

Traditional Owner

HEALTHY WATER GLOSSARY



Australian Government

REEF TRUST



Great Barrier
Reef Foundation

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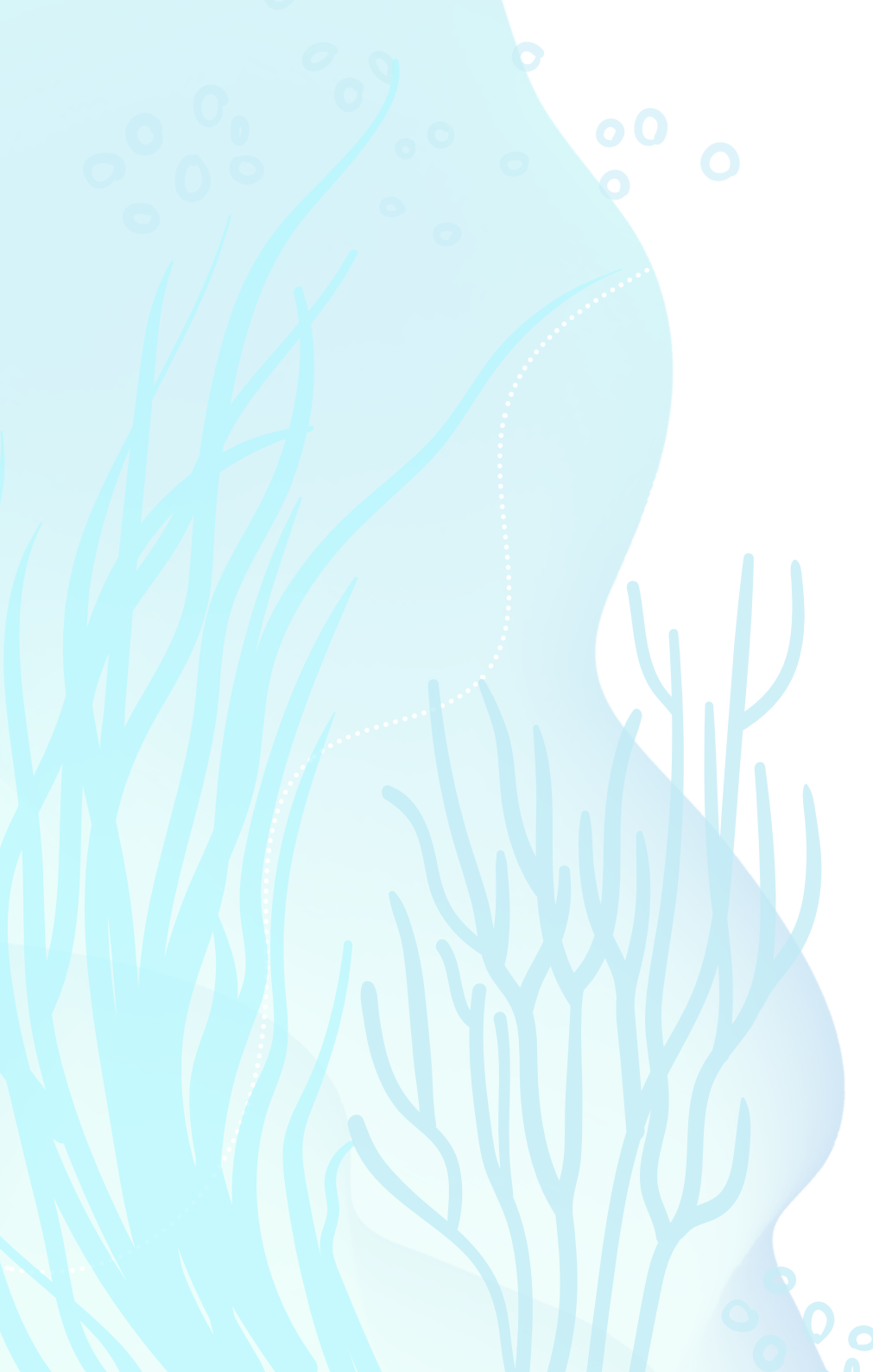
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ACKNOWLEDGEMENT OF COUNTRY

We acknowledge the Traditional Owners of the Great Barrier Reef and its Catchments and their enduring connection to Land and Sea Country.

We pay our respects to them and their cultures and to their elders both past and present, recognising their deep and profound knowledge of Reef Country's native plants and animals.

