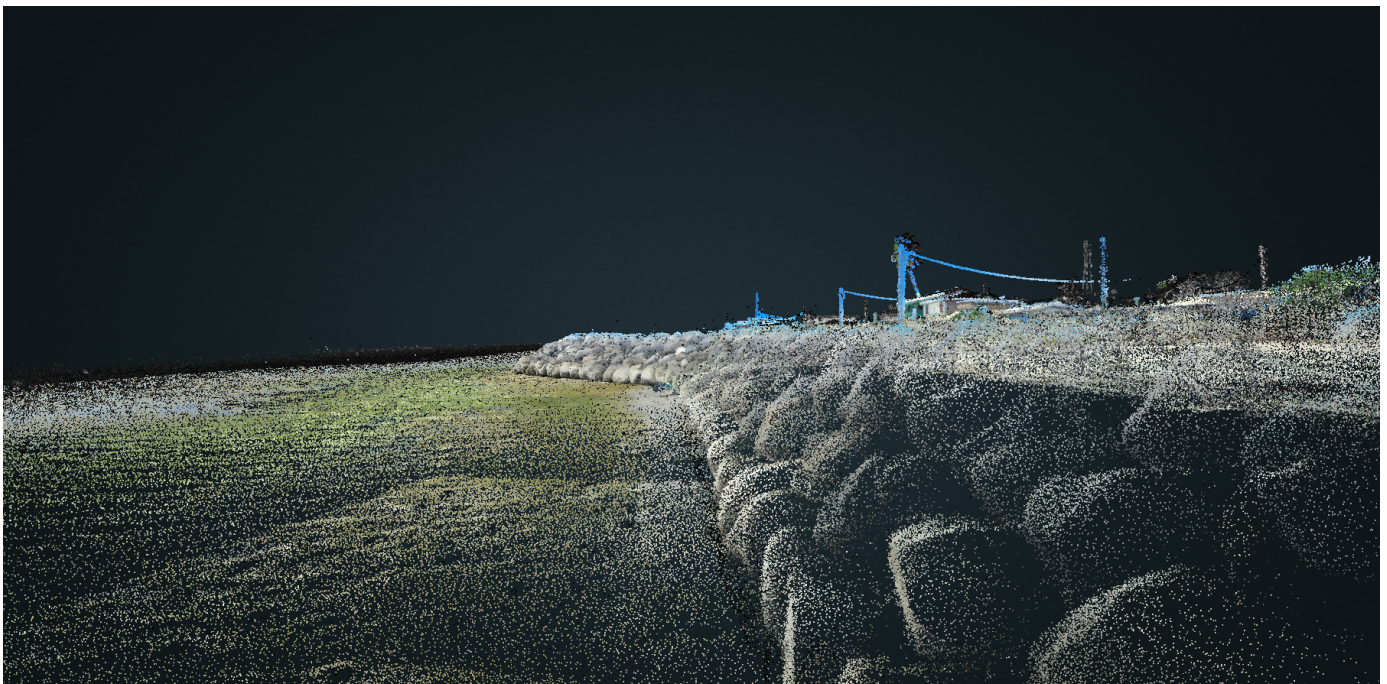
FIELD PERSPECTIVES / VECTRA DENOISED

Walk beside the geometry.

A low viewpoint reveals the height and texture of the rock edge.



vectra_denoised · alignment unvalidated. Close view beside the rockwork, looking along the corridor.

