



**Regions
4Climate**

ANNUAL CONSORTIUM

Basque Country. 5-7 OCTOBER 2026

MEETING



Hosted by:

#EUSKADIGLOBALA



Field visit to Txingudi bay



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Environmental recovery of the saltmarshes of the Bidasoa estuary-Txingudi bay



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Plaiaundi area

The first pilot area of R4C

The lack of maintenance of the tidal flaps following land expropriation in Plaiaundi has enabled the **progressive re-establishment of natural tidal inundation**

The next step will involve interventions by national authorities, including the removal of dikes and agricultural soils over an area of 5.5 hectares and the reconnection of this area to the San Lorenzo lagoon

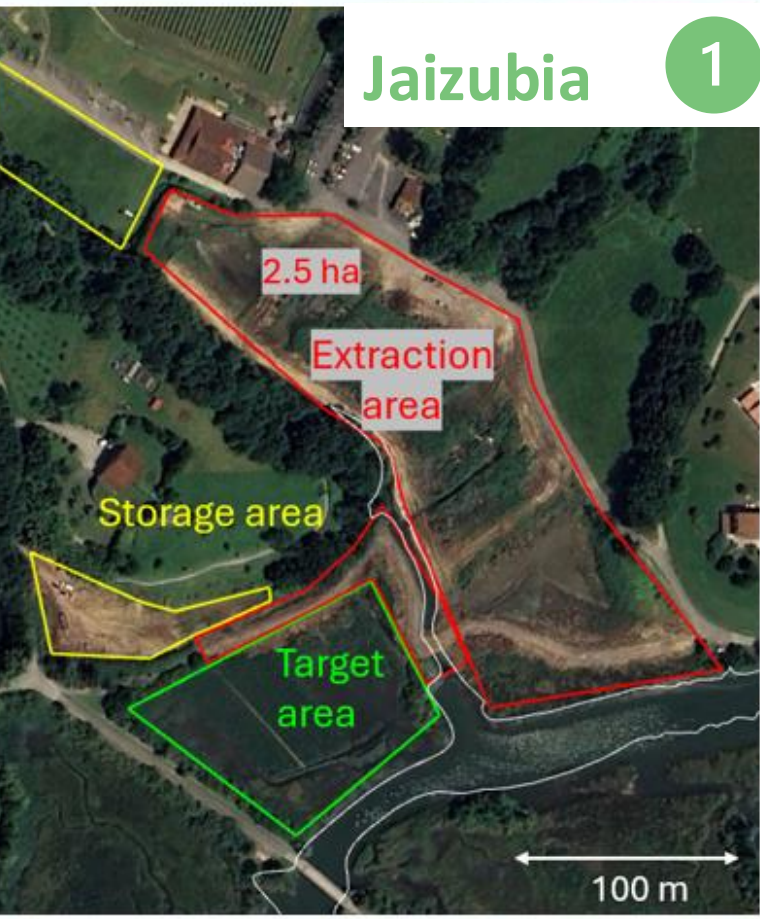
Jaizubia area

Recently incorporated area

The provincial authorities of Gipuzkoa have finalized the **restoration of 2.5 hectares of saltmarsh in Jaizubia**

Jaizubia

1



Plaiaundi

2





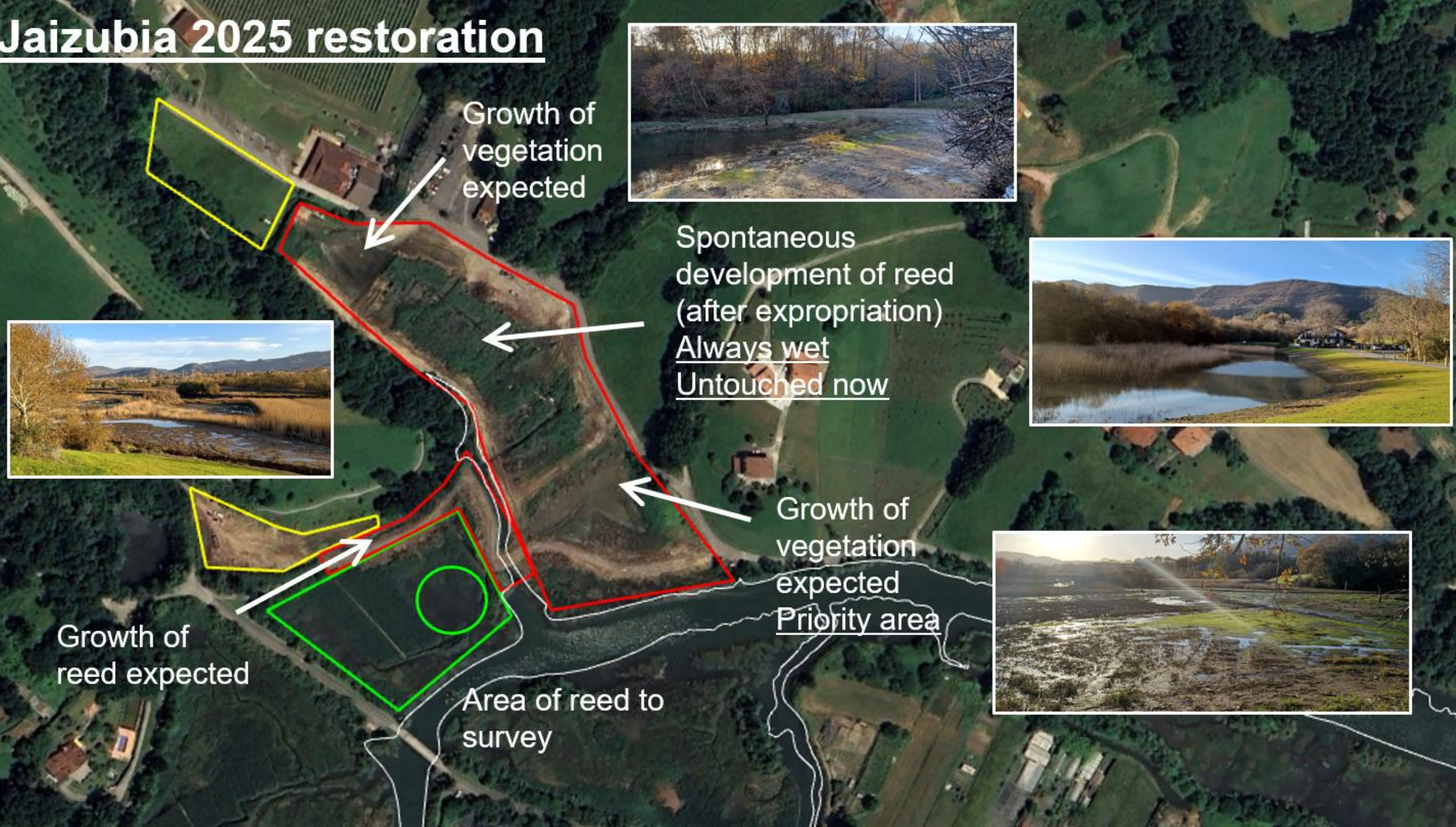
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Jaizubia area