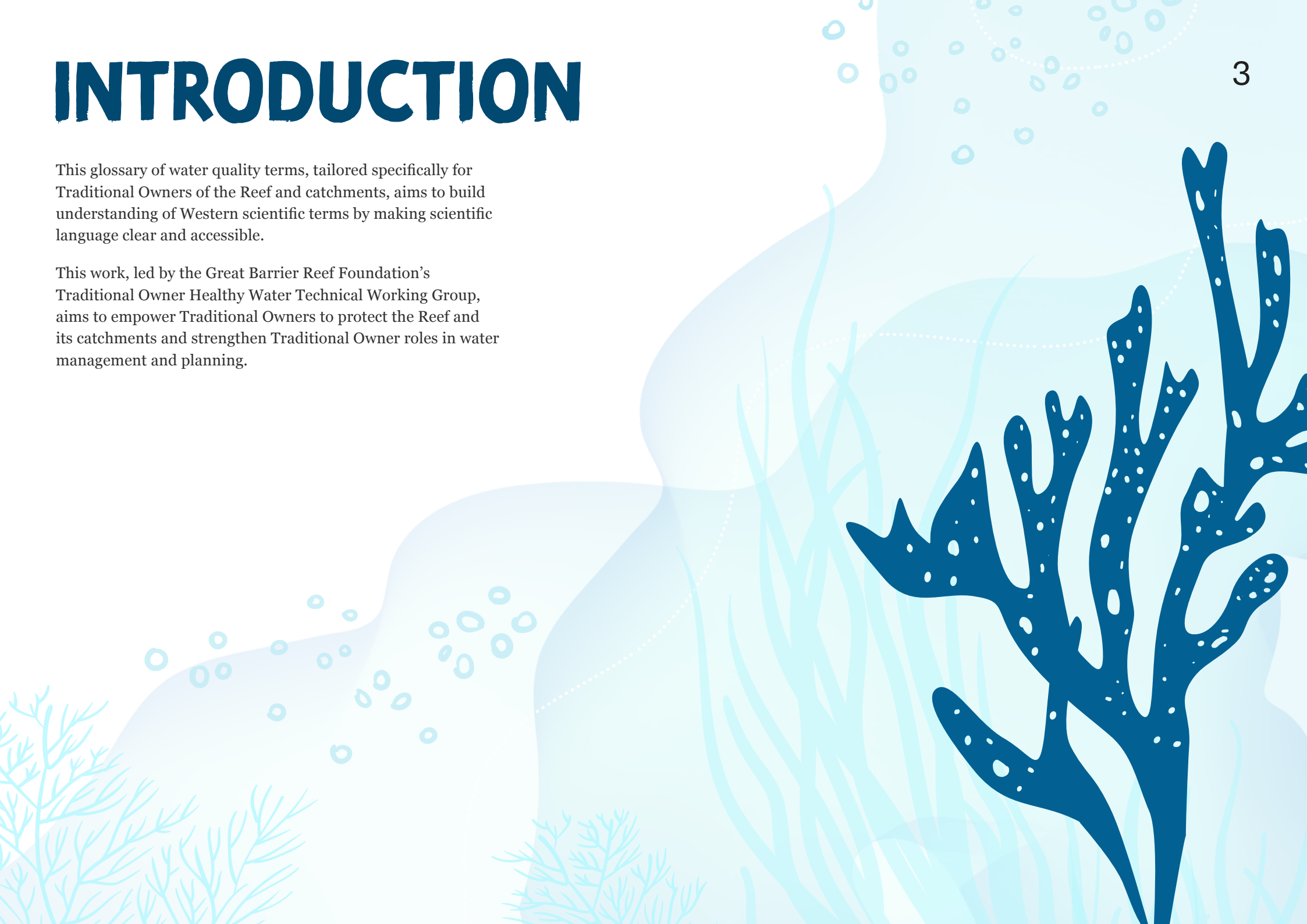
Their custodianship has nurtured and sustained these ecosystems for millennia, guided by Indigenous science, cultural practices and a profound understanding of the natural world.

We are committed to supporting the Traditional Owners in their ongoing stewardship and to working together to protect and sustain the Great Barrier Reef and its Catchments for future generations.

INTRODUCTION

This glossary of water quality terms, tailored specifically for Traditional Owners of the Reef and catchments, aims to build understanding of Western scientific terms by making scientific language clear and accessible.

This work, led by the Great Barrier Reef Foundation's Traditional Owner Healthy Water Technical Working Group, aims to empower Traditional Owners to protect the Reef and its catchments and strengthen Traditional Owner roles in water management and planning.



HOW TO USE THE HEALTHY WATER GLOSSARY

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Six key themes have been identified to capture the glossary terms through an Indigenous lens.



Each theme includes a selection of terms that show the water science term alongside its definition, developed from a holistic perspective.

Each theme begins with a cultural introduction, honouring the strong and lasting connection Traditional Owners have with the Great Barrier Reef and its catchments.

HEALTHY WATER, HEALTHY COUNTRY

Healthy Water, Healthy Country means looking after water to take care of Country. Water in all its forms—flowing in rivers, stored underground, or in oceans and lakes—keeps plants, animals, and nature strong. Everything in nature works together, from the smallest creatures to the biggest rivers and lakes. For Traditional Owners, this is about working together to protect and care for Country, ensuring it stays healthy for everyone and everything.



1 HEALTHY WATER, HEALTHY COUNTRY

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Environmental Flows

Environmental flows is the amount of water needed to keep rivers, wetlands, and other parts of Country healthy. This water helps support the plants, animals, and ecosystems that rely on it to grow and live.

Freshwater

Freshwater is water that doesn't contain salt. It can be found in some rivers, creeks, lakes, wetlands, and groundwater. It's important for drinking, growing food, and supporting fish, animals, and plants.

Brackish Water

Brackish water is a mix of fresh water (like from rivers or creeks) and salt water (like from the ocean). Brackish water can be found in places like coastal wetlands, mangrove areas, and estuaries, where rivers meet the sea. These areas help keep the nearby waters, like those around the Great Barrier Reef, healthy by filtering out dirt and protecting the reef's plants and animals.

Biodiversity

Biodiversity means having many different plants and animals living together. This is important for water health because ecosystems, like the Great Barrier Reef, need coral, seagrasses, and fish, all working together to keep the water clean and balanced.

Ecosystem

The Great Barrier Reef ecosystem is like a living community, where everything is connected; seagrass, fish, coral, the sun, water, and air. From the smallest fish to the largest coral structures, each part plays a role in keeping the reef healthy and balanced.

Groundwater

Groundwater is fresh water stored below the earth's surface in spaces between rocks and soil. It slowly moves underground and can be reached by wells or natural springs. Groundwater helps keep rivers, plants, and animals healthy, especially in dry times.

Microorganism / Microbes

A microorganism is a tiny living thing that is too small to see without a microscope. Even though they are small, microorganisms are important because they help break down things in the environment, like dead plants and animals, and keep Country and water healthy.



LANDSCAPE FEATURES

Landscape Features are living, breathing parts of Country and are important for life, food, water and shelter for plants, animals, and people. Culturally, landscape features can be sacred places that hold stories, songlines and deep knowledge passed down through generations. They are also places of connection – between land, water, people and Country – and protecting these places honours ancestors while keeping them healthy for future generations.



2 LANDSCAPE FEATURES

Riparian Zone

A riparian zone is the land next to rivers, creeks, and other waterways. It's where the water meets the land, creating a place for plants and animals to grow and live. These areas help keep the water clean, stop the land from washing away, and provide a home for fish and other wildlife.