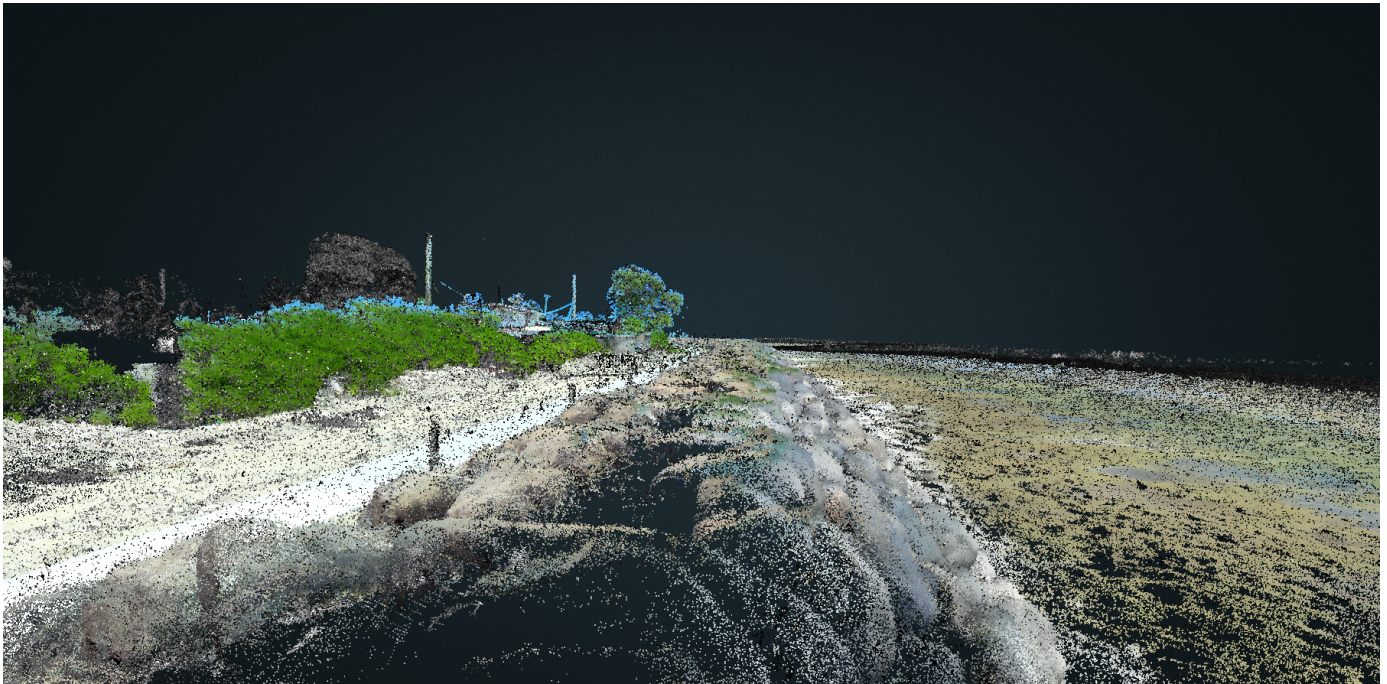


vectra_denoised · alignment unvalidated. Reverse low view connects the same edge to paths and structures.