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Jaizubia 2025 restoration



Growth of
vegetation
expected



Spontaneous
development of reed
(after expropriation)
Always wet
Untouched now



Growth of
vegetation
expected
Priority area



Growth of
reed expected

Area of reed to
survey





1km tour



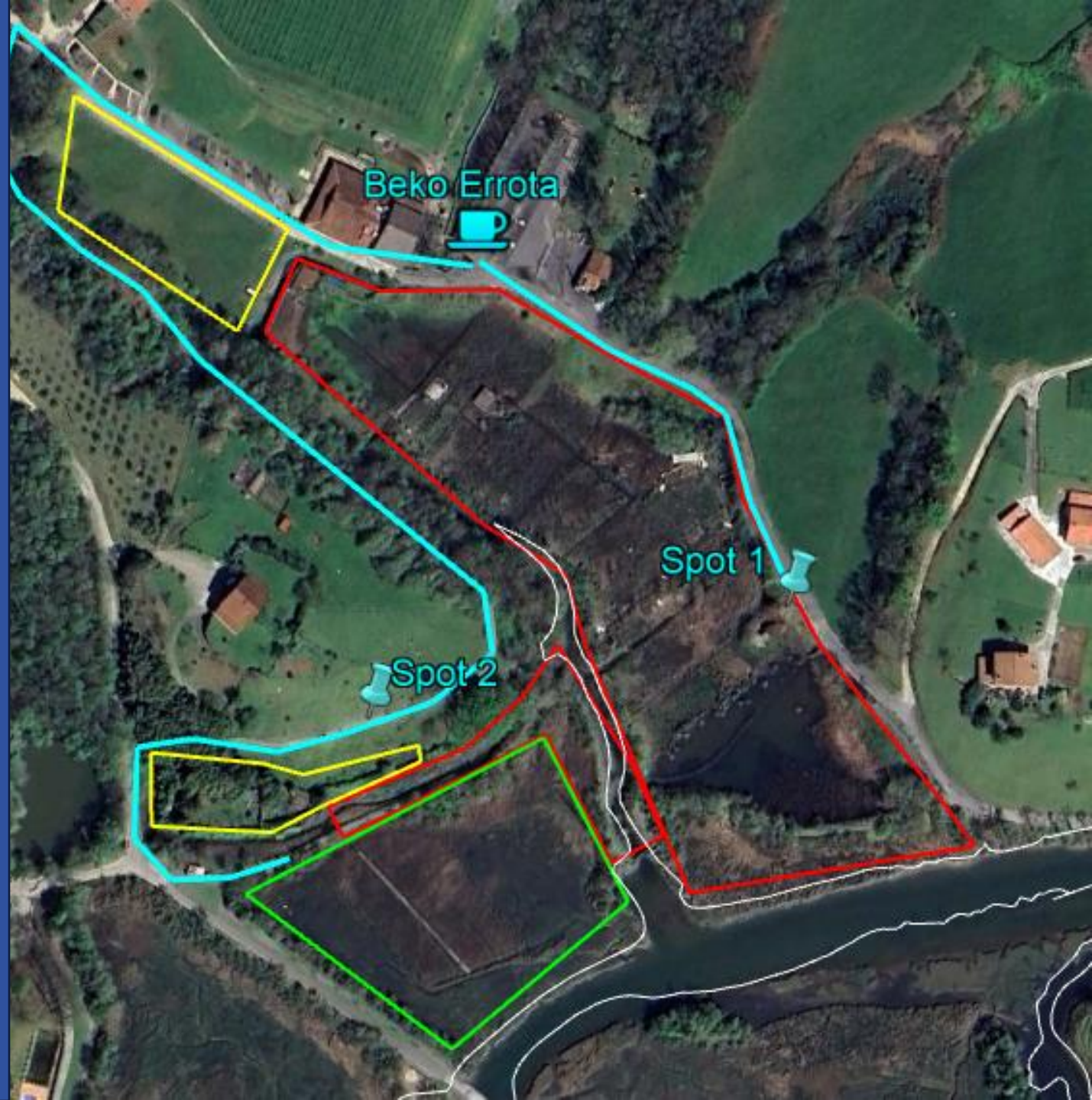
Beko Errota restaurant