Wetlands

Wetlands are areas of land that are covered in water, either all the time or some of the time. Wetlands are like the kidneys of the land, acting as natural filters. They clean and store water, remove pollutants, and help control flooding. Wetlands are also rich in biodiversity, providing homes for many animals and plants.

Tributary

A tributary is a smaller river or stream that flows into a bigger river or waterway. It brings water, nutrients, and life to the main river, supporting plants, animals, and ecosystems along the way.

Estuary

An estuary is a sheltered body of water where fresh water from rivers or creeks meets and mixes with saltwater from the sea. Estuaries are important for many plants, animals, and fish that rely on these areas for a safe place to grow and live.

Aquifer

An aquifer is an underground layer of rock or sand that holds water. This water flows slowly through the ground and can be found above ground in wells or natural springs. Aquifers are important sources of fresh water for drinking and for keeping rivers and plants alive, especially in dry parts of Country.

Floodplain

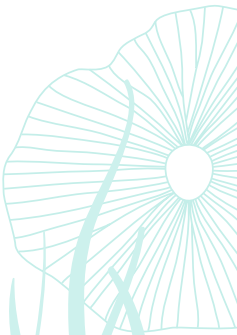
A floodplain is the flat land next to a river that sometimes floods when the river rises. Floodplains are rich in nutrients, making them great places for plants and animals to grow and live. They also help to filter floodwaters and keep the river healthy.

Catchment Area

A catchment area refers to the land or area where all the water drains into a river, creek, or waterway. It's like a natural "drainage basin" where rainwater flows into the same body of water. It's important for water health because it helps carry nutrients and water to the ocean, keeping it alive and healthy.

Water Table

The water table is below the ground where the soil or rock is completely filled with water. It's like the boundary between the dry ground and the underground water. It's important for water health because it helps supply fresh water to rivers, lakes, and springs.



WHAT CAN MAKE COUNTRY SICK

What can make Country sick are things that put Country out of balance and make it sick. Things like algal blooms, erosion, and cyanobacteria show that the water systems, both above and underground, are struggling. These problems happen when the natural flow of water is changed, when the land is overused, or when pollution harms the plants, animals, and waterways. Sick water means the loss of important cultural sites, food sources, and stories tied to these places. Keeping Country healthy means caring for the water, land, and all living things, as our ancestors have done for thousands of generations.



3 WHAT CAN MAKE COUNTRY SICK

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Sediment

Sediment is made of tiny pieces of rock, soil, sand, and other materials that are carried by water and wind, and settle in one place. You might find sediment at the bottom of rivers, lakes, or oceans. When there's too much sediment, it can cloud the water, blocking sunlight and making it hard for plants, fish and animals to live.

Eutrophication

Eutrophication is when a body of water, like a river or lake, becomes too rich in nutrients, especially from things like fertiliser, waste, or run-off from land. These extra nutrients cause plants, like algae, to grow too much, which take more oxygen from the water, making it harder for fish and other animals to live, and can cause fish kill. It can also make the water unhealthy for people and the environment.

Cyanobacteria

Cyanobacteria are tiny, bacteria-like organisms that can live in water. They are also called blue-green algae because they often look blue or green. While they can be natural and helpful in small amounts, sometimes they grow too much, especially when there are too many nutrients in the water. When this happens, cyanobacteria can produce harmful poisons that make the water unsafe for animals and people.

Algal Bloom

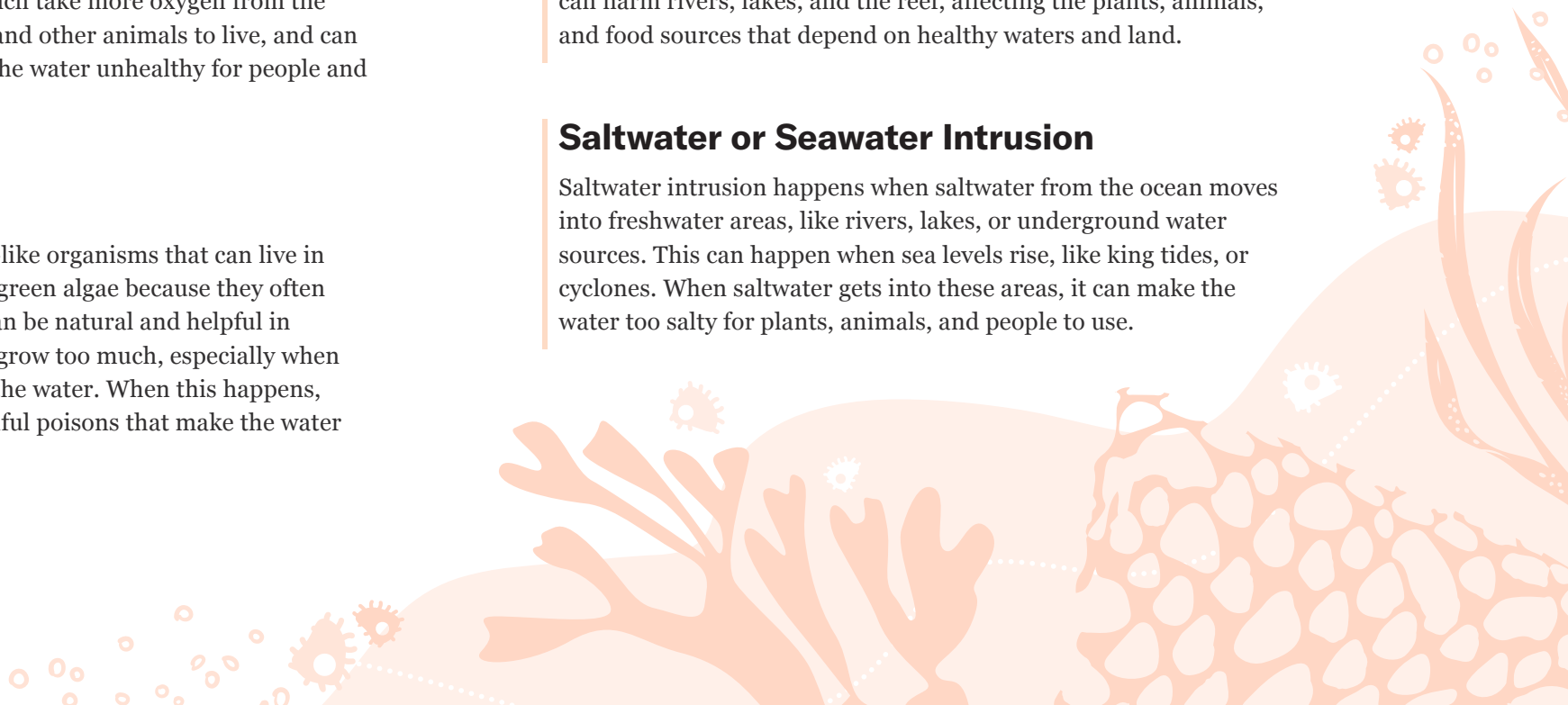
An algal bloom is when tiny plants called algae grow very quickly in water, mostly from too much nutrient pollution like fertiliser or waste. The algae can turn the water green, brown, or even red. While algae are a natural part of the water, when they grow too much, it can make the water unhealthy, taking more oxygen and harming fish and other creatures.