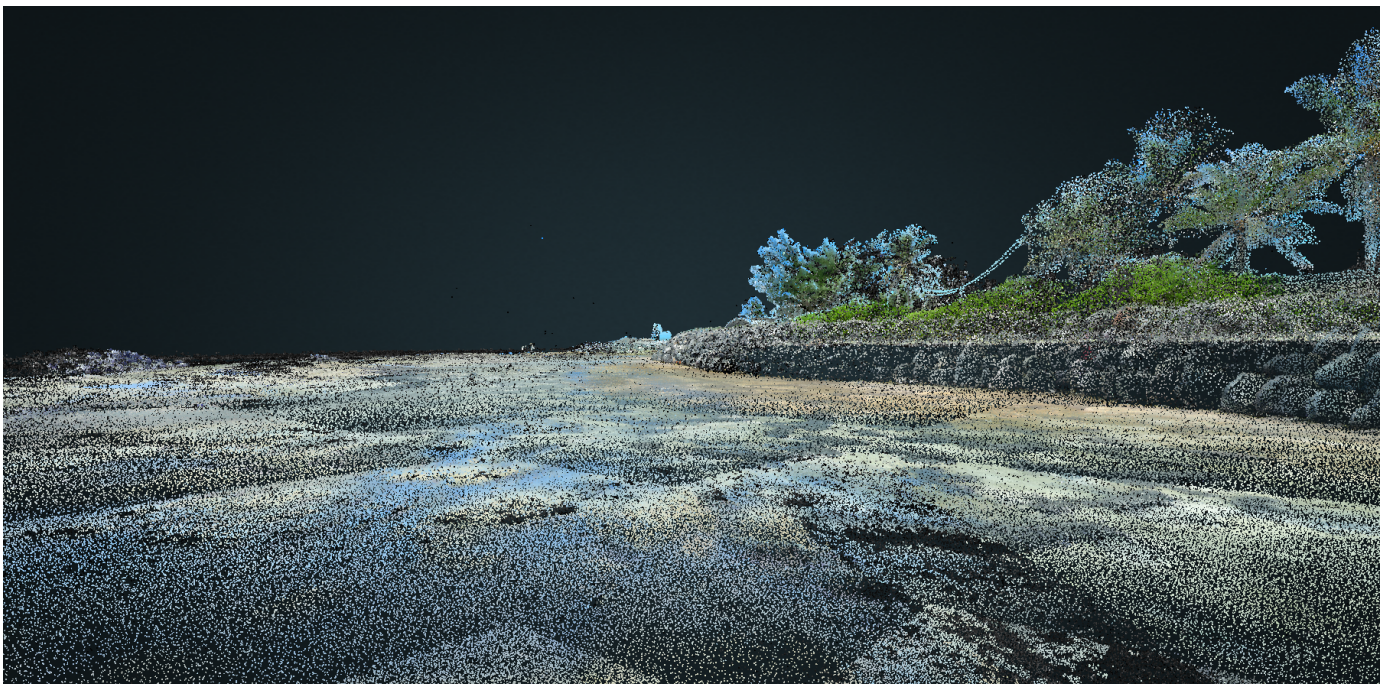
FIELD PERSPECTIVES / VECTRA DENOISED

See the route at human scale.

Follow the visible surfaces from near walking level.



vectra_denoised · alignment unvalidated. Northern low view along the path, with rockwork and vegetation in context.

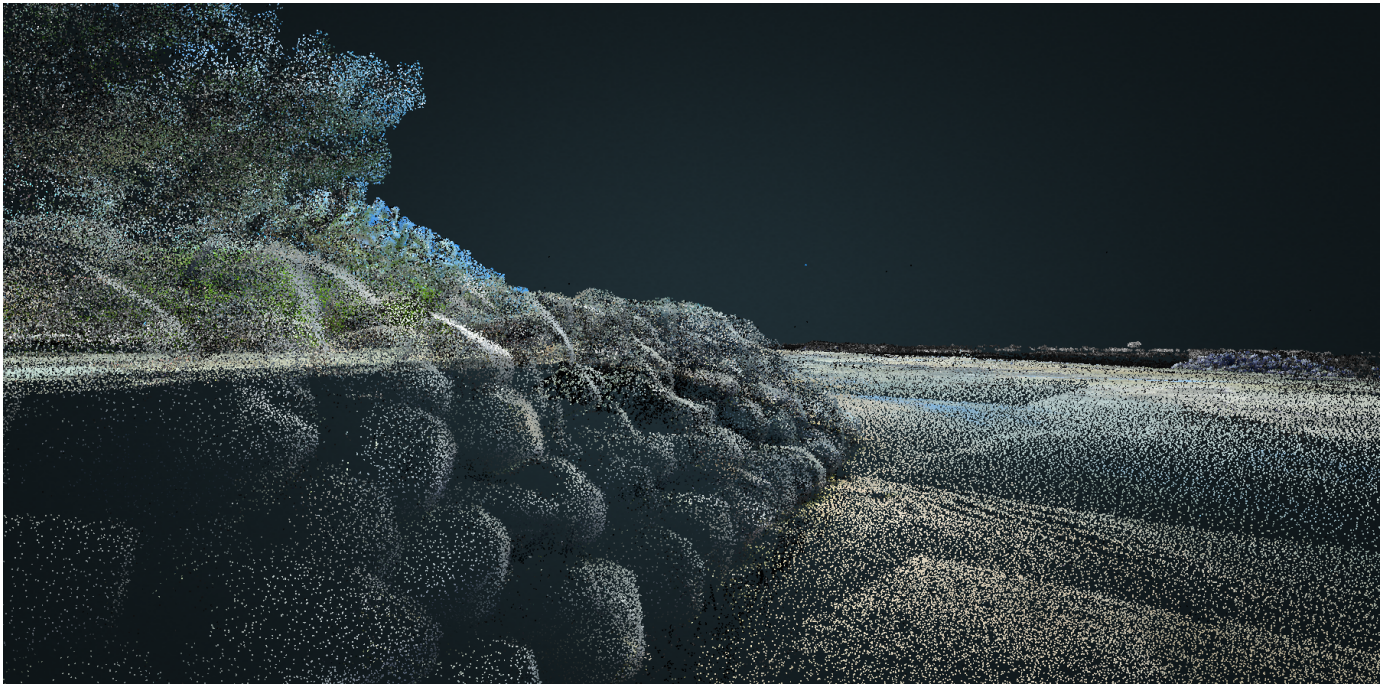


vectra_denoised · alignment unvalidated. Southern low view follows the ground surface toward the bend.