***Spot 1 View on the
extraction area (2025
restored)***



***Spot 2 View on the reedbed
saltmarsh (2004 restored)***





1km tour



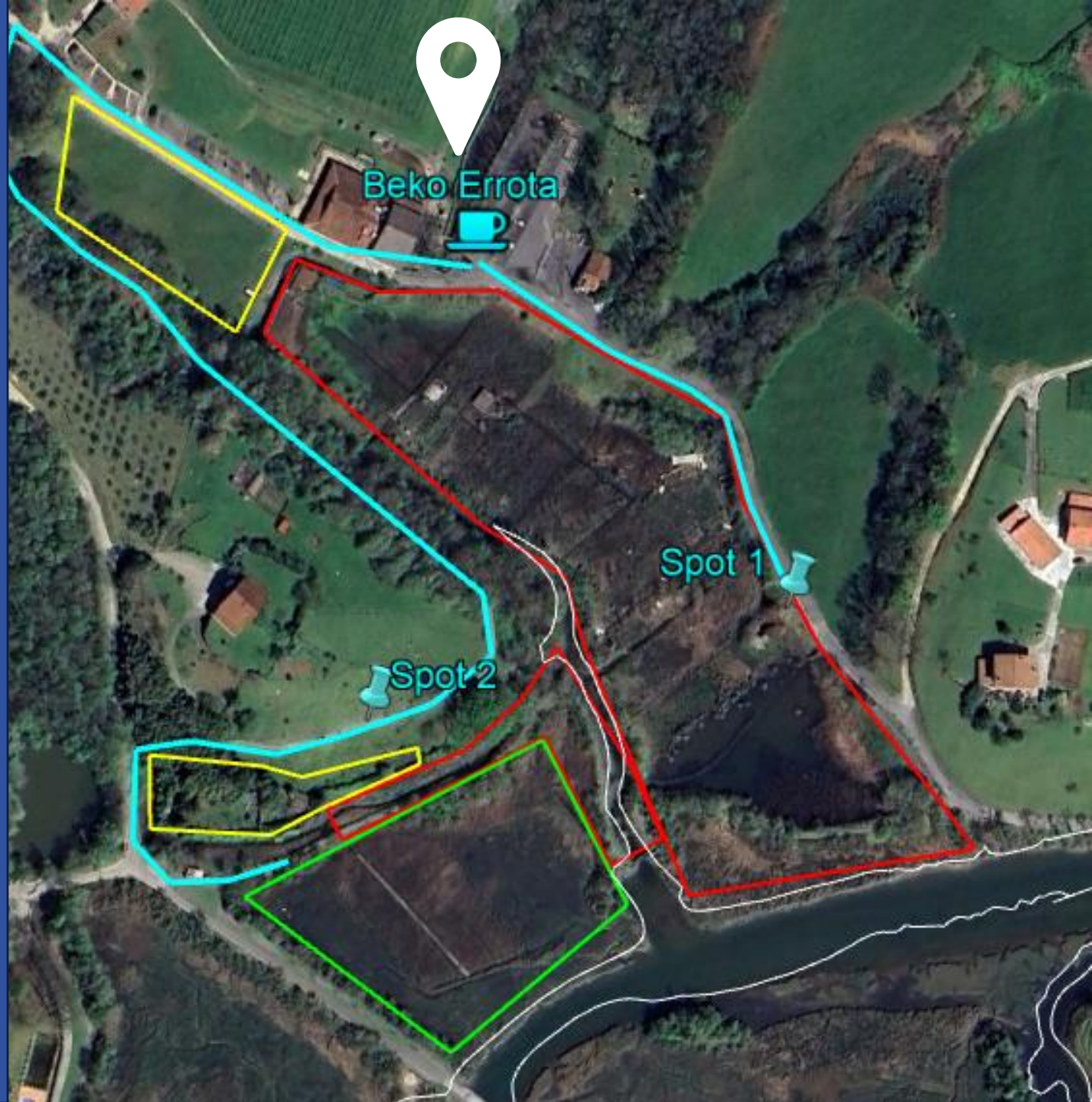
Beko Errota restaurant



*Spot 1 View on the
extraction area (2025
restored)*



*Spot 2 View on the reedbed
saltmarsh (2004 restored)*



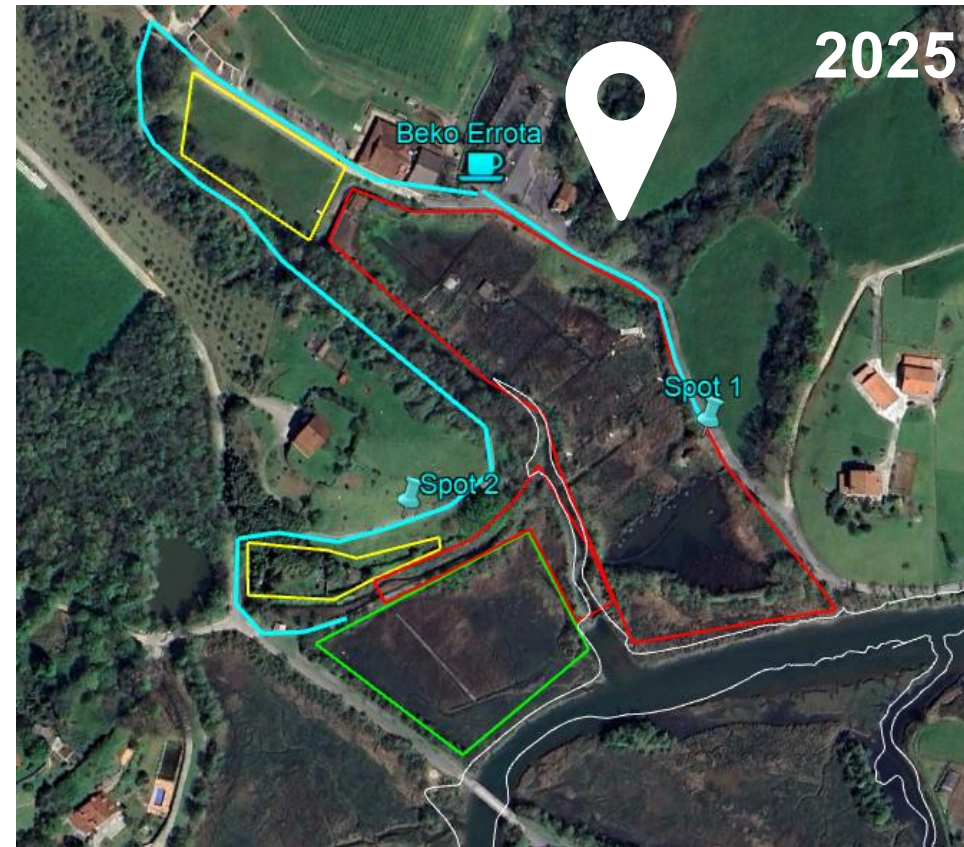
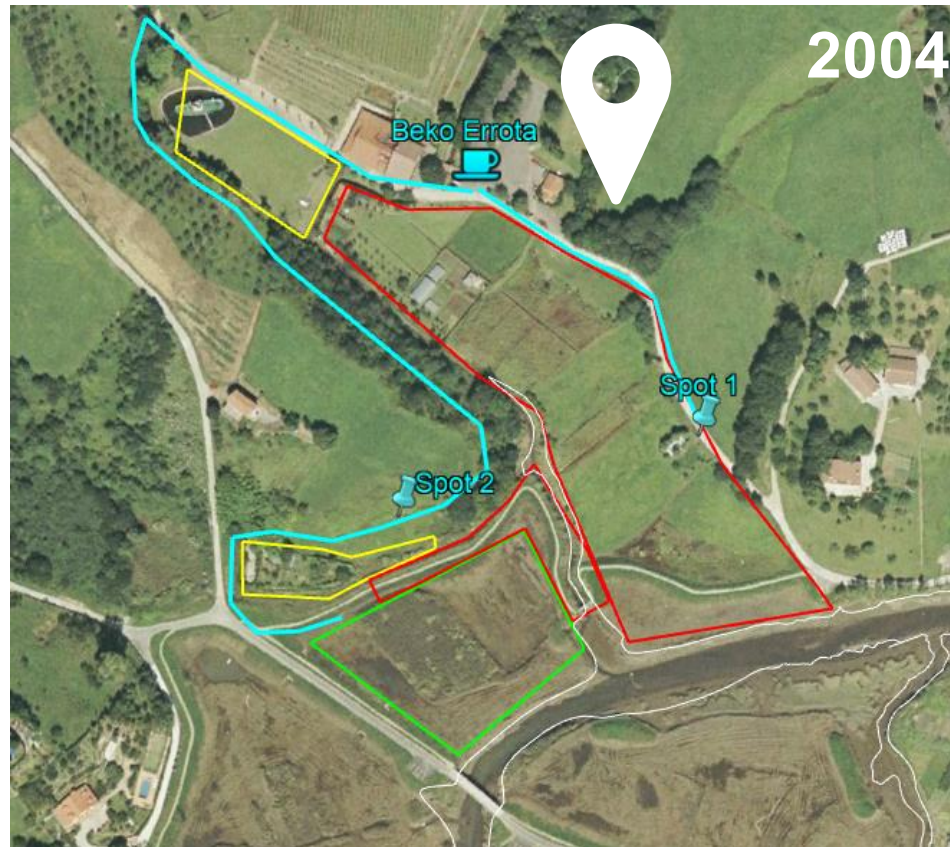