Erosion

Erosion happens when wind or water wears away the land, washing away soil and rocks into the water. This can make the water dirty and damage Country. Erosion is a problem because it can harm rivers, lakes, and the reef, affecting the plants, animals, and food sources that depend on healthy waters and land.

Saltwater or Seawater Intrusion

Saltwater intrusion happens when saltwater from the ocean moves into freshwater areas, like rivers, lakes, or underground water sources. This can happen when sea levels rise, like king tides, or cyclones. When saltwater gets into these areas, it can make the water too salty for plants, animals, and people to use.



3 WHAT CAN MAKE COUNTRY SICK *cont'd*

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Dissolved Inorganic Nitrogen

Dissolved inorganic nitrogen (DIN) is a type of nitrogen found in the environment that doesn't come from living things. It's often found in water or soil and comes from things like rain, rocks, or human activities, such as farming. While nitrogen is important for plant growth, too much of it can harm the environment, making water unhealthy for animals and plants.

Ocean Acidification

Ocean acidification is when the ocean becomes more acidic because it absorbs too much carbon dioxide from the air. This happens mainly because of human activities like running cars, making electricity, or powering factories. The increased acidity can harm fish, plants and animals in the sea.

Coral Bleaching

Corals depend on tiny animals (zooxanthellae) inside them that need sunlight to survive, but when the water gets too hot, the corals push these animals out. This causes the corals to lose their colour, become unhealthy, and sometimes die.

Pollution

Pollution is when harmful things, like chemicals or waste, are put into the air, water, or land, through human activity. This will damage the environment, and all the things that depend on healthy water and healthy Country to grow and live.

Ammonia

Ammonia is a chemical that is found in nature and can also be made by human activities. It's found in water, air, and soil and can come from things like animal waste or fertilisers. While small amounts of ammonia are natural, too much of it can harm the environment and make water unhealthy for animals and plants.



3 WHAT CAN MAKE COUNTRY SICK *cont'd*

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Nutrient Runoff

Nutrient runoff happens when rain or water carries nutrients, like those from fertilisers or animal waste, from the land into rivers, lakes, or oceans. These nutrients can harm the water and ecosystems, causing problems like algae growth that can suffocate fish and harm other animals.

Stormwater

Stormwater is the rainwater that flows over the ground during a storm. It can pick up dirt, rubbish, and other things as it moves, and often flows into drains, rivers, or oceans. If not managed properly, it can cause pollution and damage to the environment.

Wastewater

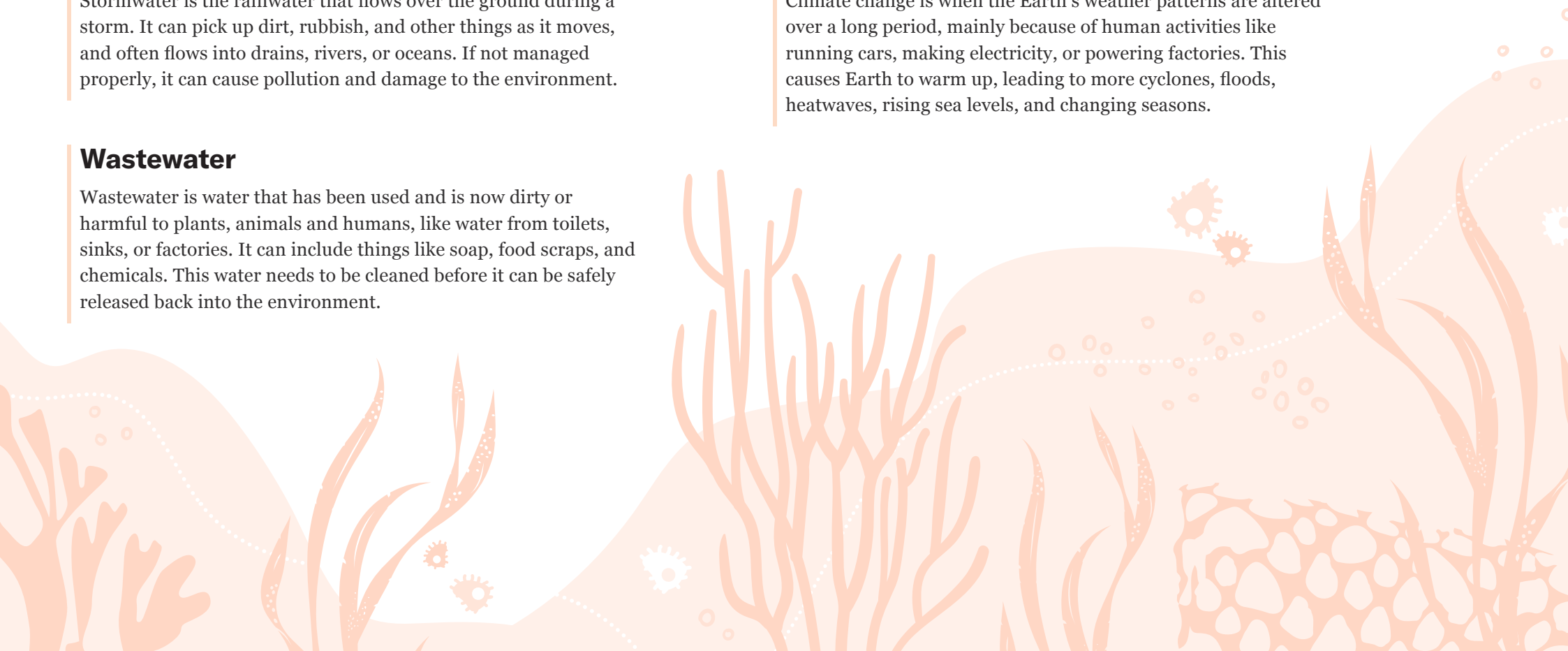
Wastewater is water that has been used and is now dirty or harmful to plants, animals and humans, like water from toilets, sinks, or factories. It can include things like soap, food scraps, and chemicals. This water needs to be cleaned before it can be safely released back into the environment.

