Imagination
Design

Serious Games to think about Future Coasts

MAGE 50 Cards 94mmx67mm.indd 1 12/01/2026 18:24:59

About

OUR FUTURE COAST

Coastal Communities are at the front-line of climate challenge. It is not possible to protect the whole coast with hard rock and concrete, it is not a good long-term solution and there isn't enough money. So, we need to get really good at working with nature – where possible we can utilize saltmarshes and sand dunes as a coastal defence. The essence of the **Our Future Coast** approach is designing the coastline together with our communities, putting them at the heart of **Our Future Coast**.

MAGE 50 Cards 94mmx67mm.indd 2 12/01/2026 18:24:59

Imagination
Design

Serious Games to think about Future Coasts

MAGE 50 Cards 94mmx67mm.indd 3 12/01/2026 18:25:00

About

MAGE – Morecambe Area Gaming Environment is a digital sandbox for coastal environments and management. This serious tabletop game is an analog version of the sandbox for public engagement covering the North-West UK coastline from Wirral Merseyside to Millom, Cumbria.

Our Future Coast
is led by Wyre Council, funded by Defra as part of the £200 million Flood and Coastal Innovation Programmes which is managed by the Environment Agency.

https://thefloodhub.co.uk/ourfuturecoast/

MAGE 50 Cards 94mmx67mm.indd 4 12/01/2026 18:25:00

Imagination
Design

Serious Games to think about Future Coasts

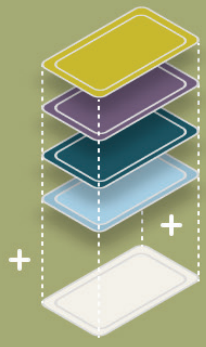
MAGE 50 Cards 94mmx67mm.indd 5 12/01/2026 18:25:01

Structure

1

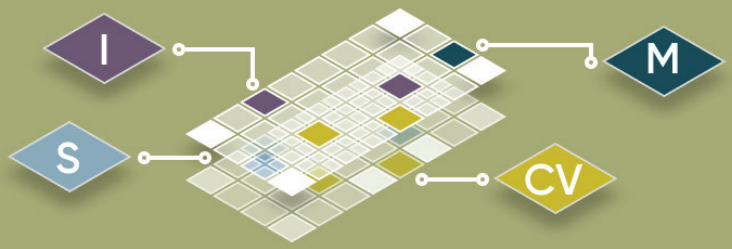
MAGE is a serious game and is divided into various playable elements:

- Community Value Cards (**CV**)
- Interaction Cards (**I**)
- Mission Cards (**M**)
- Scenario Cards (**S**)
- Customisation Cards



The game board consists of:

- Ordnance Survey Map and Grid Squares
- Start Areas for Play Counters
- Activation Zones - Values & Interactions
- Activation Zones - Missions & Scenarios



MAGE 50 Cards 94mmx67mm.indd 6 12/01/2026 18:25:02

Imagination
Design

Serious Games to think about Future Coasts

MAGE 50 Cards 94mmx67mm.indd 7 12/01/2026 18:25:02

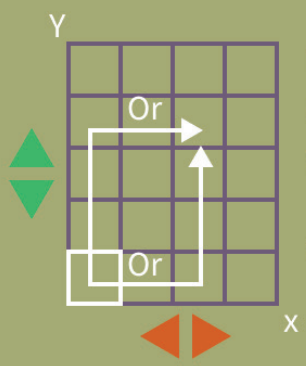
Movement

2

MAGE Movement consists of X.Y. movements according to dice colour. Players roll both dice per turn and choose any order of movement on the gameboard. **AIM to pass through or Land on an activation square to pick up a card.** Complete 4x Cards to Win!

X- Axis Dice

Y - Axis Dice



Move in any dice order you choose

X,Y or Y,X

The game board consists of:

- Grid Squares for Movement
- Stacked Game Board - Ordnance Survey Data **See Map Legend**

MAGE 50 Cards 94mmx67mm.indd 8 12/01/2026 18:25:03

Imagination
Design

Serious Games to think about Future Coasts

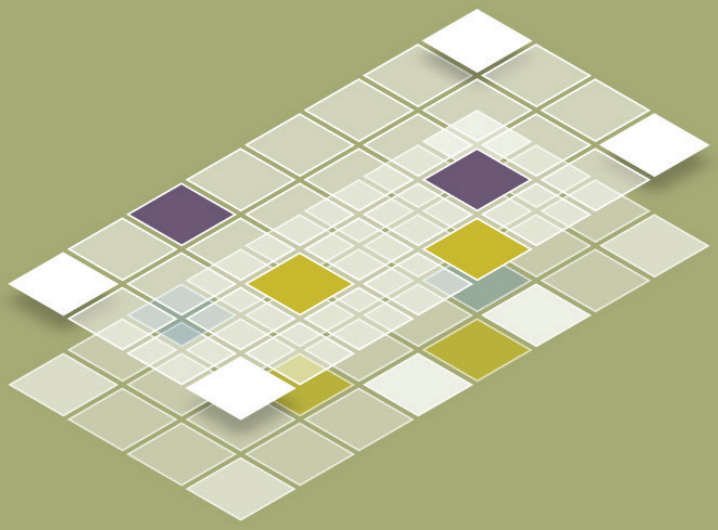
MAGE 50 Cards 94mmx67mm.indd 9 12/01/2026 18:25:03

Gameboard

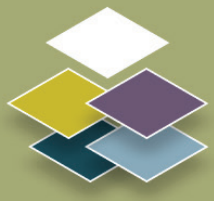
3

Players start the corners squares and roll the dice, and if a player counter lands or pass through the letter squares a card is drawn.

To Win complete 4 cards!
Use 1 or multiple joined Gameboards.



The game board consists of:



Start Areas for Play Counters
Letter Square - Values & Interactions
Letter Square - Missions & Scenarios

MAGE 50 Cards 94mmx67mm.indd 10 12/01/2026 18:25:04

Imagination
Design

Serious Games to think about Future Coasts

MAGE 50 Cards 94mmx67mm.indd 11 12/01/2026 18:25:04

Players

4

Players select a player piece in which to explore future coasts. Moves are turn-based. Any player can start the game.

- Wave
- SeaBird
- Dune Grass
- Buildings
- Storm
- Fishing
- Ship
- Dolphin
- Saltmarsh
- Wind Turbine
- Grazing
- \+
- Custom ?

Use the dice for player movement. Aim to land on a letter square to draw a card and respond to prompts. Each turn requires dialogue with other players.

See **Rule Cards and Instruction Manual**

MAGE 50 Cards 94mmx67mm.indd 12 12/01/2026 18:25:05

Imagination
Design

Serious Games to think about Future Coasts

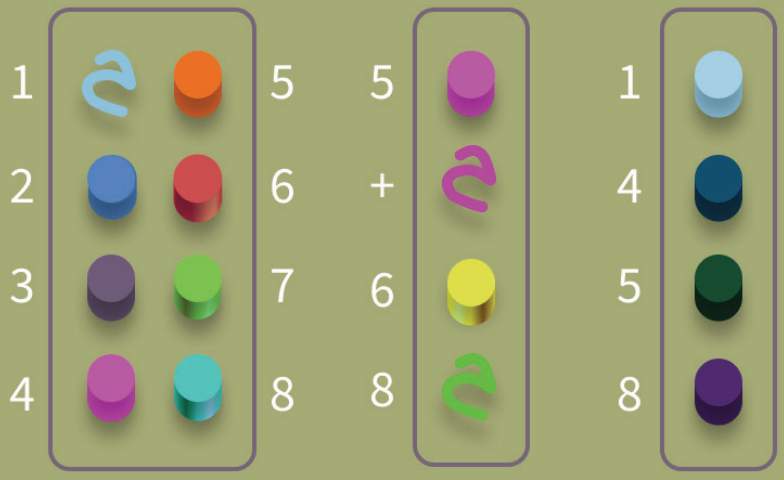
MAGE 50 Cards 94mmx67mm.indd 13 12/01/2026 18:25:06

Play Tokens

5

Players use tokens in which to explore future coasts. Moves are turn-based. Add or remove tokens to the gameboard following card instructions.

Card Numbers



Each turn requires dialogue with other players. Use each card and respond to prompts and actions.

MAGE 50 Cards 94mmx67mm.indd 14 12/01/2026 18:25:06

Imagination
Design

Serious Games to think about Future Coasts

MAGE 50 Cards 94mmx67mm.indd 15 12/01/2026 18:25:07

Credits

6

MAGE Serious Game designed by
Paul Cureton with assistance by Alana Cureton.

MAGE Project Research Team

- Rob Delaney
- Runze Xia
- Qianhui Lin

Special thanks to Suzi Ilic, Serena Pollastri, Louise Mullagh, Joseph Earl, Elanor Brown and all Our Future Coast team.

Imagination is an open and exploratory design-led research centre

imagination.lancaster.ac.uk/

MAGE 50 Cards 94mmx67mm.indd 16 12/01/2026 18:25:07

Imagination
Design

Serious Games to think about Future Coasts

MAGE 50 Cards 94mmx67mm.indd 17 12/01/2026 18:25:08

Rules

1

Setup

1. This serious game involves turn-based dialogue with (2-10) players.
2. All players must choose a starter square.
3. Players may end the game at any time.
4. To win, complete a total of **4** cards.
5. All cards must set face down.

Play

1. Players can move in any direction they choose.
2. Players who land or pass through Values / Interaction /Mission / Scenario Squares must draw a card.
3. Players may still complete Values and Interaction cards if no Scenario or Mission card is held.
4. To complete Scenarios, you need to find the correct Missions.

MAGE 50 Cards 94mmx67mm.indd 18 12/01/2026 18:25:08

Imagination
Design

Serious Games to think about Future Coasts

MAGE 50 Cards 94mmx67mm.indd 19 12/01/2026 18:25:09

Rules

2

5. Use the correct colour tokens in relation to cards.
6. Multiple counters cannot be added to the same game square.

Dialogue

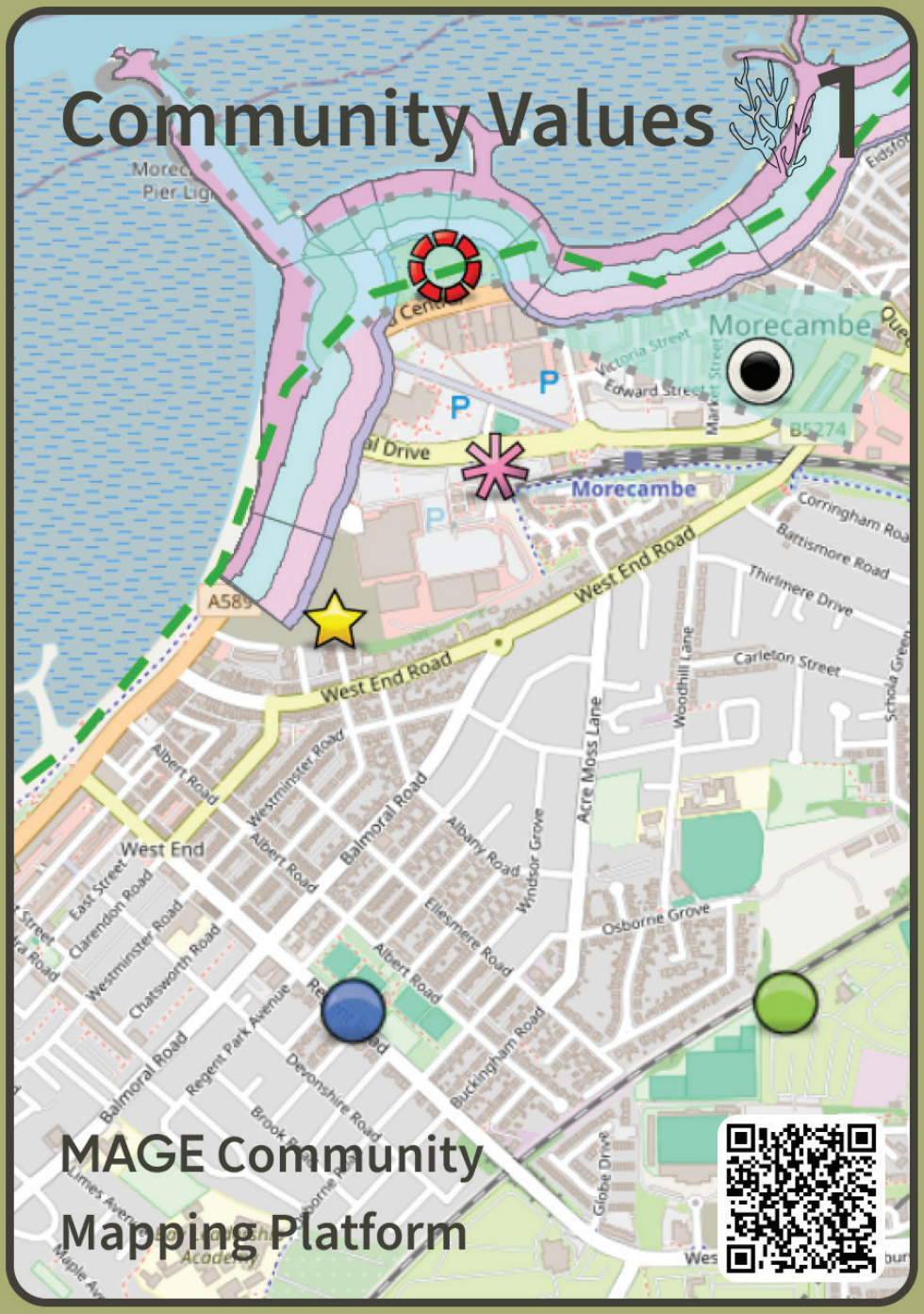
1. If there is any disagreement among players, voting must occur to which majority rules.
2. In community value tasks, the repetition of required elements any more than twice is not allowed. A new concept must be presented each time.
3. Players should make notes as they progress.
4. Any customisation must be explained to all players, and testing is recommended.