Beko Errota restaurant

The 2025 restoration interventions in Jaizubia (2.5 ha): current state



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1km tour



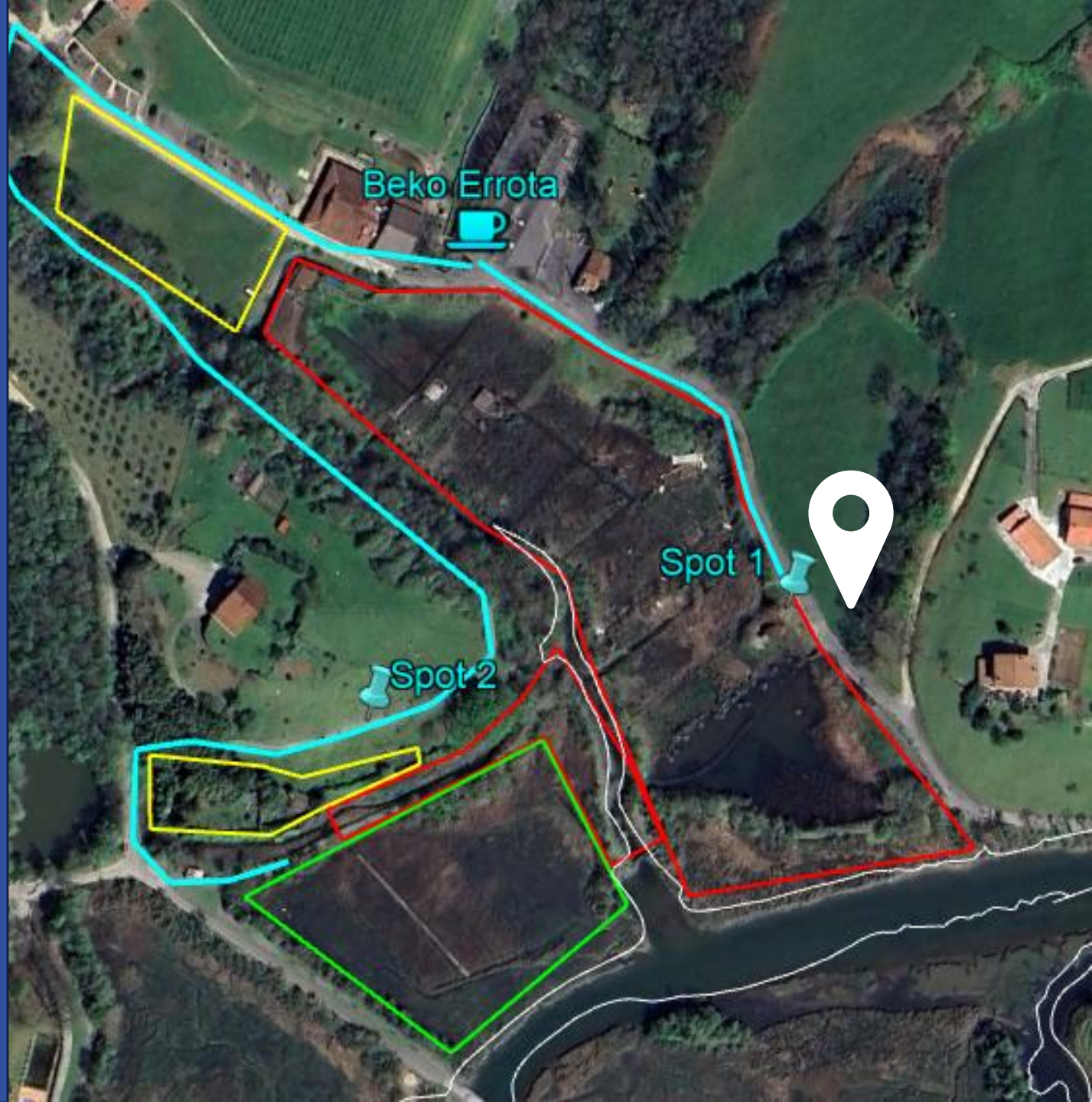
Beko Errota restaurant



*Spot 1 View on the
extraction area (2025
restored)*



*Spot 2 View on the reedbed
saltmarsh (2004 restored)*





Spot 1

View on the extraction area (2025 restored)

A view on the intervention

- *Saltmarsh restored and dikes protecting the polder removed*
- *Bridge connecting the two sides of the extraction area removed*

This area is intensively monitored

- *Instruments: Videometry, SETs, Tidal Gauge since 2023*
- *Surveys: Topography, vegetation, bird counting, blue carbon samples*



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Spontaneous development of
Salicornia spp.

Jaizubia R4C Monitoring

- Vegetation surveys - 2 surveys (2026, 2027)
- Topography surveys - 2 surveys (2026, 2027)
- Bird counting (Kaizen gestion)
- Vegetation species samples

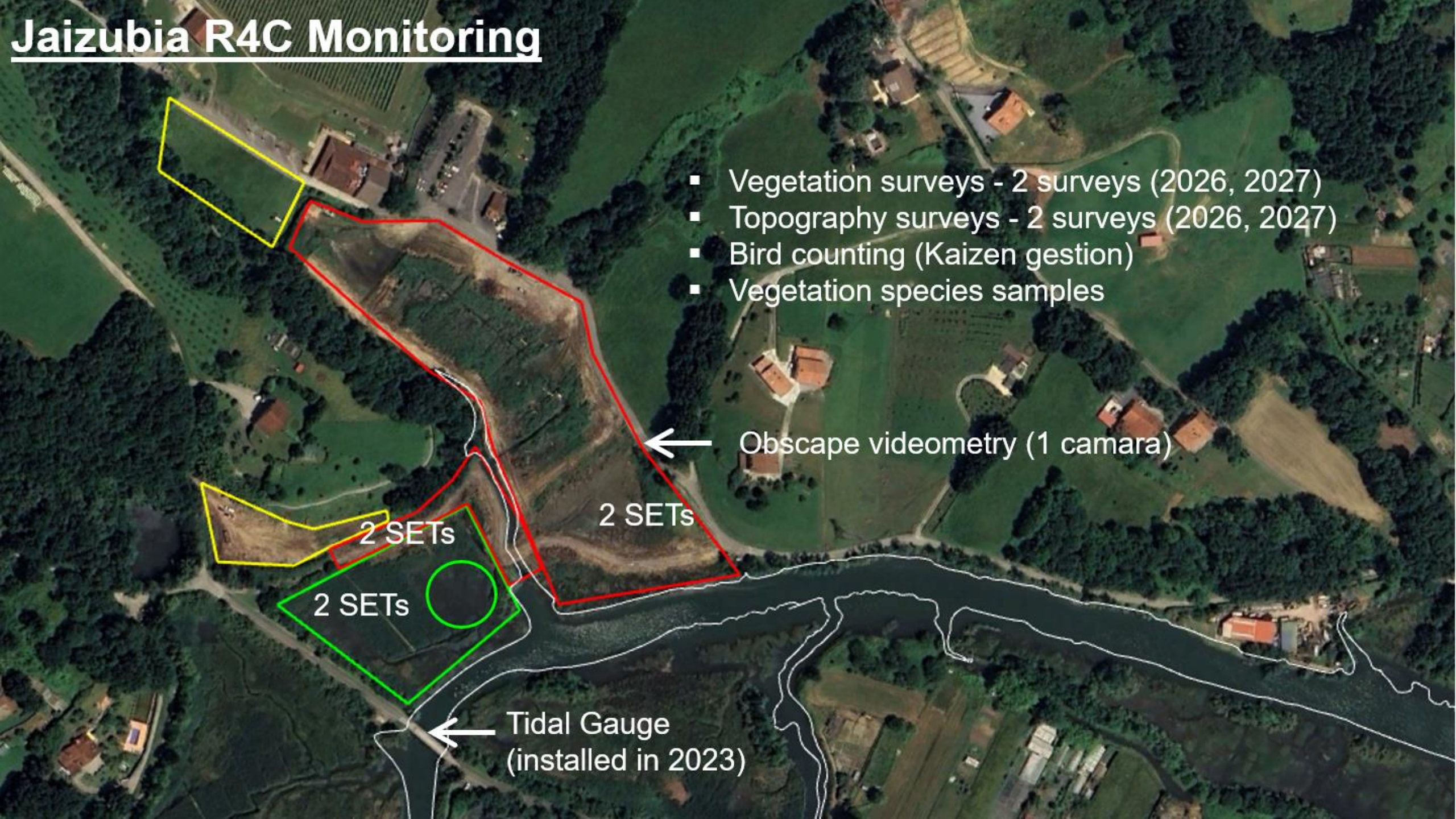
← Obscape videometry (1 camara)