Acid sulfate soils

Acid sulfate soils are types of soils that can be found in places like wetlands, swamps, or coastal areas. When these soils are disturbed, like by draining or digging, they can release sulfuric acid, which makes the water very acidic and harmful to plants, animals, and the environment.

Climate Change

Climate change is when the Earth's weather patterns are altered over a long period, mainly because of human activities like running cars, making electricity, or powering factories. This causes Earth to warm up, leading to more cyclones, floods, heatwaves, rising sea levels, and changing seasons.



THINGS THAT ARE MEASURED FOR WATER HEALTH

Things that are measured for water health means things like pH, water quality, nitrogen, and salinity that help us understand how healthy Country is. These indicators tell us if the water is balanced and safe for plants, animals, and people. If the pH is off, nitrogen is too high, or salinity increases, it can mean the water is stressed, and the ecosystems it supports are under pressure. For us, these measures align with our deep knowledge of listening to Country, watching how the water flows, how the plants grow, and how the animals behave. Healthy water means healthy Country, and it is our responsibility to protect it for future generations.



4 THINGS THAT ARE MEASURED FOR WATER HEALTH

Indicator

An indicator is a sign or measure that tells us about the health of something, like the land, water, or environment. For example, if fish or plants are healthy, it can indicate that the water is clean.

Biological parameters

Biological parameters are measurements that tell us about living things in the environment, like plants, animals, and tiny micro organisms. They help us understand the health of ecosystems, such as how many fish or insects are in a river, or if there are harmful bacteria in the water.

Physico-Chemical parameters

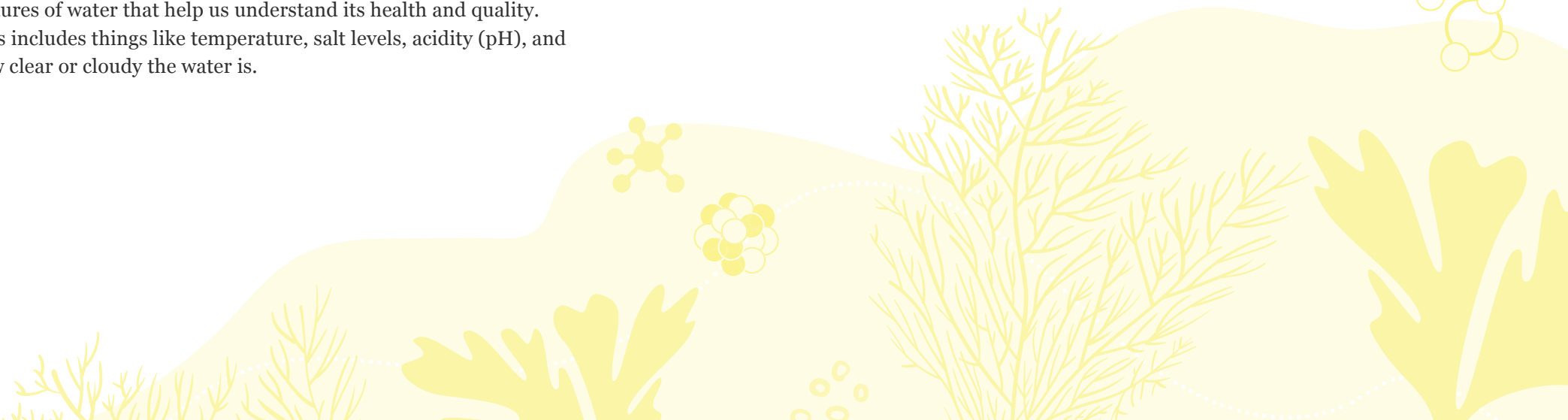
Physico-chemical parameters are the physical and chemical features of water that help us understand its health and quality. This includes things like temperature, salt levels, acidity (pH), and how clear or cloudy the water is.

pH

pH is a way of measuring how neutral, acidic or alkaline water is. If the water is close to pH7, it means the water is neutral and balanced and plants, animals and ecosystems can live there. If the water is less than pH7, it means the water is acidic and this can be harmful to fish, plants and animals in the water. If the water is more than pH7 it means the water is alkaline and can also be harmful to fish, plants and animals in the water.

Water Quality

Water quality is how clean or healthy the water is. It involves checking for harmful chemicals, bacteria, or dirt, and if it's safe for drinking, swimming, or supporting plants and animals. Good water quality is important for the health of the environment and people.