Data Utilised to make MAGE:

Environment Agency

Ordnance Survey

MAGE 50 Cards 94mmx67mm.indd 20 12/01/2026 18:25:09



MAGE 50 Cards 94mmx67mm.indd 21 12/01/2026 18:25:10

Community Values 1

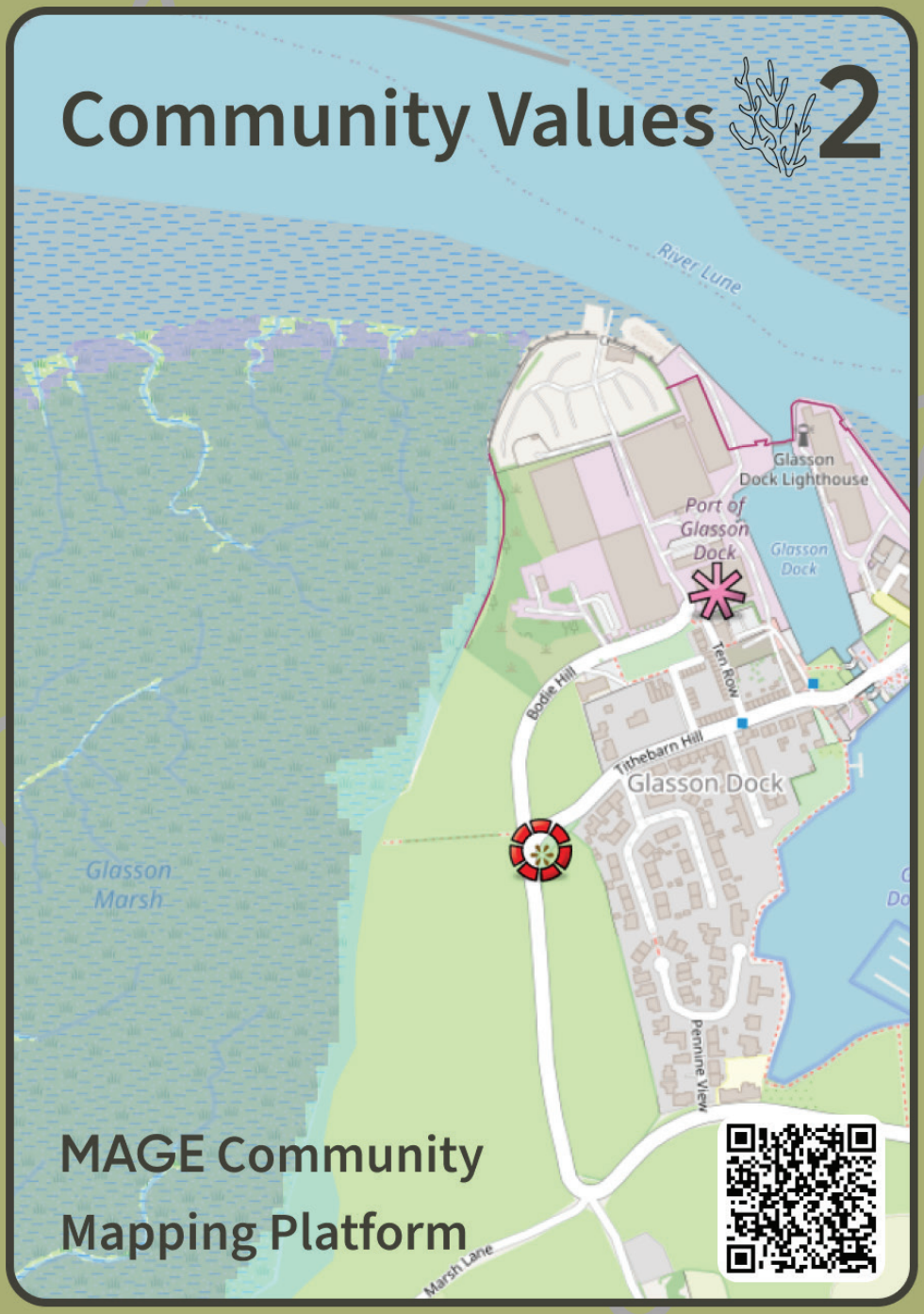
Give Land to the Sea

Coastal protection work may involve changing and fixing the land or removing structures. The goal is to **restore natural processes** and use key natural features like saltmarshes, mudflats, and dunes to lessen wave energy and reduce erosion. They can also improve water quality and biodiversity.

Respond to Players: What are your thoughts on this?

MAGE 50 Cards 94mmx67mm.indd 22 12/01/2026 18:25:10

Community Values 2



MAGE Community Mapping Platform

MAGE 50 Cards 94mmx67mm.indd 23 12/01/2026 18:25:11

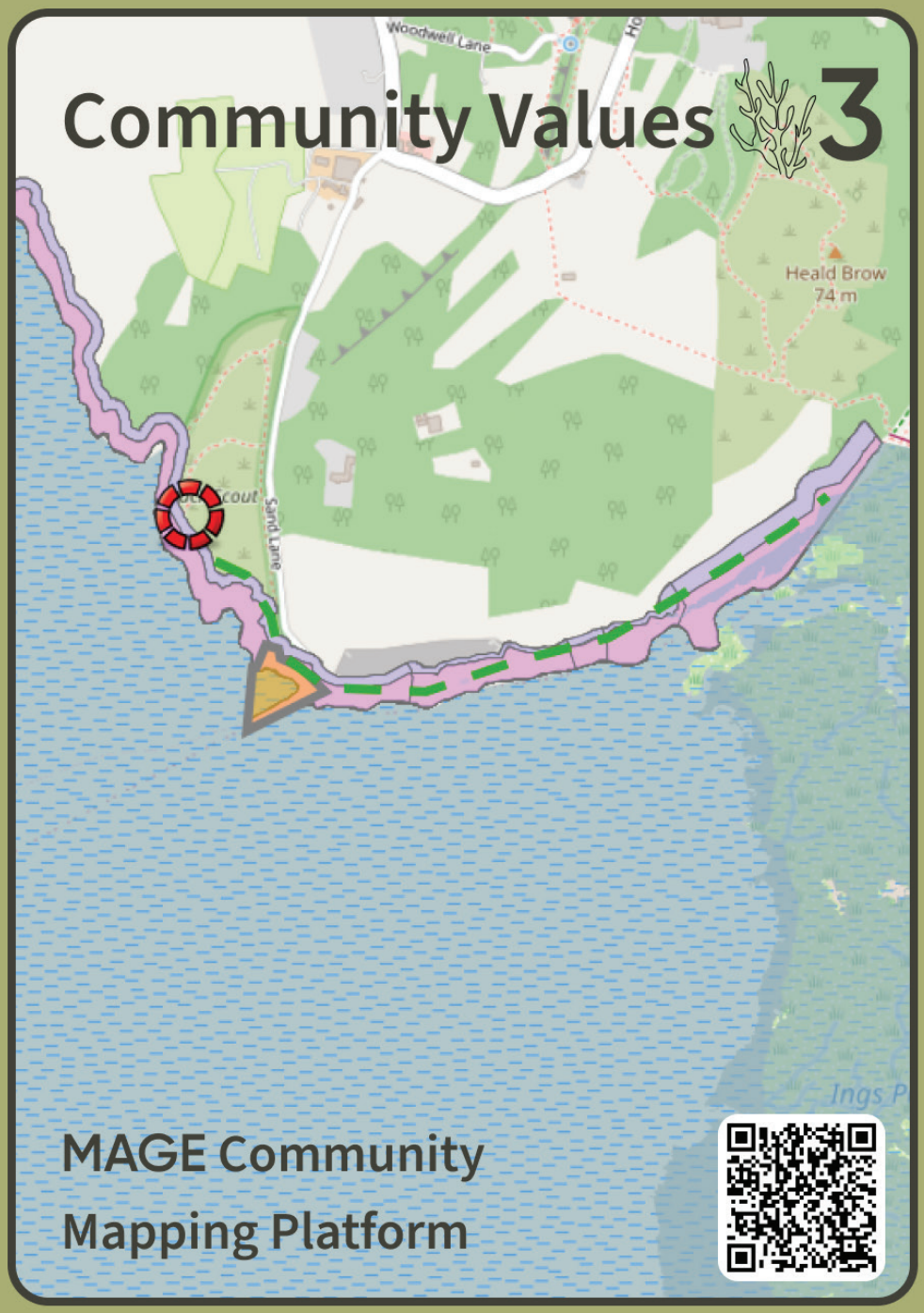
Community Values 2

Habitat Assets

Coastal habitats include cliffs, rocky shores, sandy beaches, sand dunes, mudflats, saltmarshes, and grassy plains. These areas support many birds, fish, and wildlife. Some coasts have **managed realignment** of defenses to help these habitats flourish.

Respond to Players: Find areas of managed realignment on the gameboard.

MAGE 50 Cards 94mmx67mm.indd 24 12/01/2026 18:25:12



MAGE 50 Cards 94mmx67mm.indd 25 12/01/2026 18:25:12

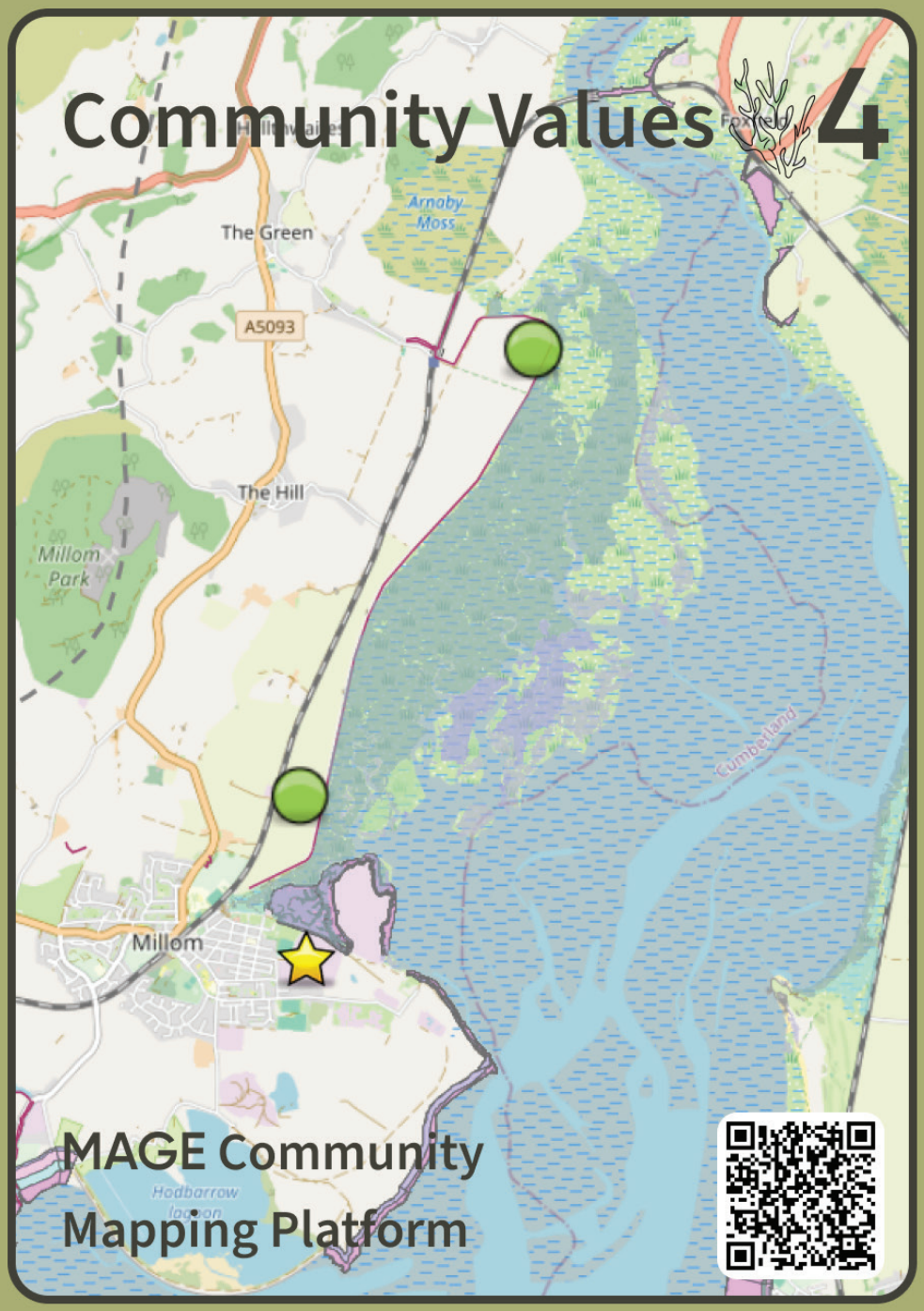
Community Values 3

Key Transit Destination

Ports, Jetties, Coastal Paths and **Critical Infrastructure** along the Coastline are all susceptible to erosion. Wind and waves, particularly during storms, dramatically shape the coastline, yet it is home to key infrastructure and special sites in the community.

Respond to Players: Find areas of critical infrastructure on the gameboard.

MAGE 50 Cards 94mmx67mm.indd 26 12/01/2026 18:25:13



MAGE 50 Cards 94mmx67mm.indd 27 12/01/2026 18:25:13

Community Values 4

Desired Use

Desired Use refers to how a space, resource, or system is intended to be used. It indicates its specific purpose and the outcomes it aims to achieve.

Understanding **Desired Use** is important for planning because it helps shape design and development choices.

Respond to Players: What are your Desired Use areas?

MAGE 50 Cards 94mmx67mm.indd 28 12/01/2026 18:25:14

MAGE 50 Cards 94mmx67mm.indd 29 12/01/2026 18:25:14

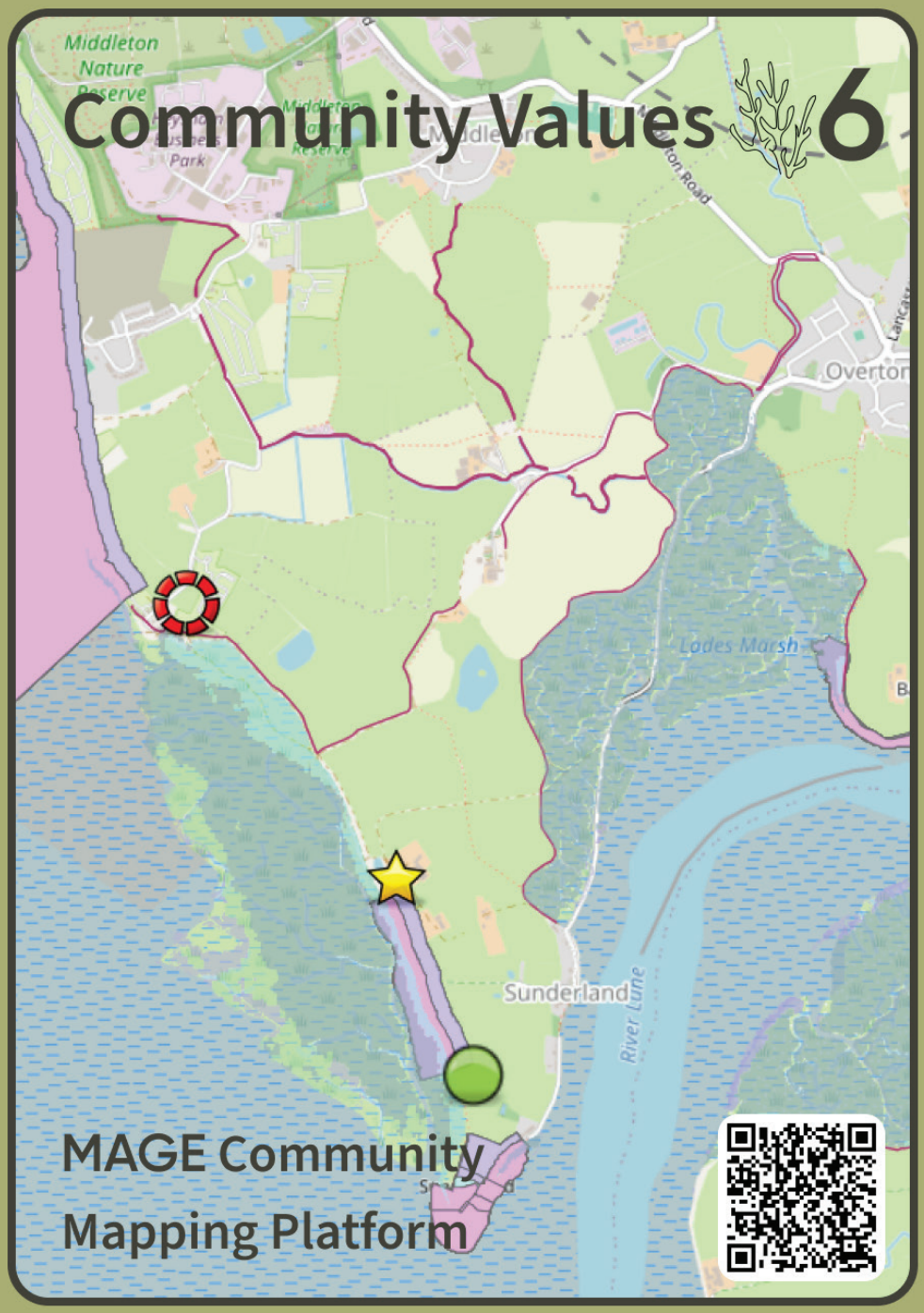
Community Values 5

Undesirable Use

Undesirable usage in planning means actions or developments that aren't allowed by current rules or that harm the surrounding area. This can lead to changes in land use or violations of planning regulations.