2 SETs

2 SETs

2 SETs

← Tidal Gauge
(installed in 2023)





1km tour



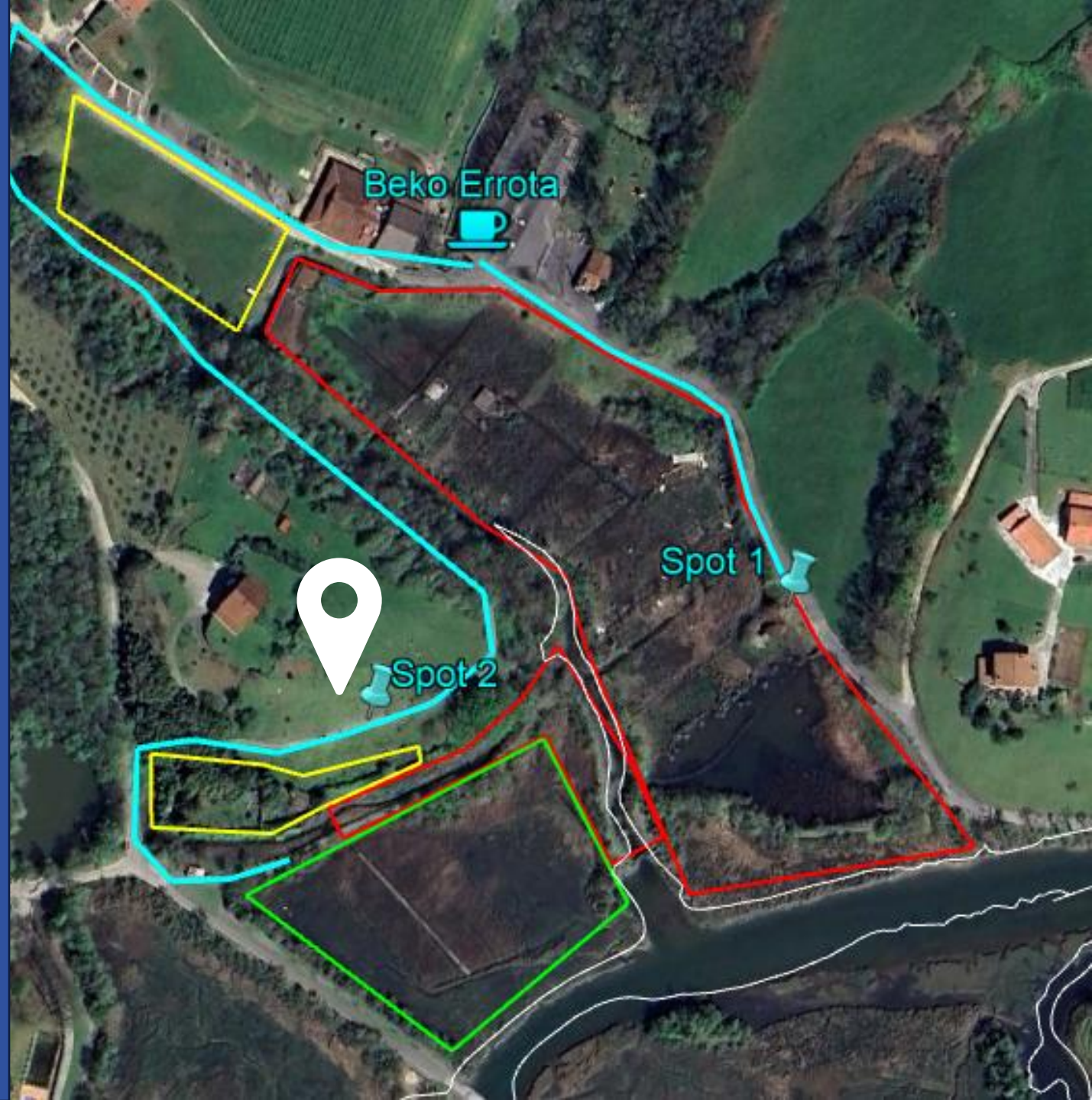
Beko Errota restaurant



***Spot 1 View on the
extraction area (2025
restored)***



***Spot 2 View on the reedbed
saltmarsh (2004 restored)***





Spot 2

View on the reedbed saltmarsh (2004 restored)



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A view on the intervention

- *24ha of Saltmarsh restored (re-open)*
- *Most extended area of reed (*Phragmites australis*) in Gipuzkoa*