4 THINGS THAT ARE MEASURED FOR WATER HEALTH *cont'd*

Chlorophyll a

Chlorophyll a is the green substance in plants and algae that helps them use sunlight to make food and energy to live. It's important for the health of plants in the water, like seaweed or tiny plankton, and tells us about the amount of plant life in a waterway or ocean.

Nitrogen

Nitrogen is a natural substance found in the air, soil, and water. It's important for plants and animals to grow, but too much nitrogen, often from things like fertilisers or waste, can harm the environment, like causing algae blooms in water that harm fish and other creatures. Together with phosphorous, nitrogen is known as nutrients for plants and animals.

Phosphorous

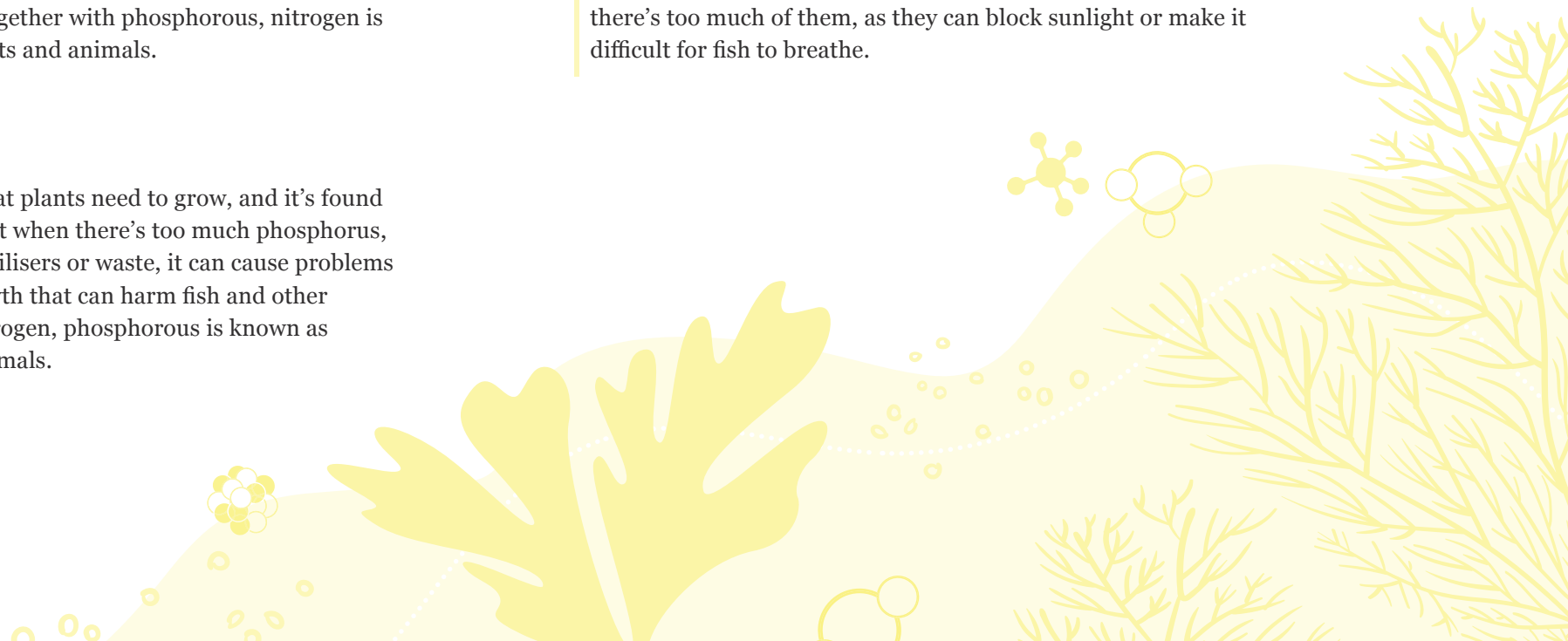
Phosphorus is a nutrient that plants need to grow, and it's found in soil, water, and rocks. But when there's too much phosphorus, usually from things like fertilisers or waste, it can cause problems in the water, like algae growth that can harm fish and other animals. Together with nitrogen, phosphorous is known as nutrients for plants and animals.

Salinity

Salinity is the amount of salt in water or soil. Water with high salinity, like seawater, is very salty, while freshwater has much less salt. Too much salt in water or soil can harm plants, animals, and the environment, making it harder for them to live in that water or land.

Total suspended solids

Total suspended solids are a measure of tiny bits of dirt, sand, or other materials that are floating in the water. These particles can make the water look cloudy and can harm plants and animals if there's too much of them, as they can block sunlight or make it difficult for fish to breathe.



4 THINGS THAT ARE MEASURED FOR WATER HEALTH *cont'd*

Turbidity

Turbidity is a measure of how clear or cloudy the water is. When the water has a lot of dirt, mud, or small particles in it, it becomes cloudy, and this reduces the light that can get through. High turbidity can make it harder for plants and animals in the water to grow and live.

Dissolved oxygen

Total dissolved oxygen is the amount of oxygen that's mixed into the water. Fish and other water animals need this oxygen to live. If there's not enough total dissolved oxygen in the water, it can harm the creatures living there and make the water unhealthy.

Electrical conductivity

Electrical conductivity is a measure of how well water can carry an electric current. It tells us how much salt and other dissolved substances are in the water. Higher conductivity means more salts and chemicals, which can affect the health of plants, animals, and the environment.

Coliform bacteria

Coliform bacteria are tiny germs that live in the gut of humans and animals. When they show up in water, it can mean the water has been contaminated by animal or human waste, which can make people sick. Testing for coliform bacteria helps us know if water is safe to drink or swim in.



POLICY TERMS

For Traditional Owners, knowledge of **policy terms** helps us care for Country in today's world. These terms can sit alongside our cultural knowledge, helping us look after land and water for all life. Policy terms help us understand changes caused by people, reminding us of our responsibility to care for Country. They can guide us to see where impacts on land and water are happening and where our attention is needed. These terms also help set limits that protect the health of Country, supporting us to make decisions that keep everything in balance. Together, these policy terms and our ways of listening to and respecting Country guide us to act responsibly, ensuring its health and wellbeing for future generations.