Respond to Players: What are your Undesirable areas on the gameboard?

MAGE 50 Cards 94mmx67mm.indd 30 12/01/2026 18:25:15



MAGE 50 Cards 94mmx67mm.indd 31 12/01/2026 18:25:16

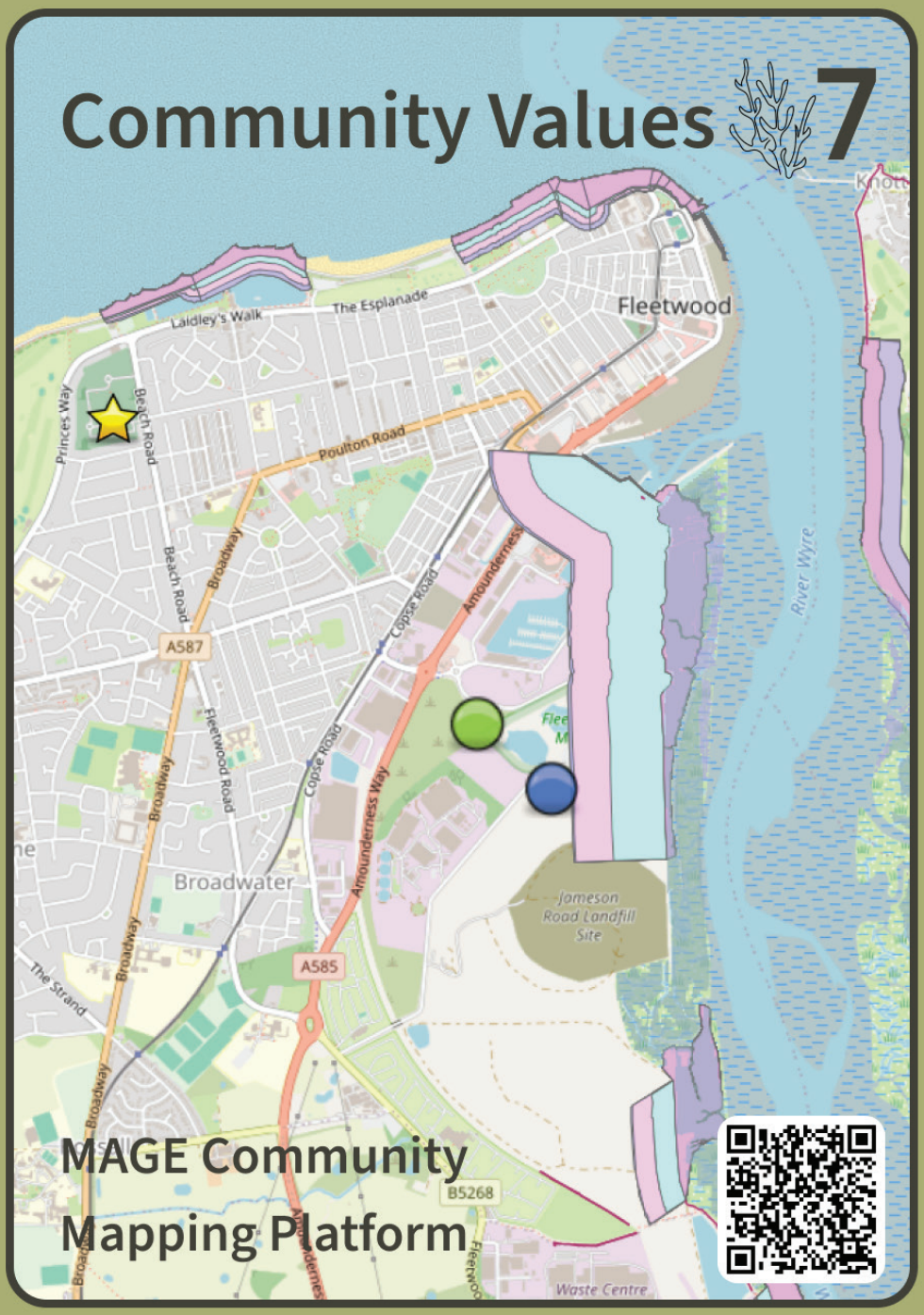
Community Values 6

Landmarks

Landmarks are important reference points in planning. They can be physical structures, natural features, or even ‘abstract’ ideas that help with navigation and decision-making. **Landmarks** can be individual or community based.

Respond to Players: What are your Landmarks on the gameboard?

MAGE 50 Cards 94mmx67mm.indd 32 12/01/2026 18:25:16



MAGE 50 Cards 94mmx67mm.indd 33 12/01/2026 18:25:17

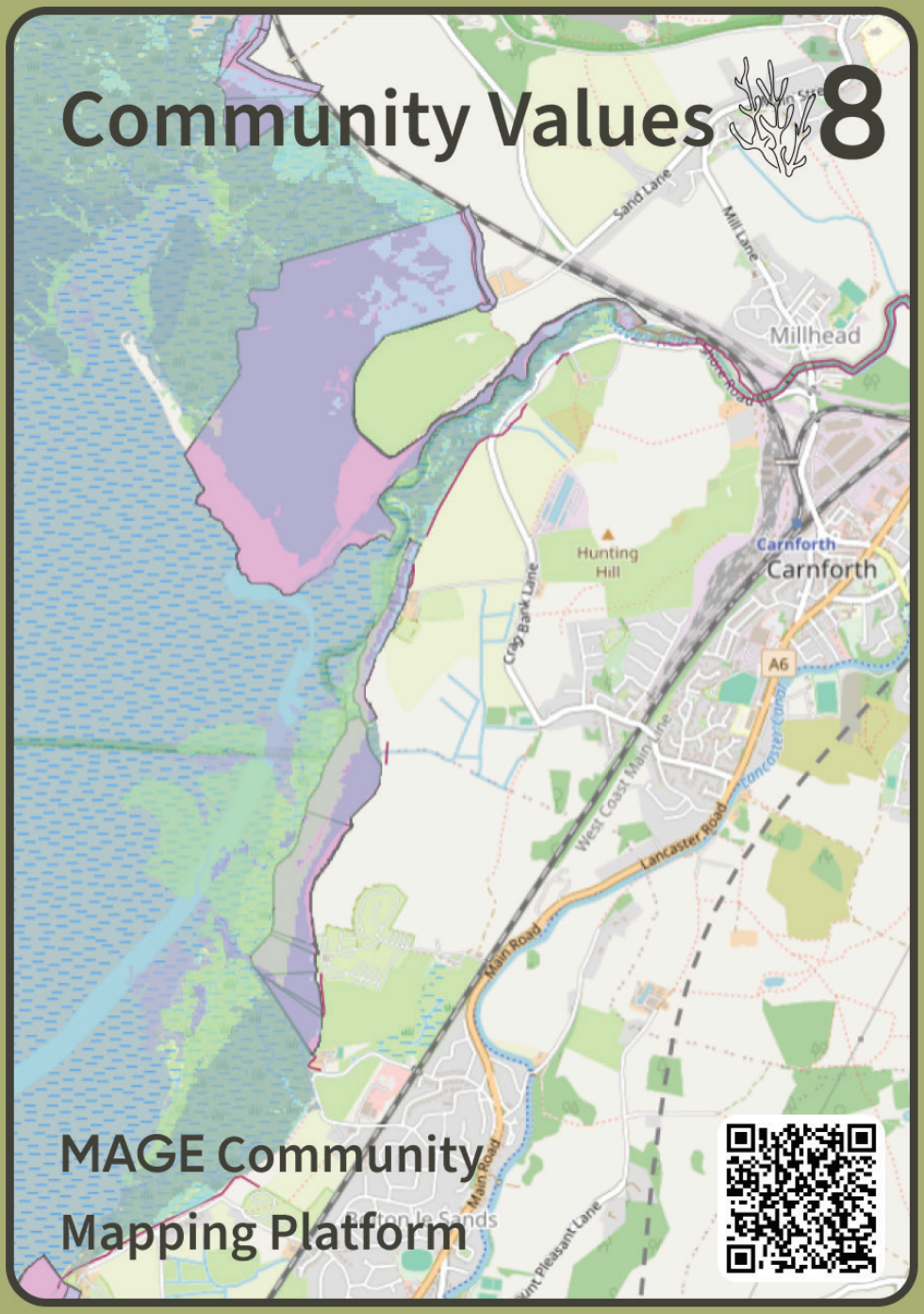
Community Values 7

Mobility

Mobility planning is about making plans and policies to improve how people and goods move to and from the coast. It includes activities like walking, cycling, and using public transit. The goal is to make it easier to get around, reduce traffic jams, and improve overall quality of life.

Respond to Players: What are your thoughts to improve moving around your area?

MAGE 50 Cards 94mmx67mm.indd 34 12/01/2026 18:25:17



MAGE 50 Cards 94mmx67mm.indd 35 12/01/2026 18:25:18

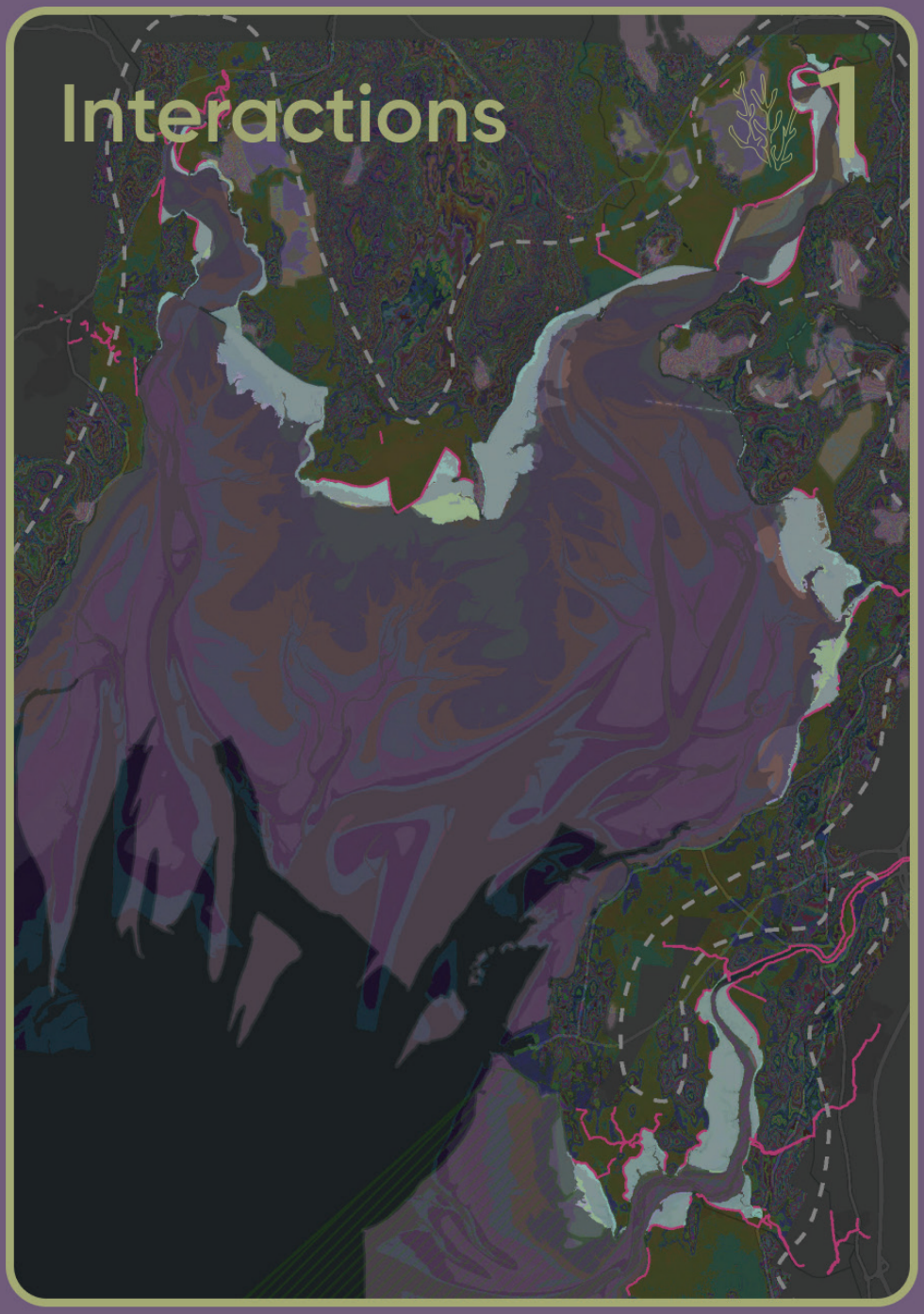
Community Values 8

Flora & Fauna

Coastal plants and animals are vital for the health of coastal ecosystems. They help support food webs, protect shorelines, regulate water quality, and maintain biodiversity. Key elements include salt marshes, dune grasses, rocky plants, and salt-tolerant species.

Respond to Players: What are the critical coastal ecosystem areas?