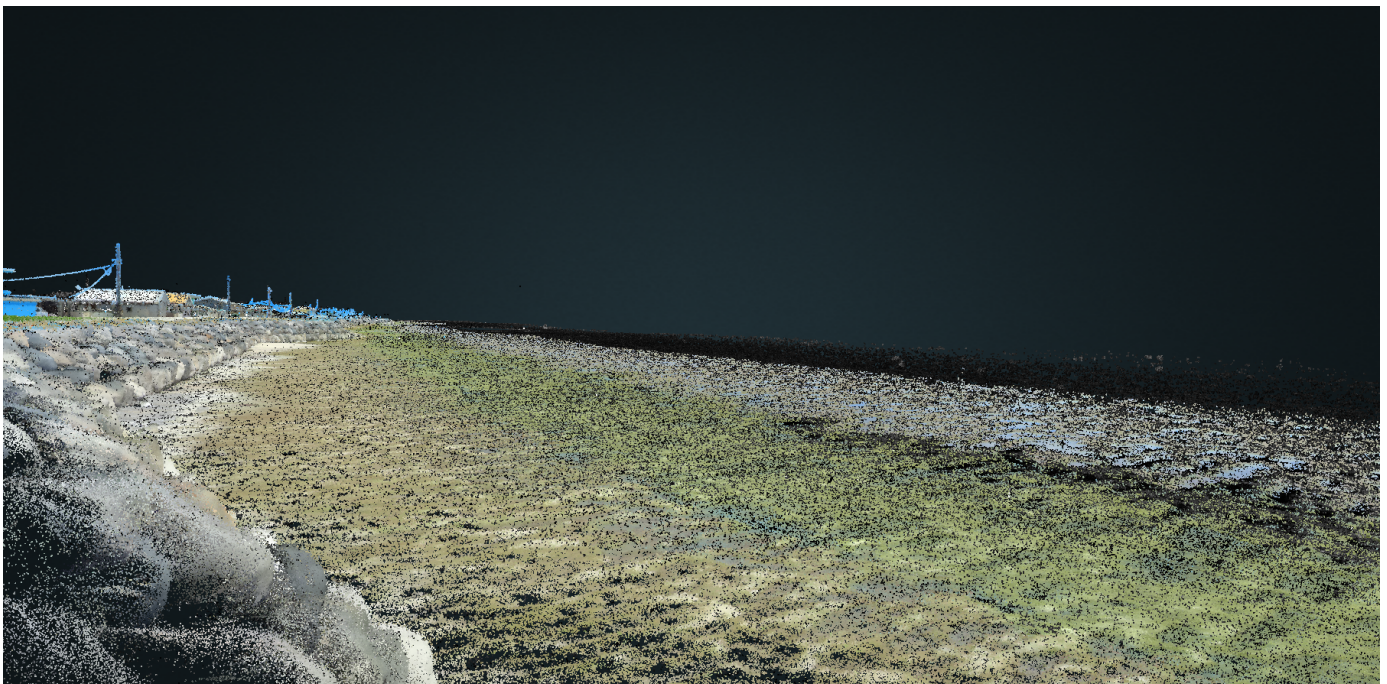
FIELD PERSPECTIVES / VECTRA DENOISED

Look closely at transitions.

Change viewpoint to inspect where rock, ground and access paths meet.



vectra_denoised · alignment unvalidated. Lower viewpoint beside a change in the rock edge.



vectra_denoised · alignment unvalidated. Low view along the rockwork reveals the adjacent ground in depth.