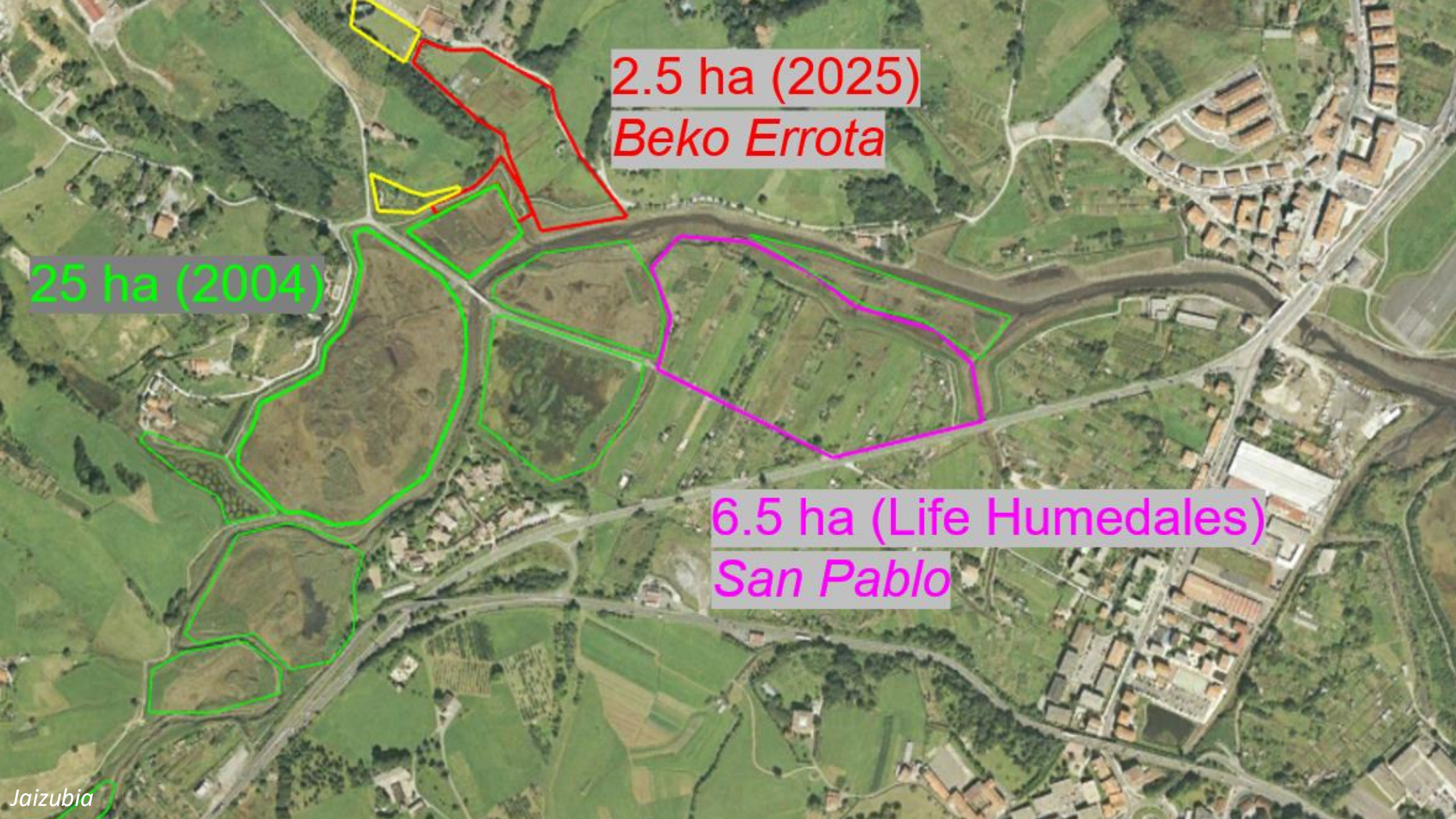


With R4C, the Blue Carbon Assessment of the Basque Country, initially conducted by Ihobe and AZTI (2025), has been further developed through:

- *The inclusion of reedbeds as a Blue Carbon ecosystem*
- *Methodological improvements, including incubation experiments to measure greenhouse gas emissions from different species*



Next phase?

An aerial photograph of a landscape featuring a river, agricultural fields, and a residential area. Three specific areas are highlighted with colored outlines: a red outline at the top, a green outline in the center-left, and a magenta outline in the center-right. Text labels are placed near these outlines. The red label indicates a future area of 2.5 ha in 2025, named 'Beko Errota'. The green label indicates a 25 ha area from 2004. The magenta label indicates a 6.5 ha area designated as 'Life Humedales' named 'San Pablo'.

2.5 ha (2025)
Beko Errota

25 ha (2004)

6.5 ha (Life Humedales)
San Pablo



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Plaiaundi area



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Augmented Reality App available to get further information and to play



When you see this logo, you can enter the app just pressing the icon



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2km tour



Ekoetxea



Spot 1 View on the Itzaberri marsh (2000 restored)



Spot 2 View on the airport and Amute urban area



Spot 3 View on the next extraction area





2km tour



Ekoetxea



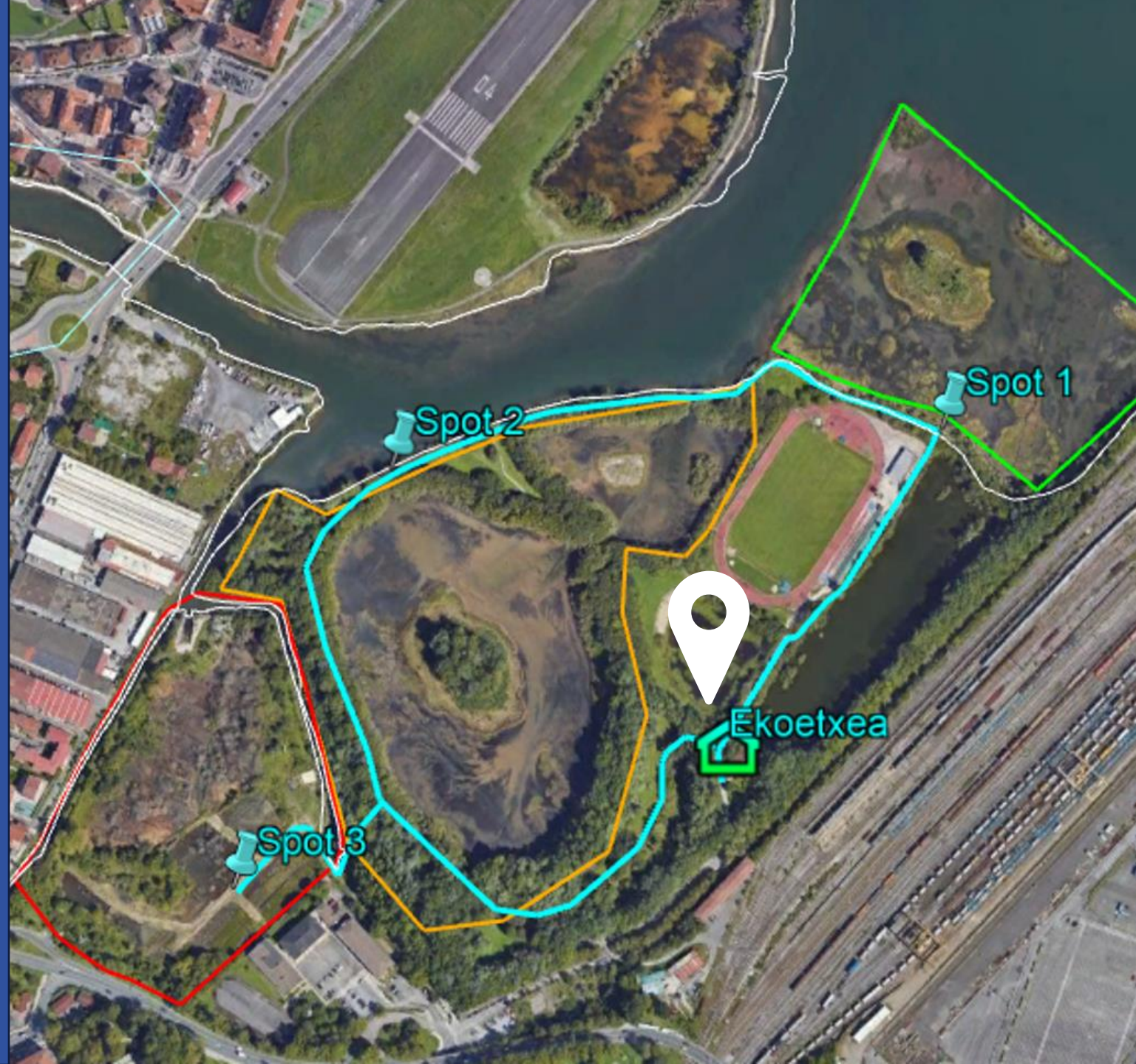
Spot 1 View on the Itzaberri marsh (2000 restored)



Spot 2 View on the airport and Amute urban area



Spot 3 View on the next extraction area





Ekoetxea

Creation of Ekoetxea with the Plaiaundi ecological park (San Lorenzo lagoon and the Itzaberri) in 1999



Regions
4Climate





2km tour



Ekoetxea



**Spot 1 View on the
Itzaberri marsh
(2000 restored)**



*Spot 2 View on the
airport and Amute
urban area*



*Spot 3 View on the next
extraction area*





Spot 1

View on the Itzaberri marsh (2000 restored)

A view on the intervention

- *Saltmarsh and tidal flats enhance biodiversity, improve water quality, coastal protection (increase friction - storm surge impact, retain sediment),*

This area is intensively monitored

- *SETs and morphological monitoring*





Spot 1

View on the Itzaberri marsh (2000 restored)

Story of the area

- **17th-18th centuries:** land reclamation
- **19th-20th centuries:** urban expansion
- **2000:** restoration projects, Natura 2000 (Ekoetxea - Plaiaundi 1999, Jaizubia 2004)
- **2015:** The Master Plan Txingudi (Basque Government), tidal flats and saltmarsh
- **Today:** Application of the Master Plan (Jaizubia 2025, Jaizubia LIFE Humedales, Plaiaundi...)