MAGE 50 Cards 94mmx67mm.indd 36 12/01/2026 18:25:18



MAGE 50 Cards 94mmx67mm.indd 37 12/01/2026 18:25:19

Interactions 1

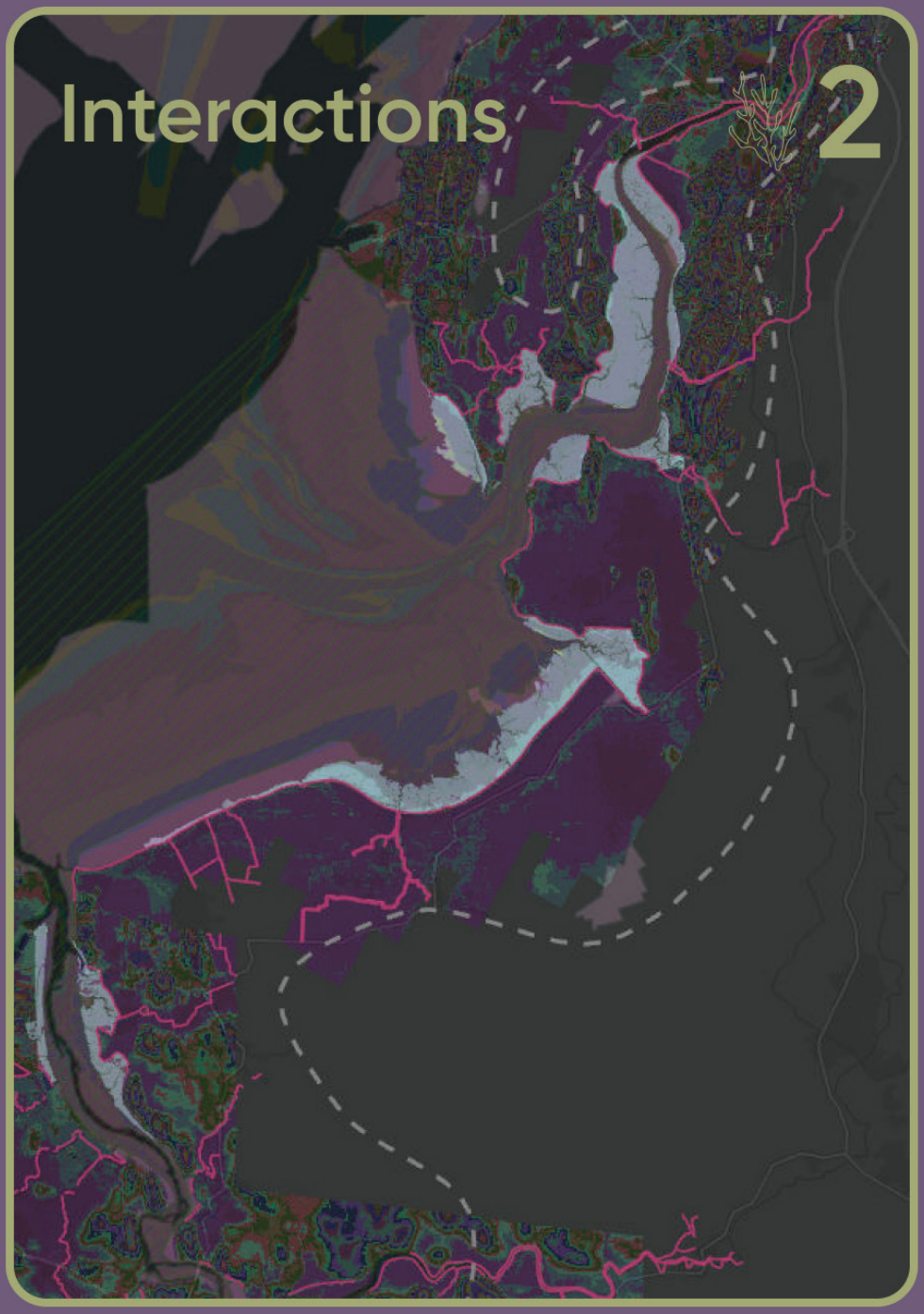
Reshape the Coast

Take the Flexy String and reshape the coast. Choose any coastal area and either:

- Advance the coastline or
- Managed Retreat of the land.

Respond to Players: What effect will this have in the area?

MAGE 50 Cards 94mmx67mm.indd 38 12/01/2026 18:25:19



MAGE 50 Cards 94mmx67mm.indd 39 12/01/2026 18:25:20

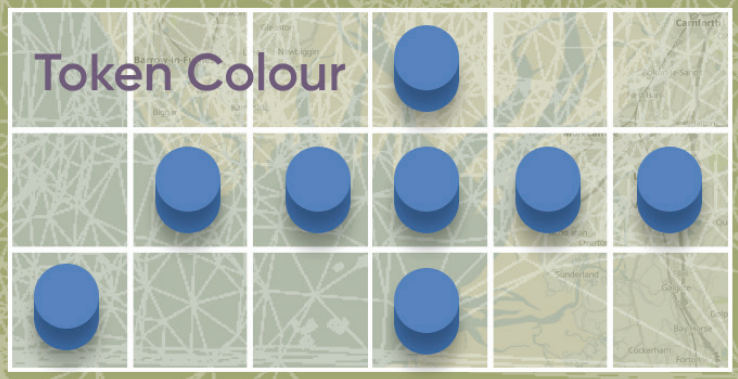
Interactions 2

Coastal & River Flooding

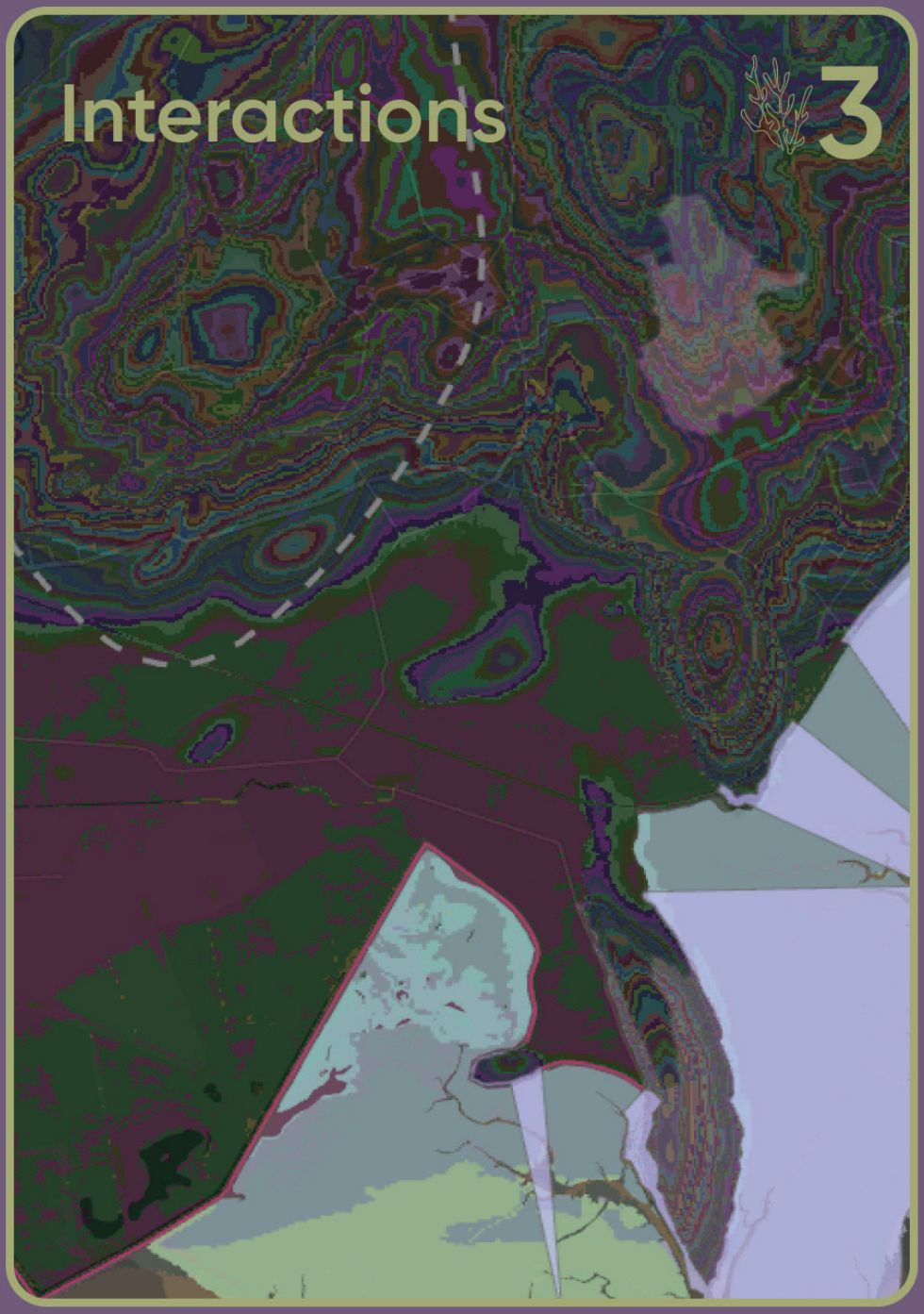
Take the tokens and add to the shoreline or either side of a river:

- Add **8x** Blue Counters to an area that will be flooded.
  This will last for 5x turns.

Find another Mission or Interaction to remove these counters and win the card!



MAGE 50 Cards 94mmx67mm.indd 40 12/01/2026 18:25:21



MAGE 50 Cards 94mmx67mm.indd 41 12/01/2026 18:25:21

Interactions 3

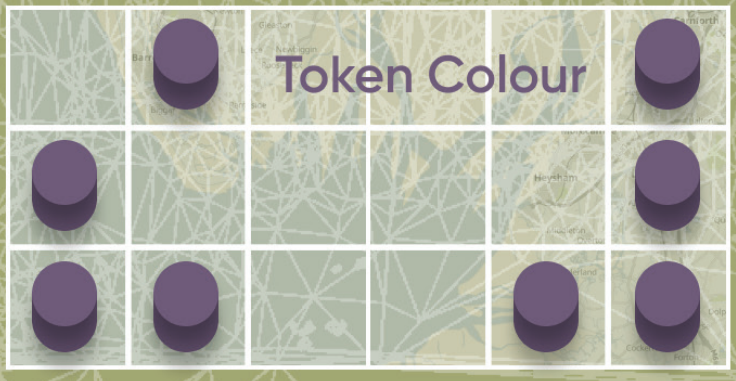
Expand Settlement

Expand a small/medium town.

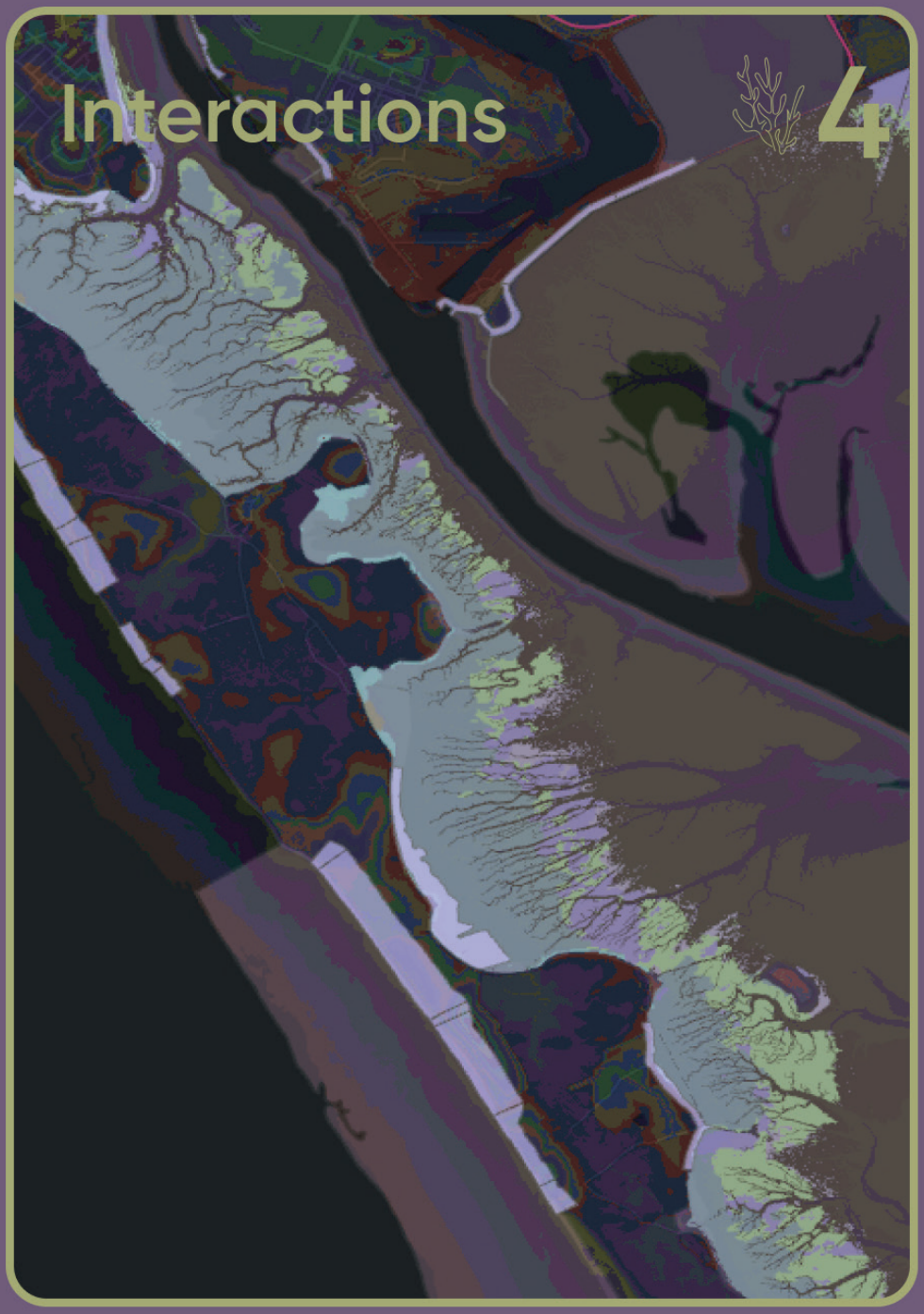
Choose any built-up area:

- Add **2x** Purple Counters **EVERY** turn to a total of **10x turns** and expand a built-up area.

How can you avoid coastal and river Flooding? Card won if expanded area is unaffected for 10x turns!