Water Allocation

Water allocation is the way of deciding who gets to use water and how much they can use. This includes water for drinking, farming, fishing, and keeping the land healthy. It's about making sure that water is shared fairly and used in a way that respects both the needs of people and the environment.

Anthropogenic

Anthropogenic means things that are caused by human activity. For example, when people make changes to the land, water, or air, like pollution, mining or agriculture, these are anthropogenic changes because they are the result of human actions.

Guideline value

A guideline value for waters is a recommended standard that helps keep water clean and safe. It's based on scientific research to protect the environment, plants, animals, and people's health.

Environmental values

An environmental value is about what we think is important in the land, water, and nature around us. These things are important for our health, the well-being of animals and plants, our culture, and the way the environment works. Environmental values help us decide how to look after and protect our natural resources and ecosystems.

Point source

A point source is a place where pollution or waste is allowed to come from, like a factory, a pipe, or a waste outlet. It's where something harmful enters the environment in a clear, single spot, rather than spreading out over a large area.

Non-point source

A non-point source is when pollution or waste comes from many different places, rather than one single spot. For example, rain can wash chemicals from farms, roads, or cities into rivers or oceans, spreading pollution over a wide area instead of just one place.



5 **POLICY TERMS** *cont'd*

Catchment Management

Catchment management is the way we look after the land and water in a particular area, like a river or lake, to make sure they stay healthy. It involves managing things like the flow of water, protecting plants and animals, and preventing pollution.

High ecological value waters

High ecological value waters means rivers, lakes, and wetlands that are in very good condition because they support healthy ecosystems, plants, and animals. These waters are especially important because they help keep the environment strong and provide clean water for wildlife, culture, and the community.

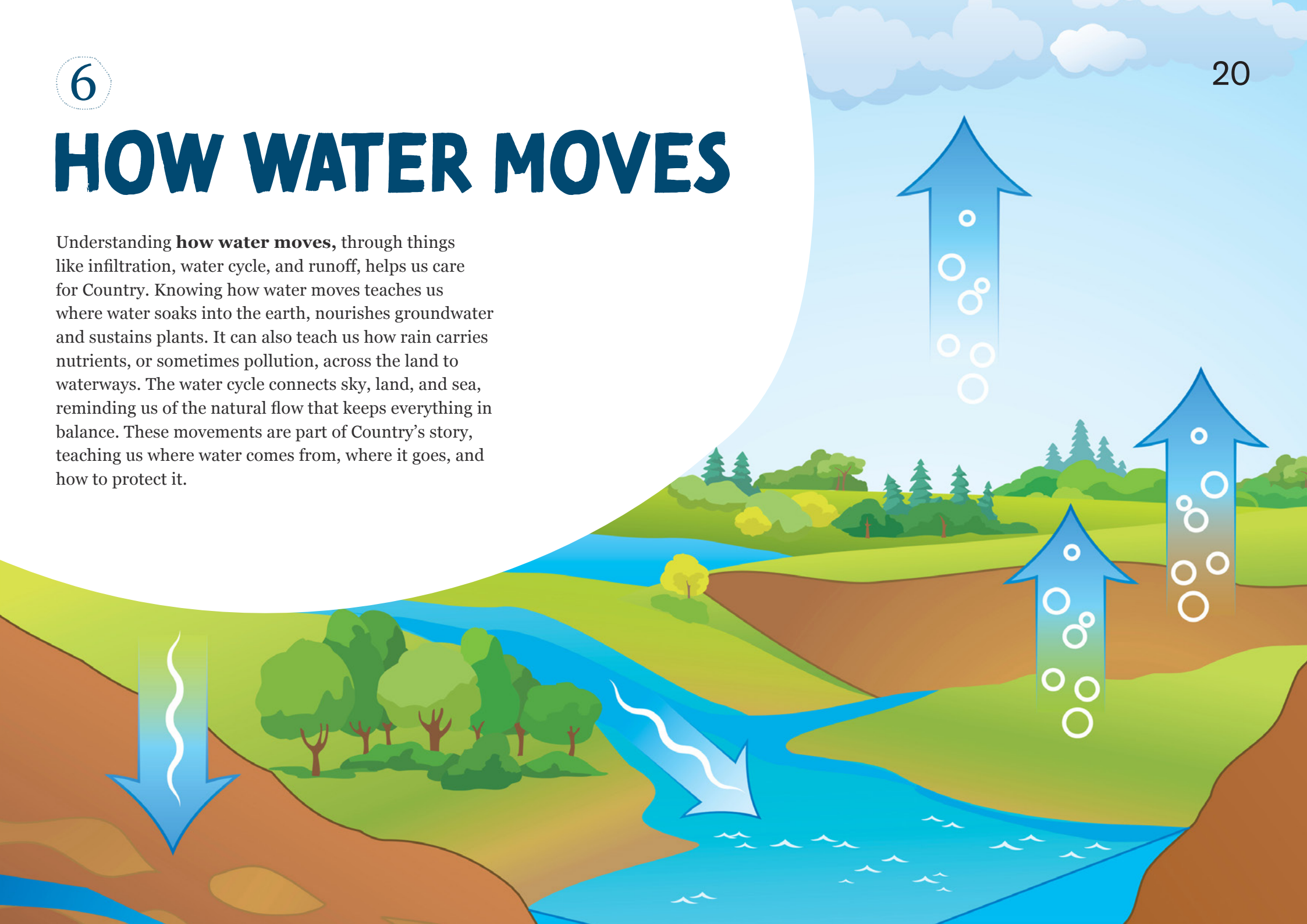
Highly disturbed waters

Highly disturbed waters means rivers, lakes, or wetlands that have been damaged or polluted, often due to things like development, farming, or industry. These waters may have poor water quality and might not support as many plants or animals as they should.