2km tour



Ekoetxea



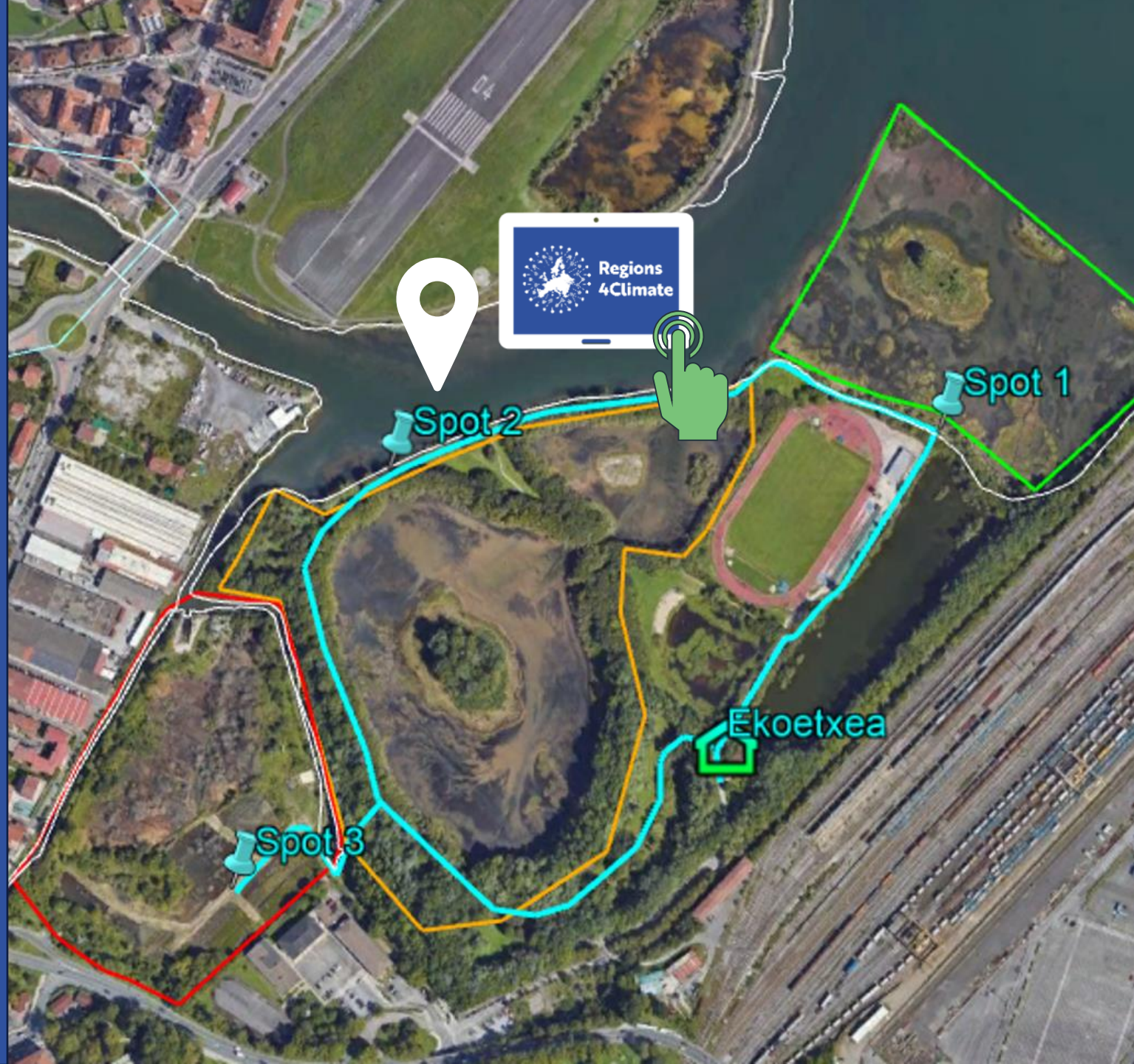
Spot 1 View on the Itzaberri marsh (2000 restored)



Spot 2 View on the airport and Amute urban area



Spot 3 View on the next extraction area





Spot 2

View on the airport and Amute urban area

Flooding risk

- *See the high-water mark on the airport dike*
- *Behind, the high-risk Amute urban area*

This area is intensively monitored

- *Starting point for monitoring climate change in the estuaries of the Basque Country and to demonstrate the effect of interventions*



On the other side, the tidal flaps of the San Lorenzo lagoon have been deliberately left open to restore tidal exchange.