MAGE 50 Cards 94mmx67mm.indd 42 12/01/2026 18:25:22



MAGE 50 Cards 94mmx67mm.indd 43 12/01/2026 18:25:22

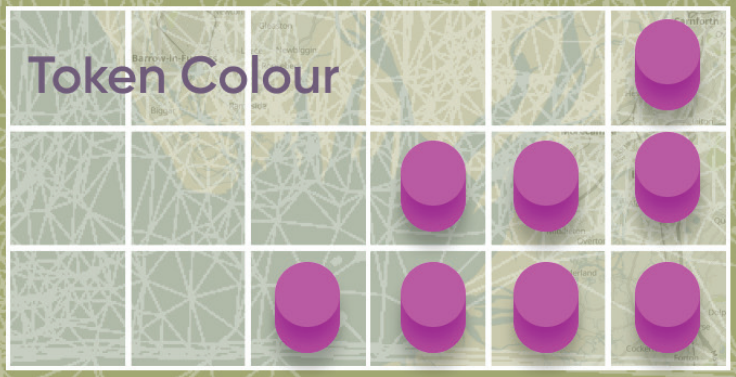
Interactions 4

Nature Based Soultions

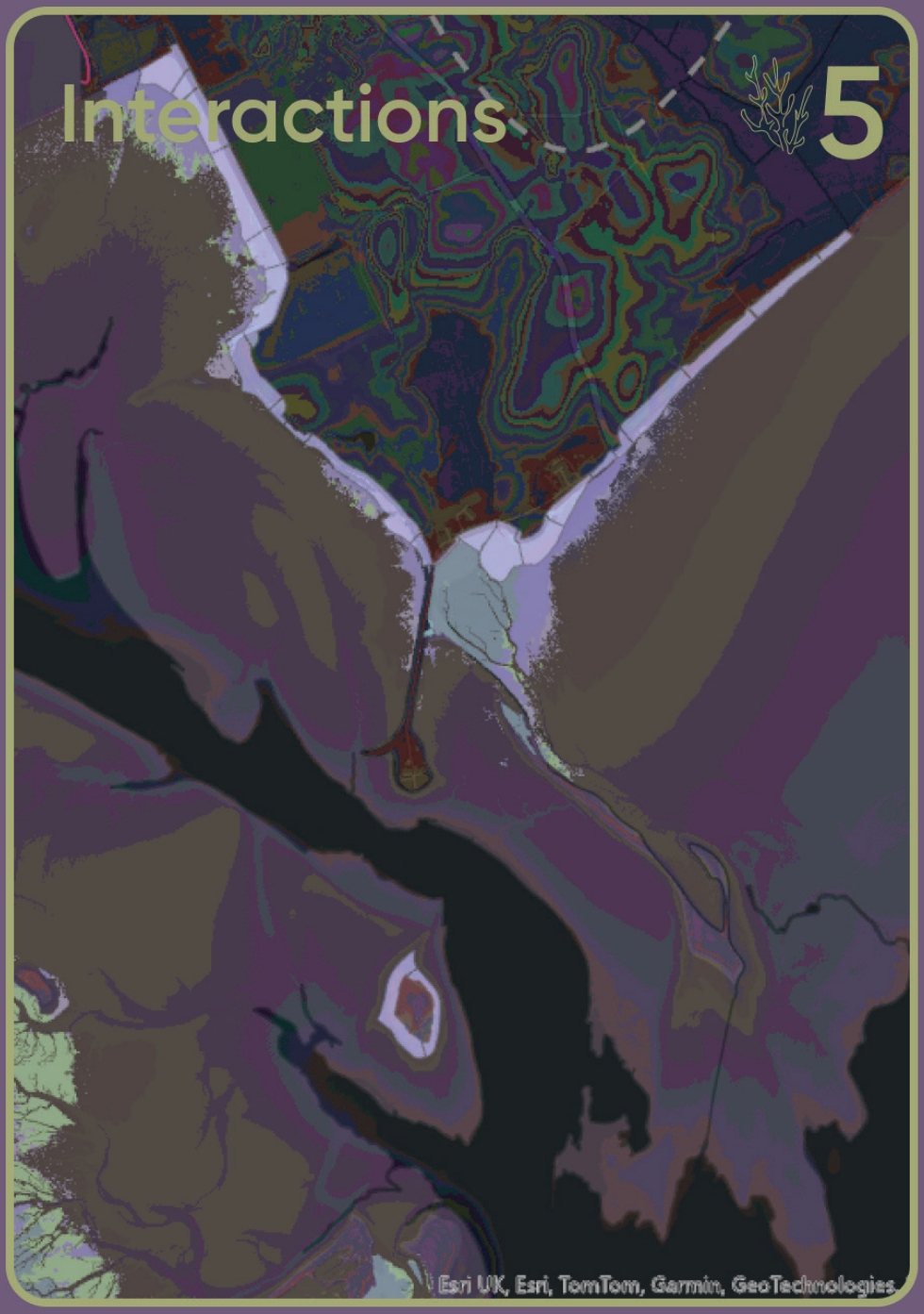
Regenerate lost Salt Marshes

- Add **8x** Pink Counters and add to the shoreline

Adding Salt Marshes protects against the **Storm Scenario 4** and **Coastal Erosion Scenario 5** card. Card won if these Scenarios are played.



MAGE 50 Cards 94mmx67mm.indd 44 12/01/2026 18:25:23



MAGE 50 Cards 94mmx67mm.indd 45 12/01/2026 18:25:23

Interactions 5

Protect Habitats

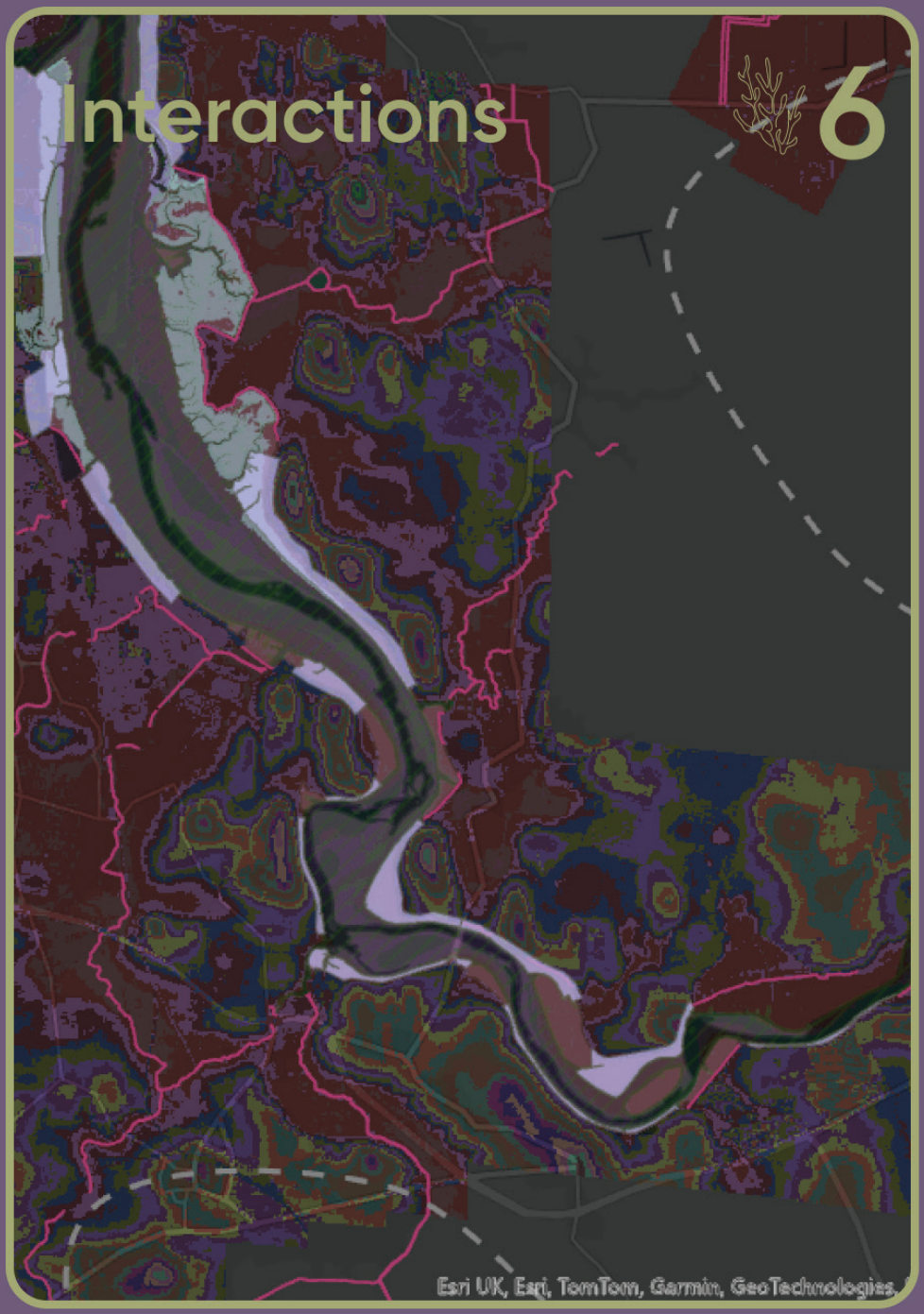
Protect important habitats.

- Add **8x** Orange Tokens to any area. This will protect the area from **ALL** other Interactions.

Why is it important to protect the special area you have chosen?

Card Won if **ANY** Scenarios effect adjacent Squares.

MAGE 50 Cards 94mmx67mm.indd 46 12/01/2026 18:25:24



MAGE 50 Cards 94mmx67mm.indd 47 12/01/2026 18:25:25

Interactions 6

Build Infrastructure Resilience

Change Infrastructure based on Rail/ Road or Energy.

- Add **8x** Red Counters. This will protect the game area from the **Infrastructure Scenario 6** card.

Why is it important to change the infrastructure you have chosen?

Card Won if **Scenario 6** played.

MAGE 50 Cards 94mmx67mm.indd 48 12/01/2026 18:25:25

MAGE 50 Cards 94mmx67mm.indd 49 12/01/2026 18:25:26

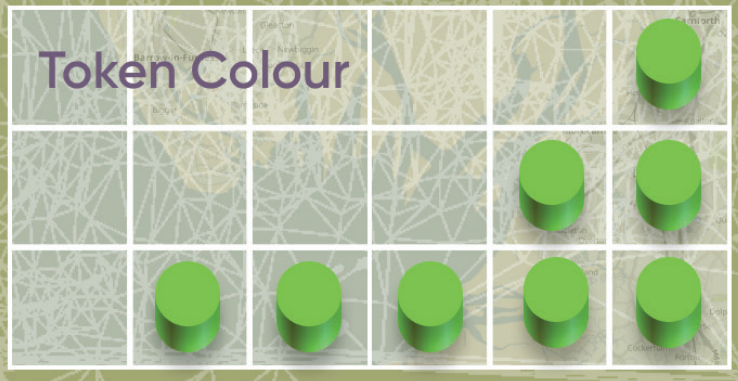
Interactions 7

Rain Water Harvesting

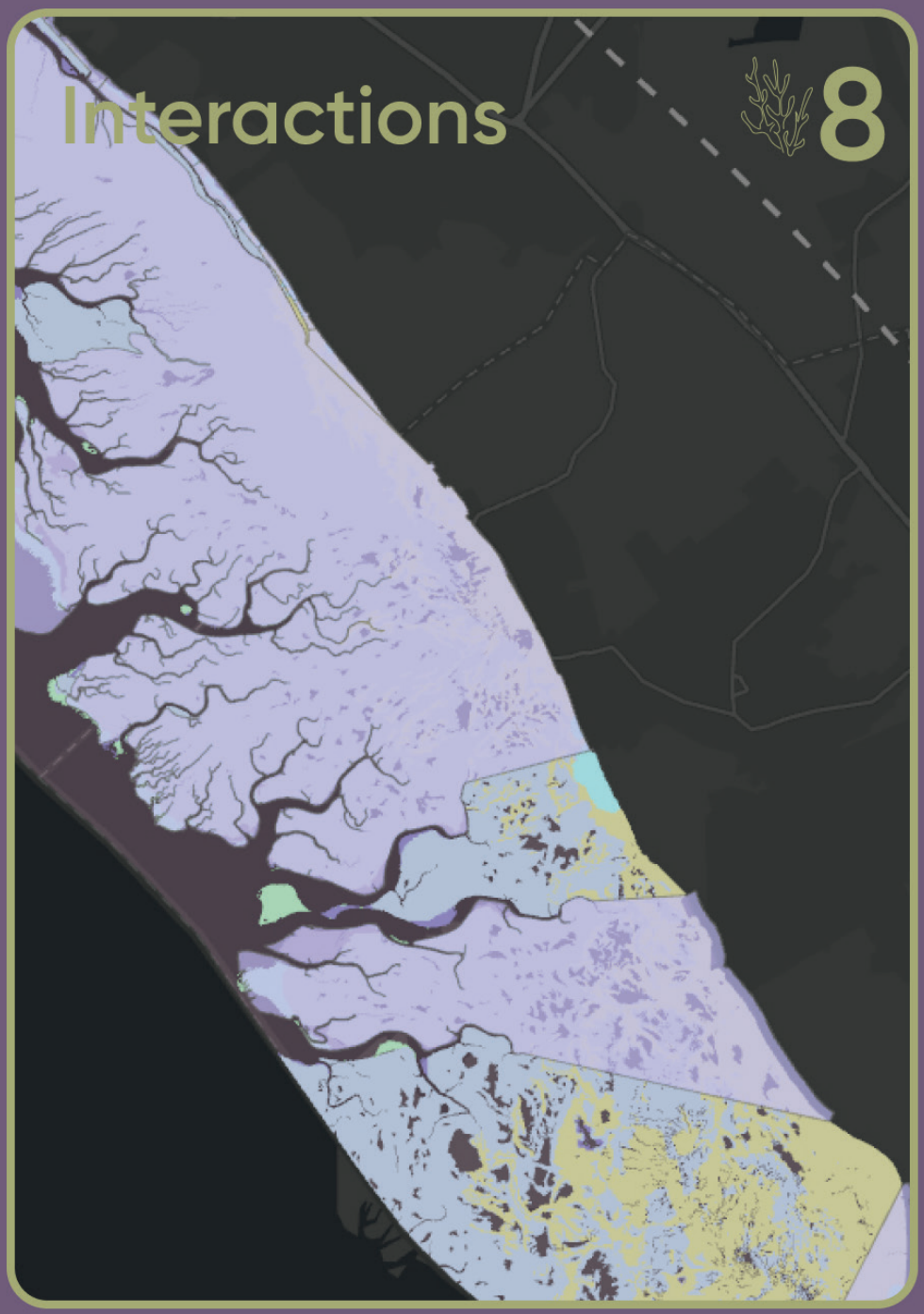
To develop sustainability .

- Add up to **8x** Green Counters.
  This will help **Resilience.**

Why is it important to add these features to the settlements? Card Won if Community Resilience **Scenario Card 8** is played.



MAGE 50 Cards 94mmx67mm.indd 50 12/01/2026 18:25:26



MAGE 50 Cards 94mmx67mm.indd 51 12/01/2026 18:25:27

Interactions 8

SUDS & Property Resilience

Develop Sustainable Urban Drainage for Settlements.

- Add up to **8x** Counters onto any Settlement for protection.

Card won if the **Town Flooding Scenario 3** and the **Community Resilience Scenario 8** cards are played.

MAGE 50 Cards 94mmx67mm.indd 52 12/01/2026 18:25:27

Missions

1

Coastal Adaption Pathways

Ethics Environment

MAGE 50 Cards 94mmx67mm.indd 53 12/01/2026 18:25:28

Missions

1

Extreme Flood Scenarios

Extreme coastal flooding happens when strong storm surges, high tides, rising sea levels, and heavy rainfall combine, often worsened by climate change. These floods can cause major damage to coastal areas, infrastructure, and ecosystems, and they can also threaten lives.

Mission: All Players Scenario Card rules are multiplied by x2 for 3x turns. *Hold card until Scenario Cards are played. Card Won if tokens cleared on gameboard.

MAGE 50 Cards 94mmx67mm.indd 54 12/01/2026 18:25:29

Missions

2

Coastal Adaption Pathways

Ethics Environment

MAGE 50 Cards 94mmx67mm.indd 55 12/01/2026 18:25:29

Missions

2

Sea Level Rise

Extreme sea levels are rising faster in many parts of the UK's coast, which is leading to higher local sea levels. This means that events that used to happen once every 100 years are becoming more frequent, especially in areas that have already experienced a rise in sea levels of over 10 cm (EEA, 2024).

Mission: All Players Water Scenario Cards: 1, 2, 3, 5, 6 are multiplied by x2 for 3x turns. *Hold card until Scenario Cards are played.
Card Won if tokens cleared on gameboard.

MAGE 50 Cards 94mmx67mm.indd 56 12/01/2026 18:25:30

MAGE 50 Cards 94mmx67mm.indd 57 12/01/2026 18:25:30

Missions

3

Radar, Monitoring & Detection

Coastal radar systems are used to monitor maritime activity, secure coastlines and monitor weather. Marine radar is developed for coastal monitoring detecting coastal changes, waves and currents.

Mission: In All Players Coastal Flooding, River, Storm and Scenarios Cards: 2, 3, 4
-4 tokens for 4x turns of any of your choosing. *Hold card until Scenario Cards are played.
Card Won if tokens cleared on gameboard.

MAGE 50 Cards 94mmx67mm.indd 58 12/01/2026 18:25:31

MAGE 50 Cards 94mmx67mm.indd 59 12/01/2026 18:25:32

Missions

4

Mini Buoys & Monitoring

Mini Buoys are affordable low-cost devices that monitor wetlands and salt marshes. They collect data for restoration projects by using accelerometers to track flooding, wave and tidal currents. However, they can't measure waves or water depths.