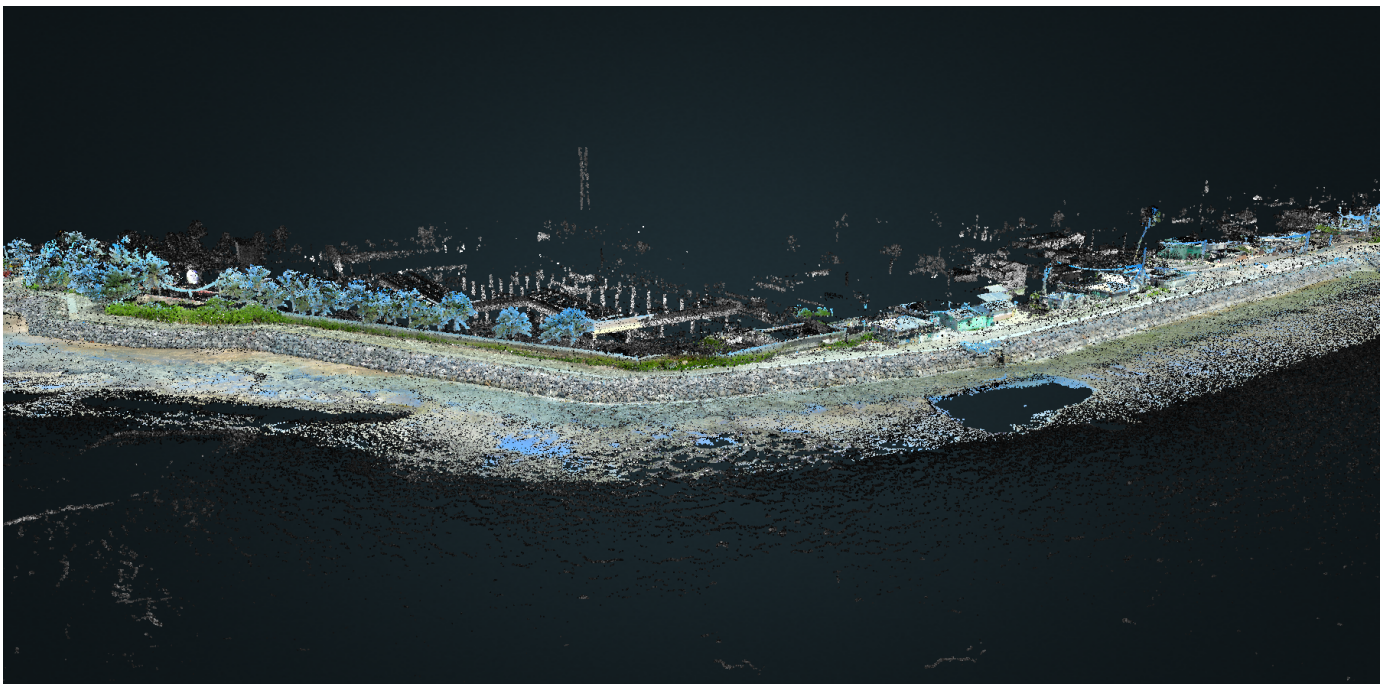
FIELD PERSPECTIVES / VECTRA DENOISED

Connect detail to the wider site.

A low cross-corridor view and a raised side view reveal different relationships.



vectra_denoised · alignment unvalidated. Low oblique view across the ground toward nearby structures.

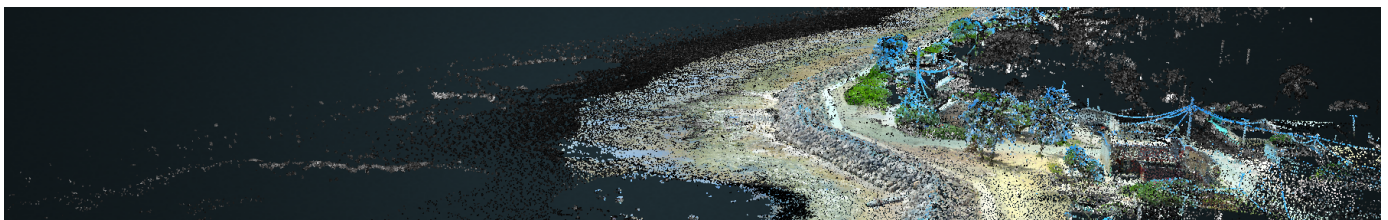


vectra_denoised · alignment unvalidated. Raised side view places the structures and corridor in their wider context.

20 / PUT ATLAS TO WORK

From separate sessions to a shared understanding.

Use Atlas to bring site coverage together, with a clear path from input selection to geometric review and accepted delivery.



vectra_denoised · alignment unvalidated. Another perspective of the full Vectra cloud, with only the denoised layer visible.

Corridors and extended sites

Bring overlapping recording sessions into a common view. Inspect where their coverage connects, then move into local features without losing the wider site context.

Recovered recording sections

Use explicitly prepared windows when capture issues require specialist recovery. Preserve the original data, chosen intervals and evidence supporting the local solutions.

Team review

Share a named, clearly labelled result with the people assessing its geometry. Agree on whether they are reviewing a preview, a candidate dense export or an accepted deliverable.

Prepare a useful demonstration

Bring supported raw recordings, their calibration, known overlap and coordinate requirements. Identify the features and reference information that will make a joint result meaningful to review.

Know the operating scope

The normal catalogue workflow is offline and GPS-assisted. This case does not establish live fleet merging, arbitrary external cloud registration or GPS-denied operation.

Continue after acceptance

Agree on output formats, coordinate checks and downstream tasks. The Vectra example includes colourisation; other Orbis analyses retain their own prerequisites.

Explore Orbis Atlas with AutoMap

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Technical review: 14 September 2026. Vectra imagery refreshed 15 September 2026. Alignment remains unvalidated. Source notes and original screenshots accompany the brochure.