HOW WATER MOVES

Understanding **how water moves**, through things like infiltration, water cycle, and runoff, helps us care for Country. Knowing how water moves teaches us where water soaks into the earth, nourishes groundwater and sustains plants. It can also teach us how rain carries nutrients, or sometimes pollution, across the land to waterways. The water cycle connects sky, land, and sea, reminding us of the natural flow that keeps everything in balance. These movements are part of Country's story, teaching us where water comes from, where it goes, and how to protect it.



6 HOW WATER MOVES

Runoff

Runoff is the water that flows over the land when it rains, instead of soaking into the ground. It can carry dirt, chemicals, and other things from the land into rivers, lakes, or oceans, which can affect the health of the water and the animals living in it.

Hydrology

Hydrology is the study of water—where it comes from, how it moves through the land, and where it goes. It looks at things like rivers, lakes, and rainfall, and how water affects the environment.

Water Cycle

The water cycle is the way water moves around the Earth. It starts when water from rivers, lakes, or oceans evaporates into the air, forms clouds, and then falls back down as rain. The rain flows into the land, filling rivers and lakes, and the cycle begins again.

Evapotranspiration

Evapotranspiration is the process where plants take water in from the soil through their roots and release it as water vapor (gas) through their leaves into the air. This helps plants stay healthy and is also part of the water cycle.

Ephemeral Streams

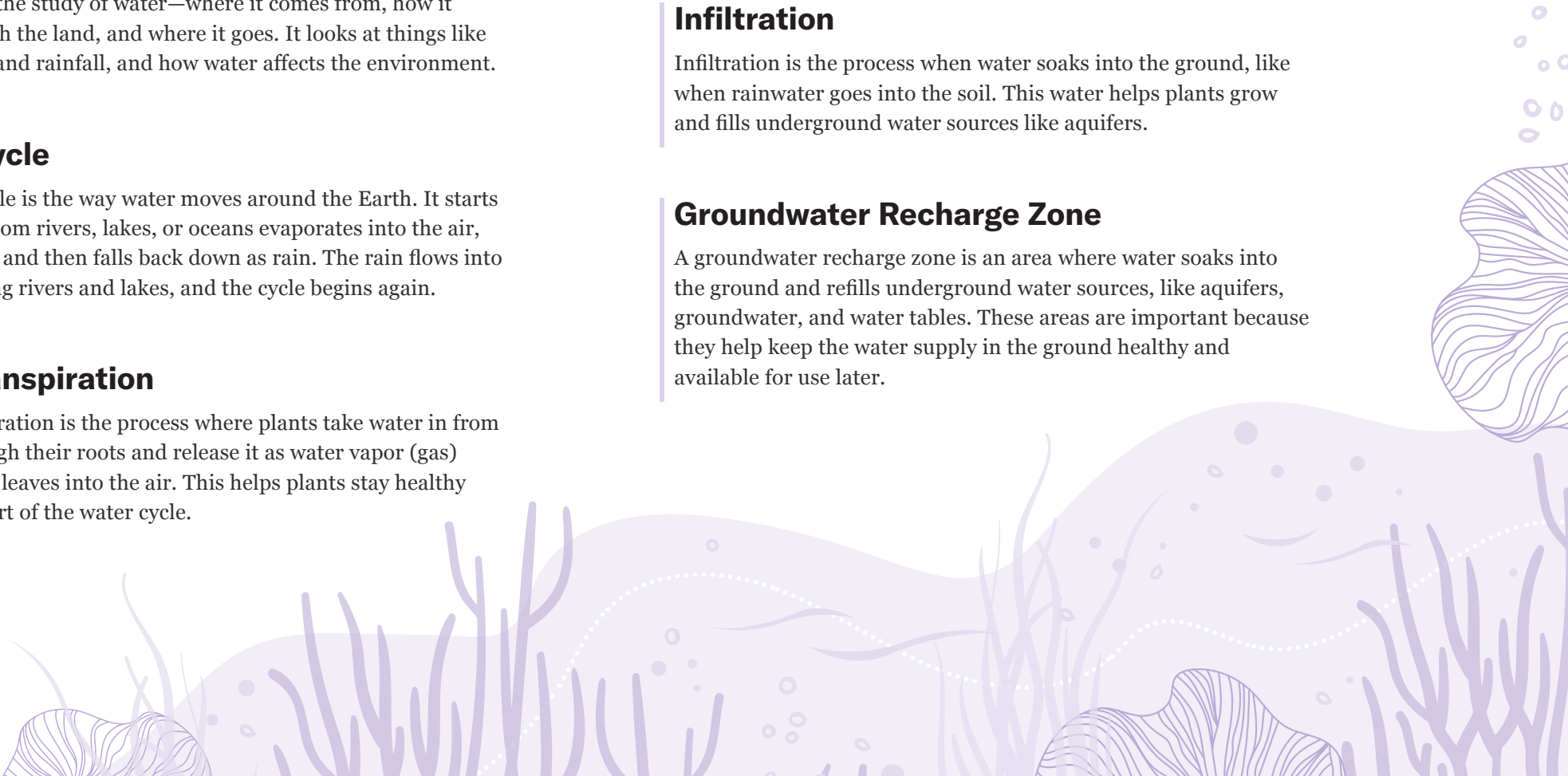
Ephemeral streams, means a water source that only lasts for a short time. An ephemeral stream is important for healthy water because it provides water when plants, animals, and people need it most, especially after wet weather times. These short bursts of water also help recharge underground water systems, keeping Country healthy and balanced.

Infiltration

Infiltration is the process when water soaks into the ground, like when rainwater goes into the soil. This water helps plants grow and fills underground water sources like aquifers.

Groundwater Recharge Zone

A groundwater recharge zone is an area where water soaks into the ground and refills underground water sources, like aquifers, groundwater, and water tables. These areas are important because they help keep the water supply in the ground healthy and available for use later.



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