Mission: In All Flooding Scenarios Cards: 1, 2, 3, 5, 6.
-3 tokens for 4x turns of any of your choosing. *Hold card until Scenario Cards are played.
Card Won if tokens are cleared on gameboard.

MAGE 50 Cards 94mmx67mm.indd 60 12/01/2026 18:25:32

MAGE 50 Cards 94mmx67mm.indd 61 12/01/2026 18:25:33

Missions

5

Advance the Line

Advancing the shoreline means building new coastal defences further out into the sea to protect the coast and reduce erosion on existing defences. This can involve creating new land or adding coastal habitats.

Mission: Add the flexi-string & 6x Pink tokens for 4x turns. Adding tokens protects against Scenario Cards: 4, 5, 6. Card Won if tokens are deployed against scenarios before their turn limit.

Flexi - String

Colour Token

MAGE 50 Cards 94mmx67mm.indd 62 12/01/2026 18:25:34

MAGE 50 Cards 94mmx67mm.indd 63 12/01/2026 18:25:35

Missions

6

No Active Intervention

No active intervention means letting the coastline develop naturally, which may require adapting to flooding or erosion risks. Areas at high risk of erosion are usually low-lying, reclaimed land or made up of soft sediment.

Mission: Choose a coastal area on the gameboard and add 5x tokens. Win Card Mission if no area is effected for 4x turns.

Colour Token

MAGE 50 Cards 94mmx67mm.indd 64 12/01/2026 18:25:35

MAGE 50 Cards 94mmx67mm.indd 65 12/01/2026 18:25:36

Missions

7

Managed Realignment

Managed realignment makes changes to the position of the shoreline in a controlled way, such as by slowing erosion or creating areas of habitat to help manage flooding. It is also often a method that replaces hard coastal defence measures and depends on natural defences to absorb or dissipate the force of waves.

Mission: - 8 tokens for 3x turns of any of your choosing for Scenario Cards: 1, 2, 3, 5. Card Won if tokens are cleared on gameboard.

MAGE 50 Cards 94mmx67mm.indd 66 12/01/2026 18:25:37

Missions

8

Coastal Adaption Pathways

Ethics Environment

MAGE 50 Cards 94mmx67mm.indd 67 12/01/2026 18:25:37

Missions

8

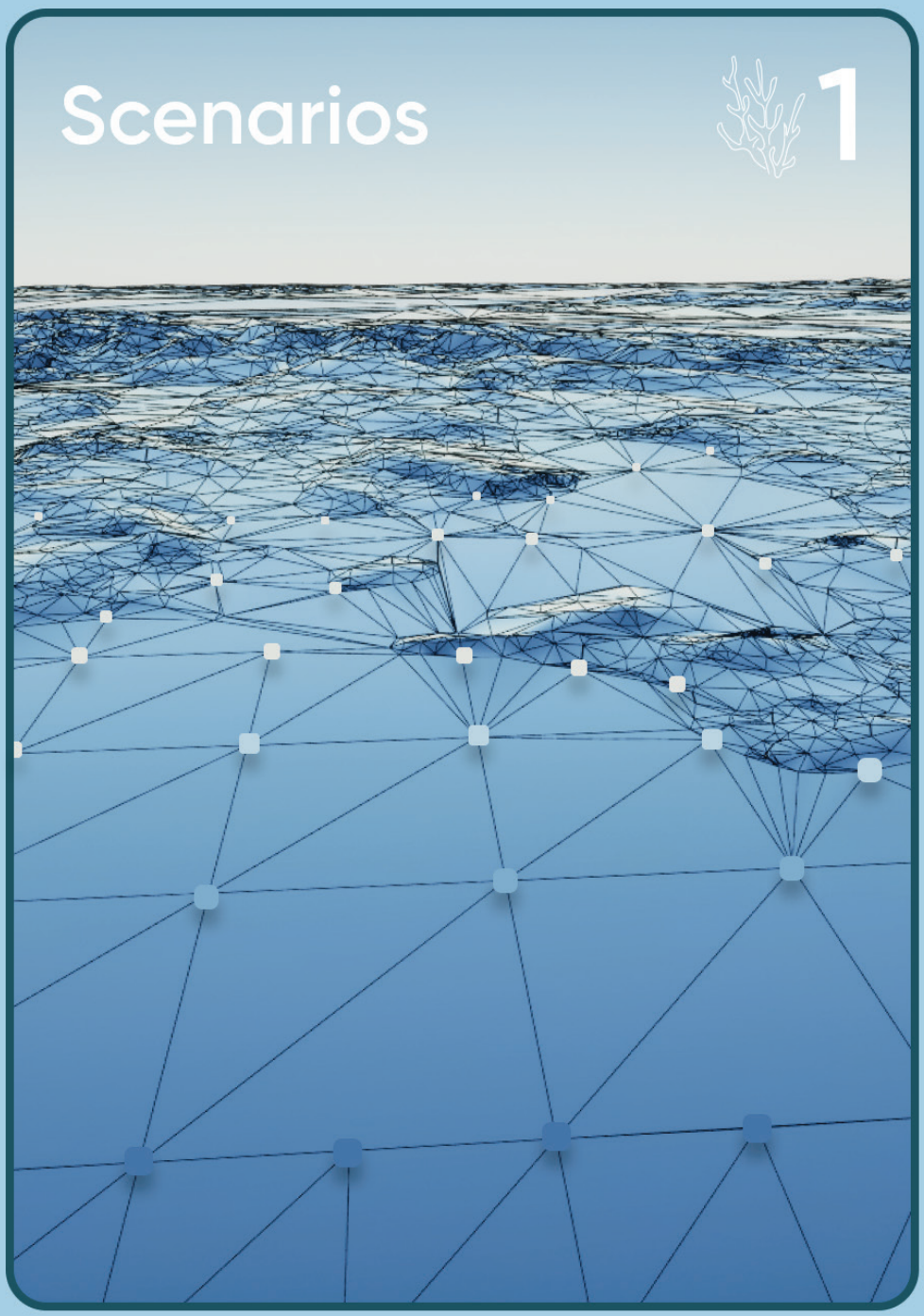
Hold The Line

Hold the line maintains or upgrades protection from flooding or erosion by holding the shoreline in broadly the same position. This could be hard or soft engineering to prevent any further shoreline retreat. This could be increasingly expensive with sea level rise.

Mission: Take the Flexy String and choose an area of the coast. Card Won if unaffected for 3x Turns.

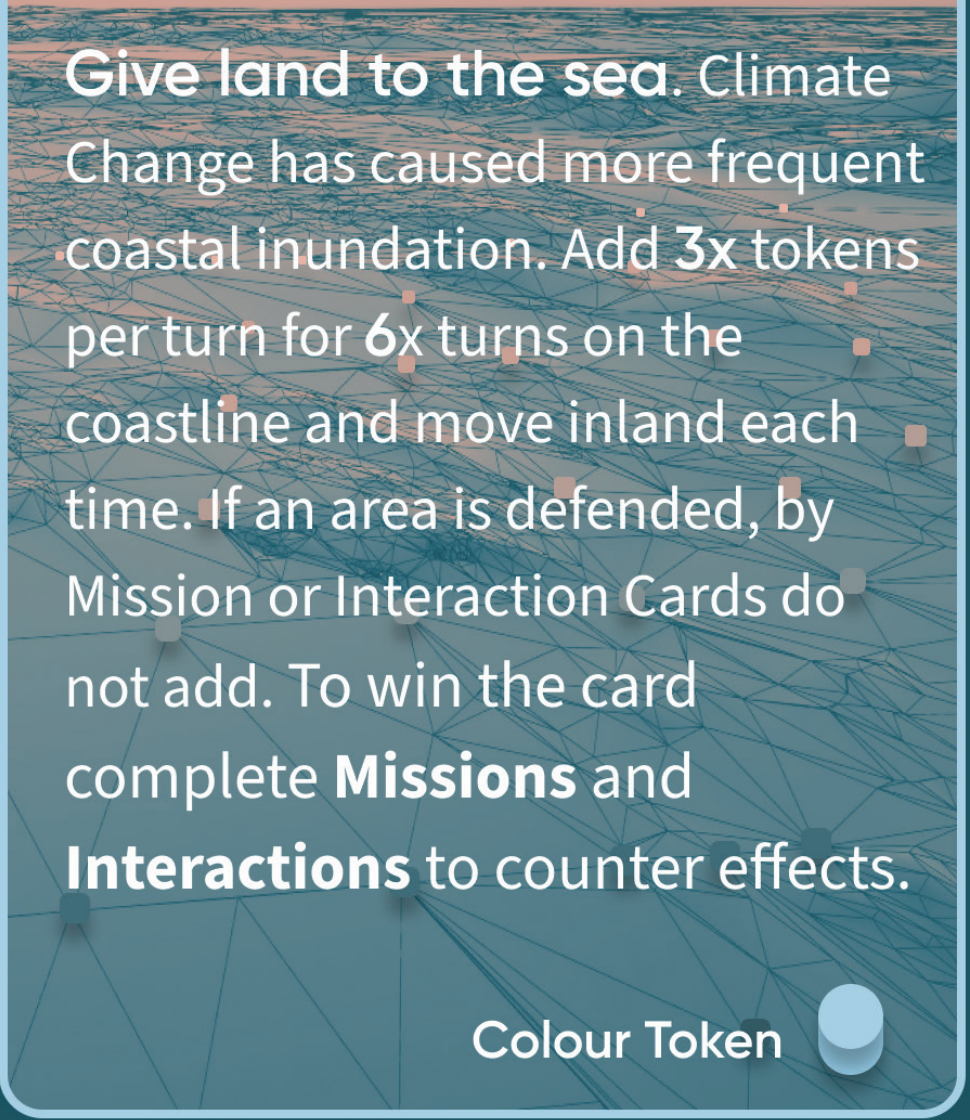
Flexi - String

MAGE 50 Cards 94mmx67mm.indd 68 12/01/2026 18:25:38



MAGE 50 Cards 94mmx67mm.indd 69 12/01/2026 18:25:38

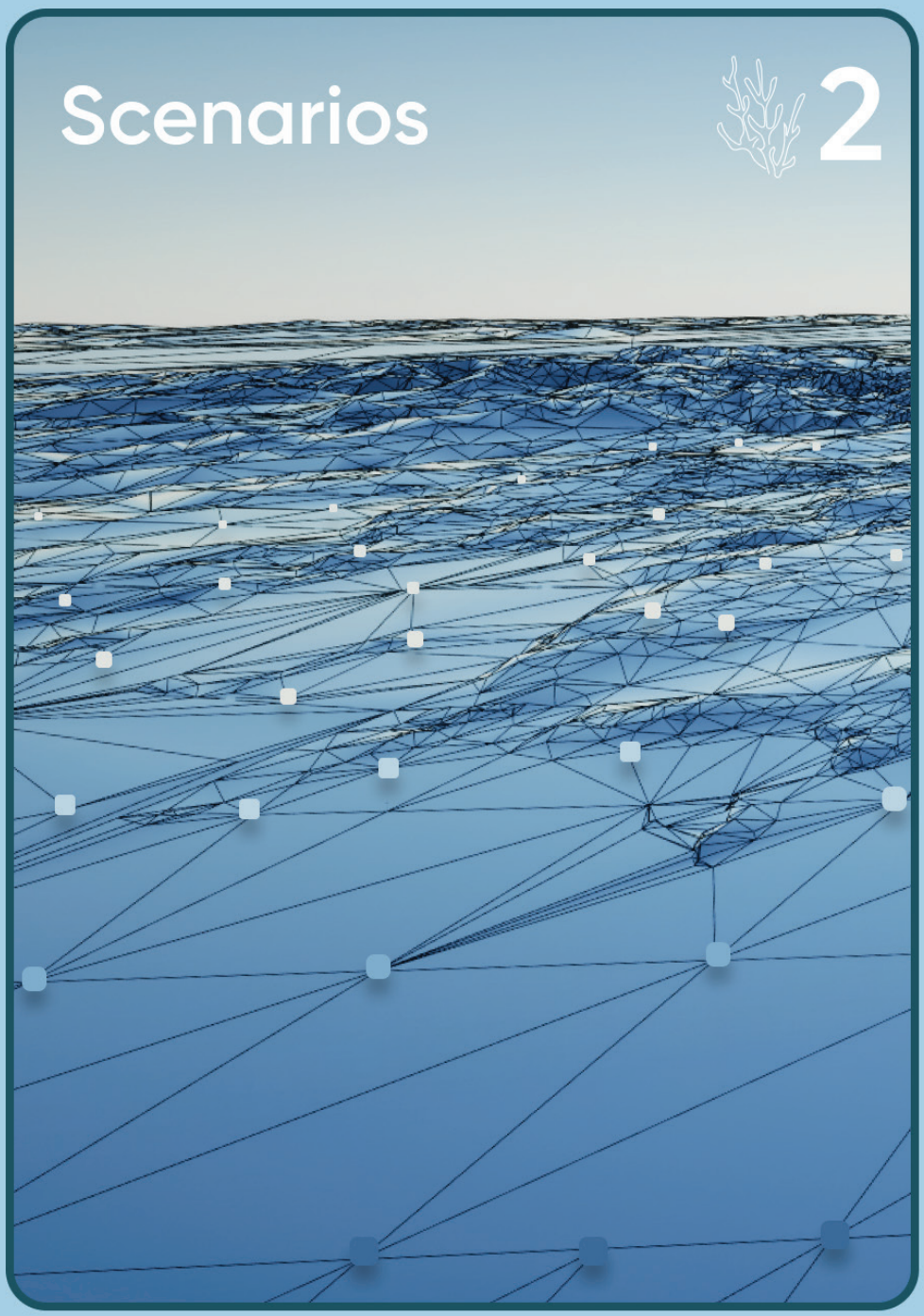
Scenarios 1



Give land to the sea. Climate Change has caused more frequent coastal inundation. Add **3x** tokens per turn for **6**x turns on the coastline and move inland each time. If an area is defended, by Mission or Interaction Cards do not add. To win the card complete **Missions** and **Interactions** to counter effects.