Spot 2

View on the airport and Amute urban area



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Monitoring programme

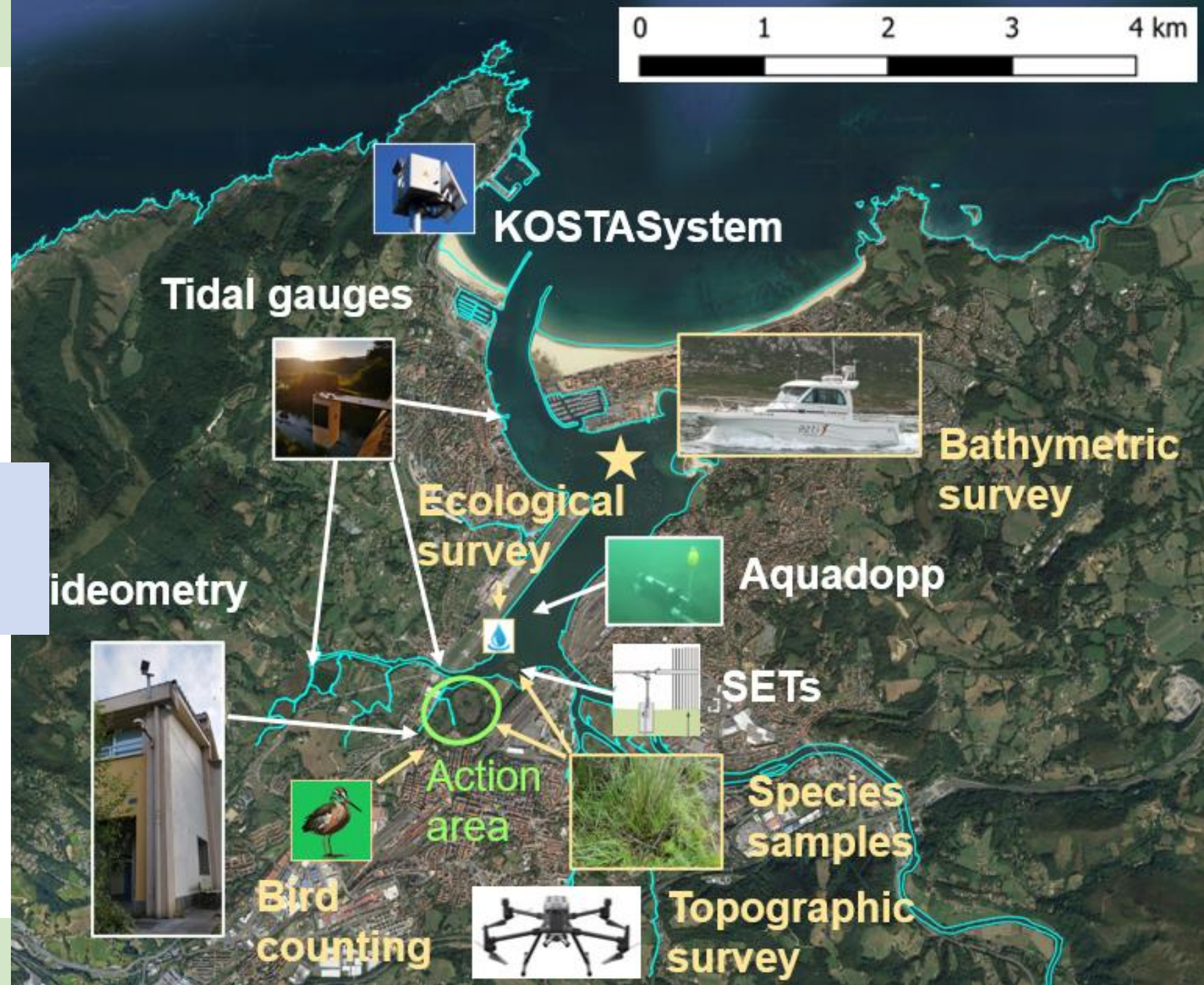
- **Goal:**
 - *Plaiaundi, a demonstrator of climate resilience to be replicated and upscaled*
- **Specific objectives:**
 - *Evaluate the impact of restoration actions (flooding/sedimentation, biodiversity, blue carbon sequestration)*
 - *Provide observation data for monitoring extreme events and long-term changes*
 - *Provide forecasting/prediction data and tools for the short-term (early warning system) and the long-term (risk analysis, climate projections)*
- **3 approaches:**
 - *Instrumentation*
 - *Field surveys*
 - *Modelling*



Spot 2

View on the airport
and Amute urban
area

Monitoring programme





2km tour



Ekoetxea



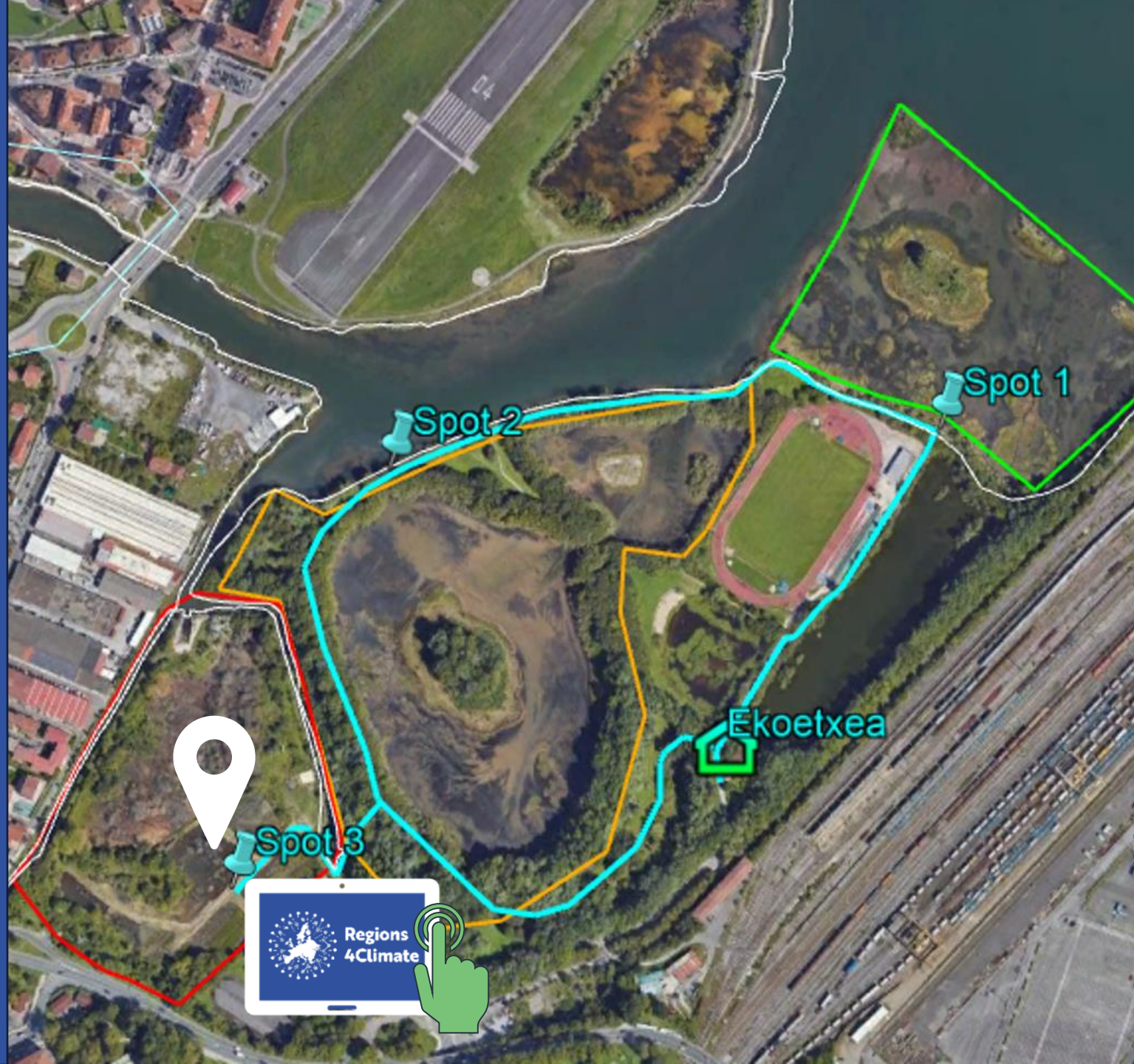
Spot 1 View on the Itzaberri marsh (2000 restored)



Spot 2 View on the airport and Amute urban area



Spot 3 View on the next extraction area





Spot 3

View on the next extraction area



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A view on the intervention

- *The lack of maintenance of the tidal flaps following land expropriation in Plaiaundi has enabled the progressive re-establishment of natural tidal inundation.*
 - *Spontaneous establishment of Salicornia spp.*
 - *Transplantation experiments*
- *A future habitat for aquatic birds and wader birds (Play the game on the App!)*



Videometry station: Morphology, species monitoring and intervention monitoring





Spot 3

View on the next
extraction area

Videometry system





Spot 3

View on the next extraction area

Play the game!



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DISCOVER THE BIRDS OF THE MARSH

Not Tried  17

Correct  0

Wrong  0





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Link and QR to access the APP:
https://program-for-digitale-processor.github.io/Basque_Browser_Prototype/



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Thank you for your attention



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