Colour Token

MAGE 50 Cards 94mmx67mm.indd 70 12/01/2026 18:25:39



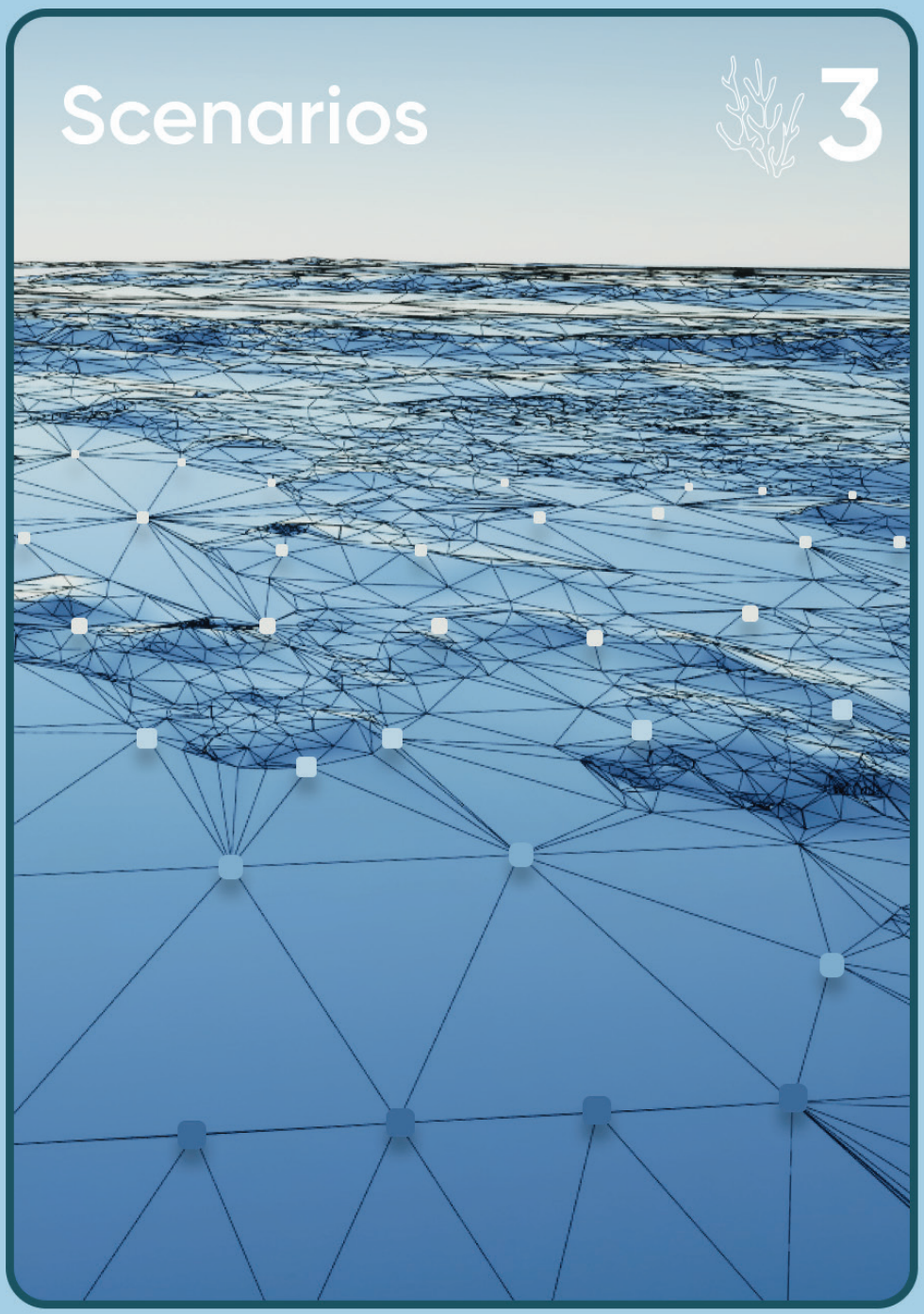
MAGE 50 Cards 94mmx67mm.indd 71 12/01/2026 18:25:39

Scenarios 2

Coastal Flooding caused by storm surges. Find low-lying land and add **3**x Light Blue tokens per turn for **5**x turns on the coastline. If an area is defended, by Mission or Interaction Cards do not add., remove any other tokens. To win the card complete **Missions** and **Interactions** to counter effects.

Colour Token

MAGE 50 Cards 94mmx67mm.indd 72 12/01/2026 18:25:40



MAGE 50 Cards 94mmx67mm.indd 73 12/01/2026 18:25:41

Scenarios 3

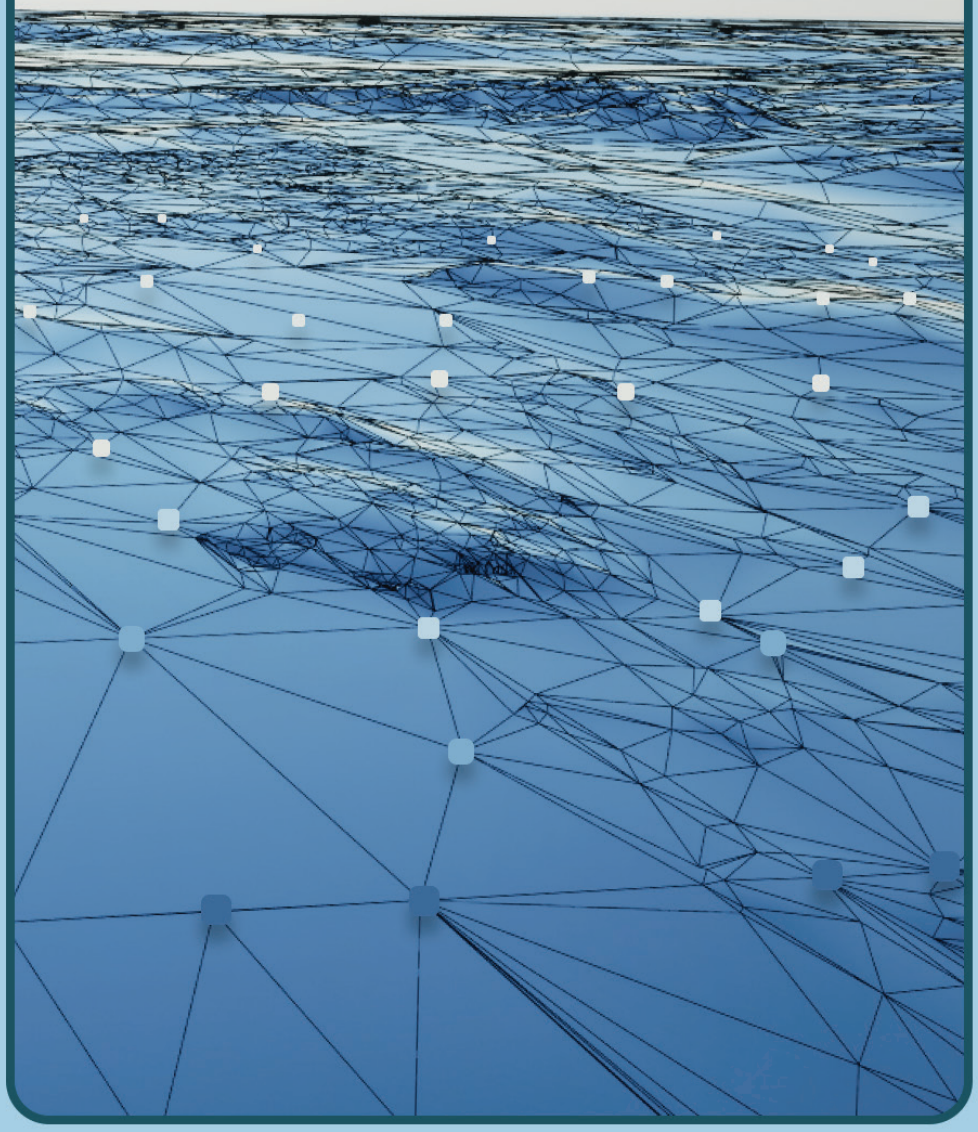
Town Flooding caused by storm surges. Find a settlement and add **2**x Light Blue tokens per turn for **4**x turns on the coastline. If an area has **Interaction** 8 and **Mission** 8 **Cards** do not add. To win the card complete **Missions** and **Interactions** to counter effects.

Colour Token

MAGE 50 Cards 94mmx67mm.indd 74 12/01/2026 18:25:41

Scenarios

4

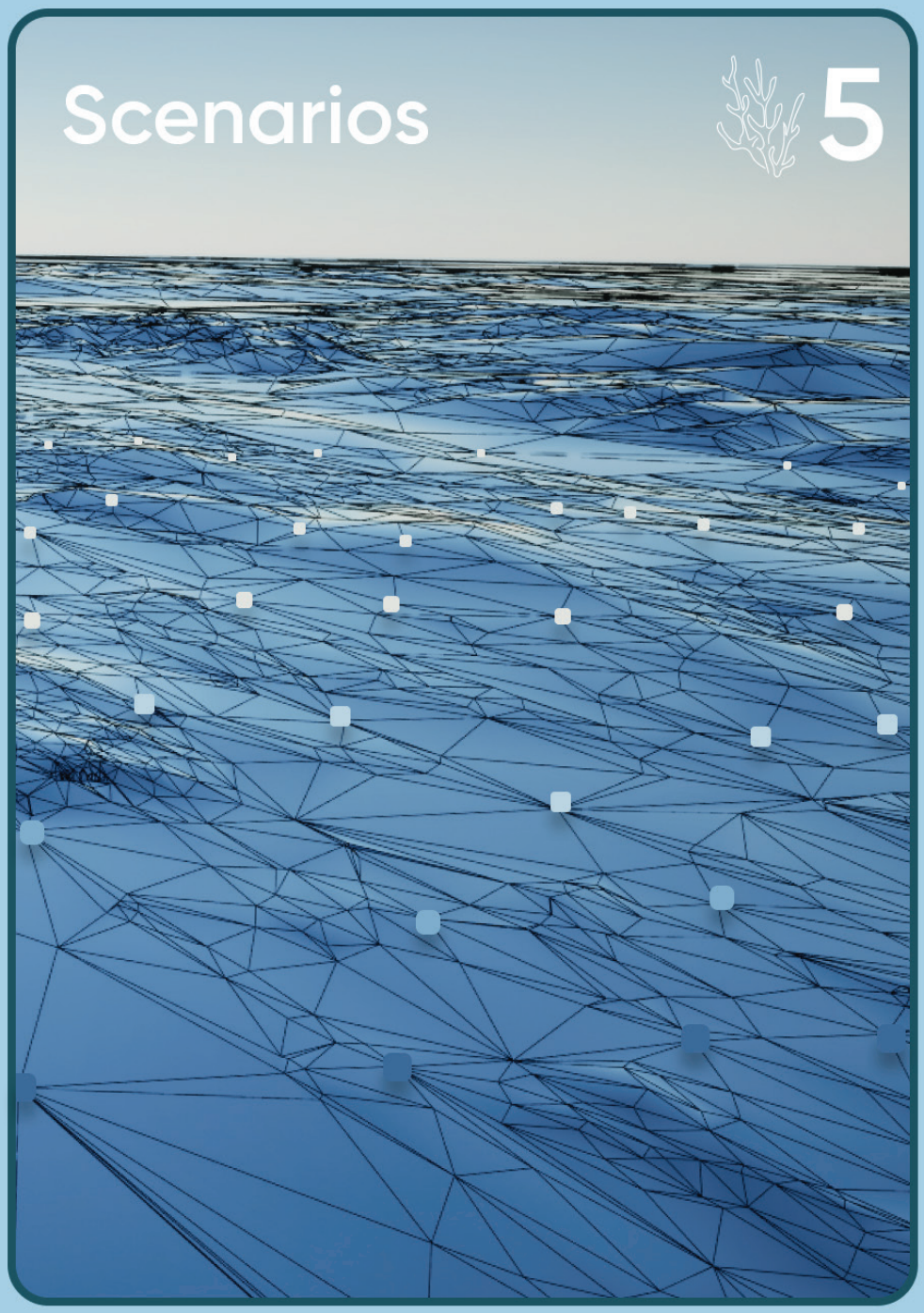


MAGE 50 Cards 94mmx67mm.indd 75 12/01/2026 18:25:42

Scenarios 4

A Storm Surge is incoming. Add **8x** Dark Blue tokens, choose a direction and move **2**x squares per turn. When the Storm hits the coast remove tokens of **Interaction Cards: 3**, **Mission Cards: 6, 8**. To win the card complete **Missions** and **Interactions** to counter effects.

MAGE 50 Cards 94mmx67mm.indd 76 12/01/2026 18:25:42

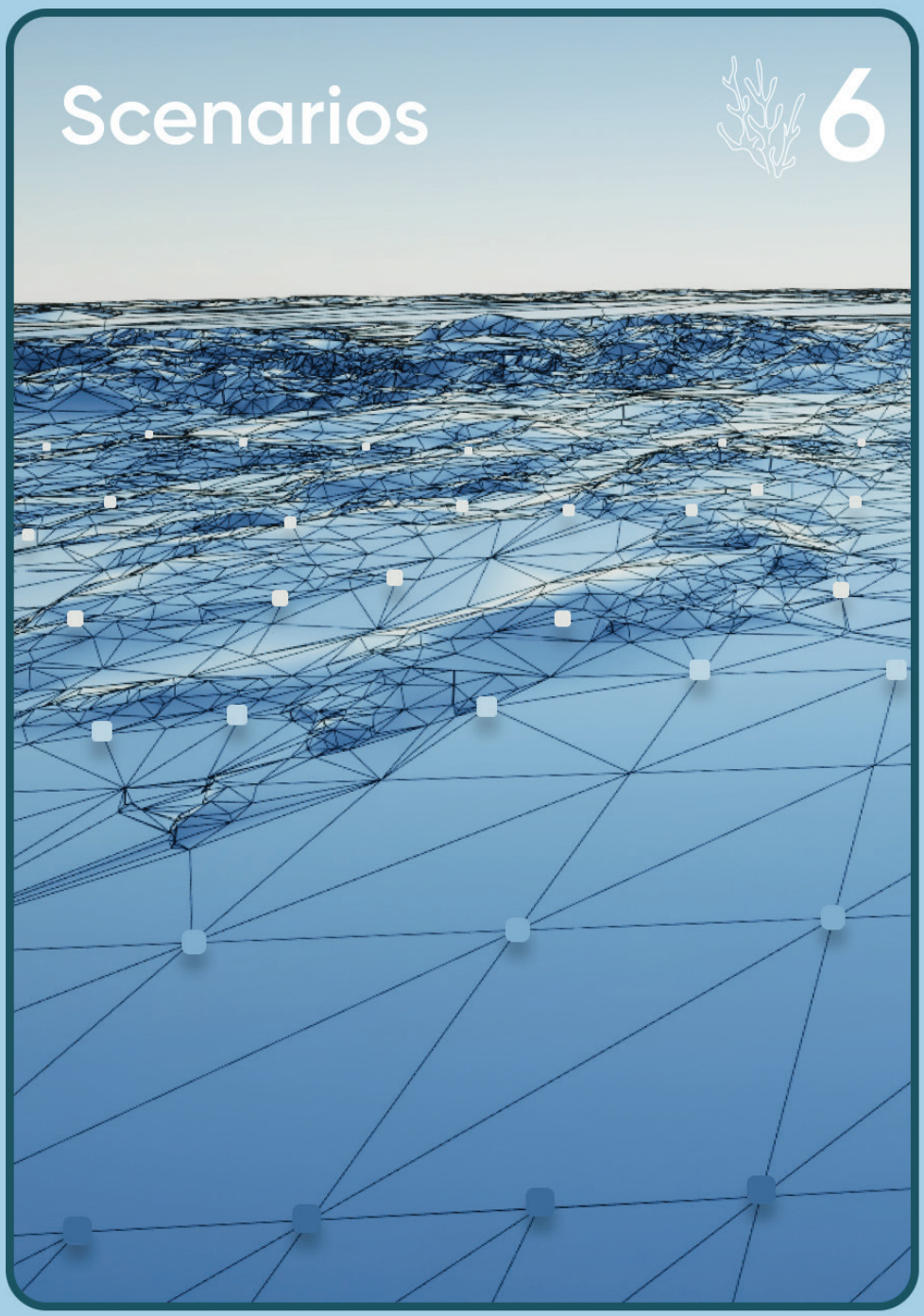


MAGE 50 Cards 94mmx67mm.indd 77 12/01/2026 18:25:43

Scenarios 6

Infrastructure Damage caused by storm waves. Find Rail/Road or Energy areas and add **2**x Dark Blue tokens per turn for **5**x turns. Any built infrastructure, rainwater harvesting, SUDS tokens are removed from **Interaction cards: 6, 7, 8**. To win the card complete **Missions** and **Interactions.**

MAGE 50 Cards 94mmx67mm.indd 78 12/01/2026 18:25:44



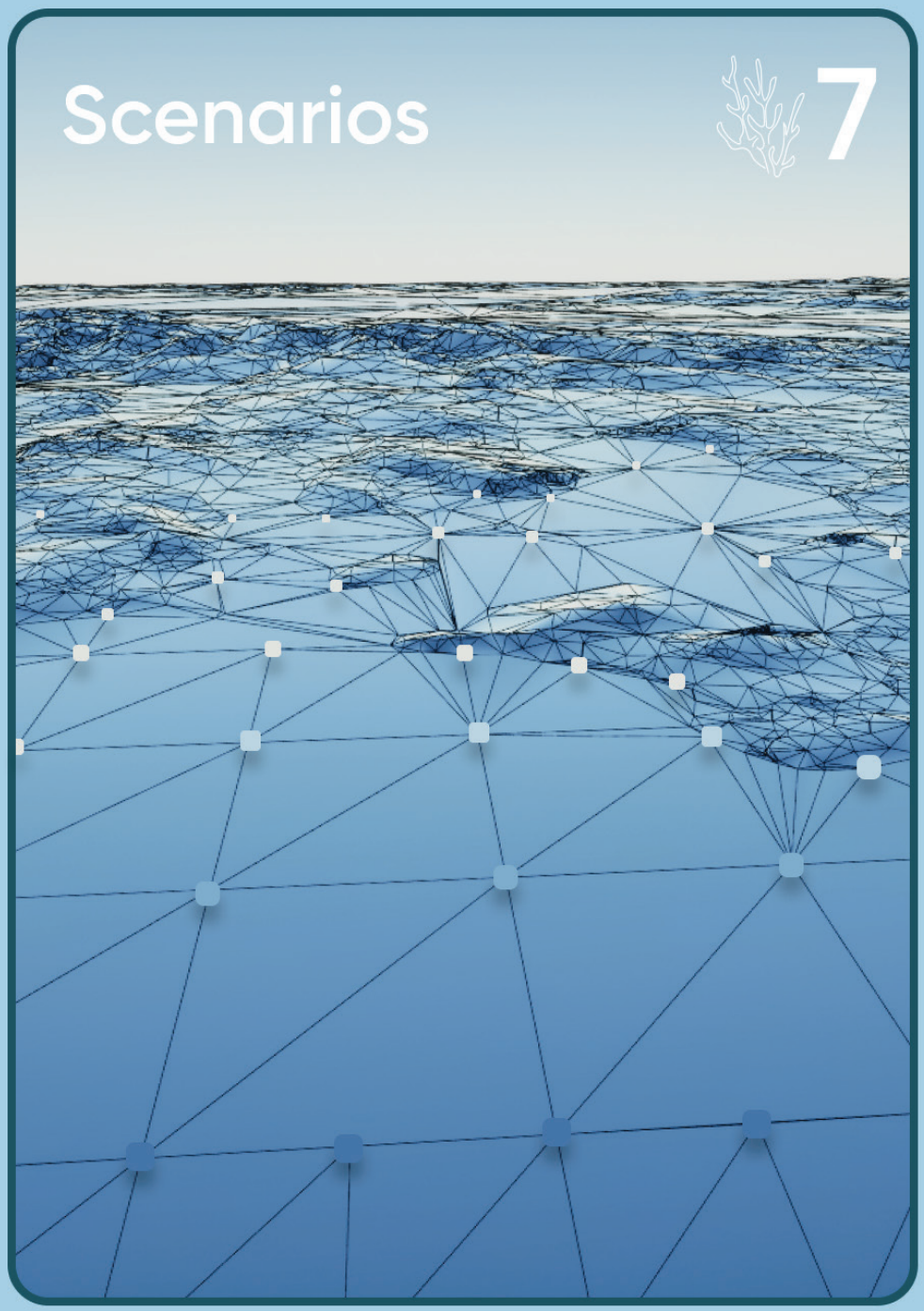
MAGE 50 Cards 94mmx67mm.indd 79 12/01/2026 18:25:44

Scenarios 6

Infrastructure Damage caused by storm waves. Find Rail/Road or Energy areas and add **2**x Dark Blue tokens per turn for **5**x turns. Any rebuilt infrastructure tokens are removed from **Interaction cards: 6, 7, 8**. To win the card complete **Missions** and **Interactions** to counter effects.

Colour Token

MAGE 50 Cards 94mmx67mm.indd 80 12/01/2026 18:25:45



MAGE 50 Cards 94mmx67mm.indd 81 12/01/2026 18:25:46

Scenarios 7

Marine Life - Protected Area

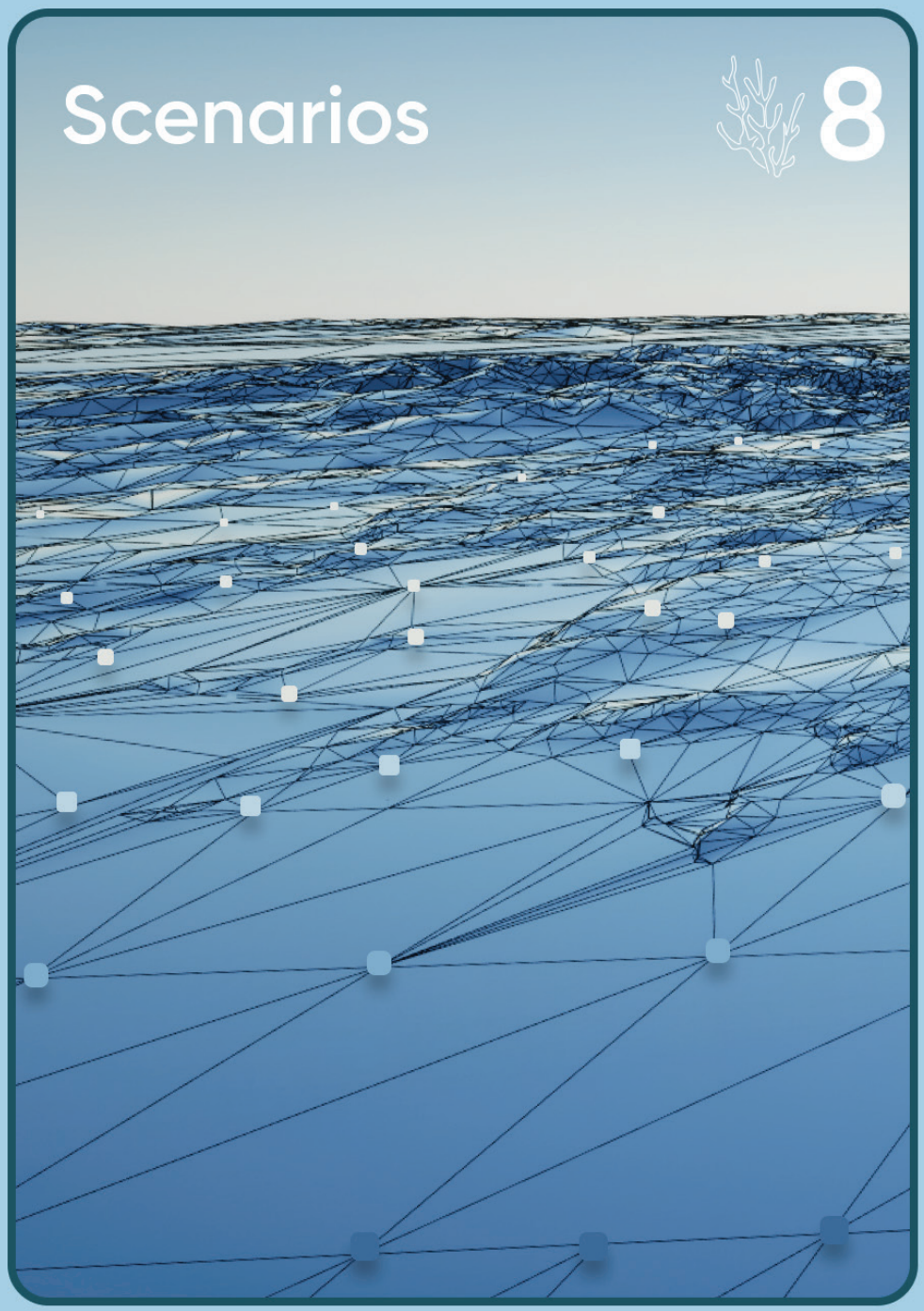
Add **6**x Dark Green tokens to the sea. The nearest coastal area of **4**x squares cannot be reshaped or realigned, or settlement expanded.

Interaction Cards: 1, 2,

Mission Cards: 7. Win Card Scenario if no area is effected for 4x turns.

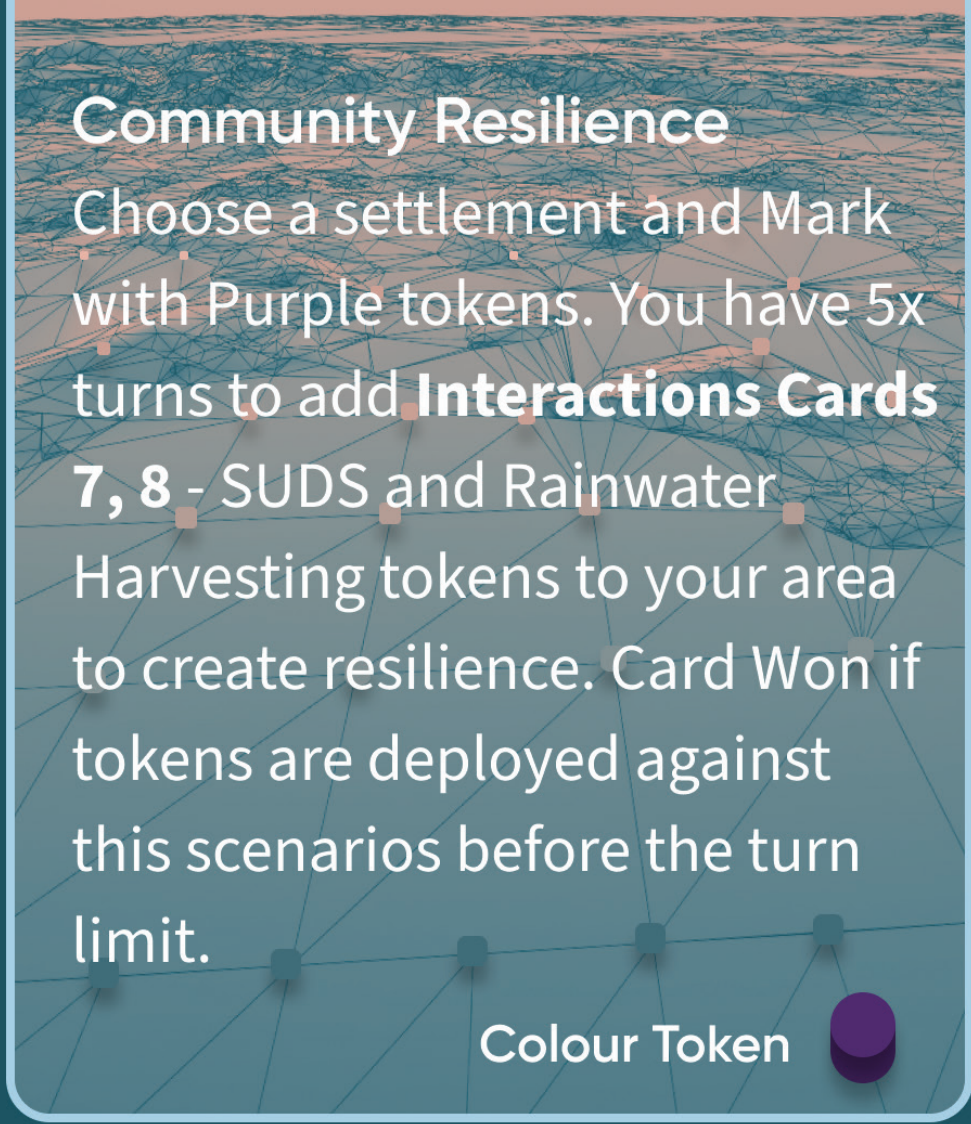
Colour Token

MAGE 50 Cards 94mmx67mm.indd 82 12/01/2026 18:25:46



MAGE 50 Cards 94mmx67mm.indd 83 12/01/2026 18:25:47

Scenarios 8



Community Resilience

Choose a settlement and Mark with Purple tokens. You have 5x turns to add **Interactions Cards 7, 8** - SUDS and Rainwater Harvesting tokens to your area to create resilience. Card Won if tokens are deployed against this scenarios before the turn limit.

Colour Token

MAGE 50 Cards 94mmx67mm.indd 84 12/01/2026 18:25:47

MAGE 50 Cards 94mmx67mm.indd 85 12/01/2026 18:25:48

Custom Cards

Customise this card for Community Values, Interactions, Missions & Scenarios.

Game Counter
Colour / Shape

MAGE 50 Cards 94mmx67mm.indd 86 12/01/2026 18:25:48

MAGE 50 Cards 94mmx67mm.indd 87 12/01/2026 18:25:49

Custom Cards

Customise this card for Community Values, Interactions, Missions & Scenarios.

Game Counter
Colour / Shape

MAGE 50 Cards 94mmx67mm.indd 88 12/01/2026 18:25:50

MAGE 50 Cards 94mmx67mm.indd 89 12/01/2026 18:25:50

Custom Cards

Customise this card for Community Values, Interactions, Missions & Scenarios.

Game Counter
Colour / Shape

MAGE 50 Cards 94mmx67mm.indd 90 12/01/2026 18:25:51

MAGE 50 Cards 94mmx67mm.indd 91 12/01/2026 18:25:51

Custom Cards

Customise this card for Community Values, Interactions, Missions & Scenarios.

Game Counter
Colour / Shape

MAGE 50 Cards 94mmx67mm.indd 92 12/01/2026 18:25:52

MAGE 50 Cards 94mmx67mm.indd 93 12/01/2026 18:25:53

Custom Cards

Customise this card for Community Values, Interactions, Missions & Scenarios.

Game Counter
Colour / Shape

MAGE 50 Cards 94mmx67mm.indd 94 12/01/2026 18:25:53

MAGE 50 Cards 94mmx67mm.indd 95 12/01/2026 18:25:54

Custom Cards

Customise this card for Community Values, Interactions, Missions & Scenarios.

Game Counter
Colour / Shape

MAGE 50 Cards 94mmx67mm.indd 96 12/01/2026 18:25:54

MAGE 50 Cards 94mmx67mm.indd 97 12/01/2026 18:25:55

Custom Cards

Customise this card for Community Values, Interactions, Missions & Scenarios.

Game Counter
Colour / Shape

MAGE 50 Cards 94mmx67mm.indd 98 12/01/2026 18:25:56

MAGE 50 Cards 94mmx67mm.indd 99 12/01/2026 18:25:56

Custom Cards

Customise this card for Community Values, Interactions, Missions & Scenarios.

Game Counter
Colour / Shape

MAGE 50 Cards 94mmx67mm.indd 100 12/01/2026 18:25:57