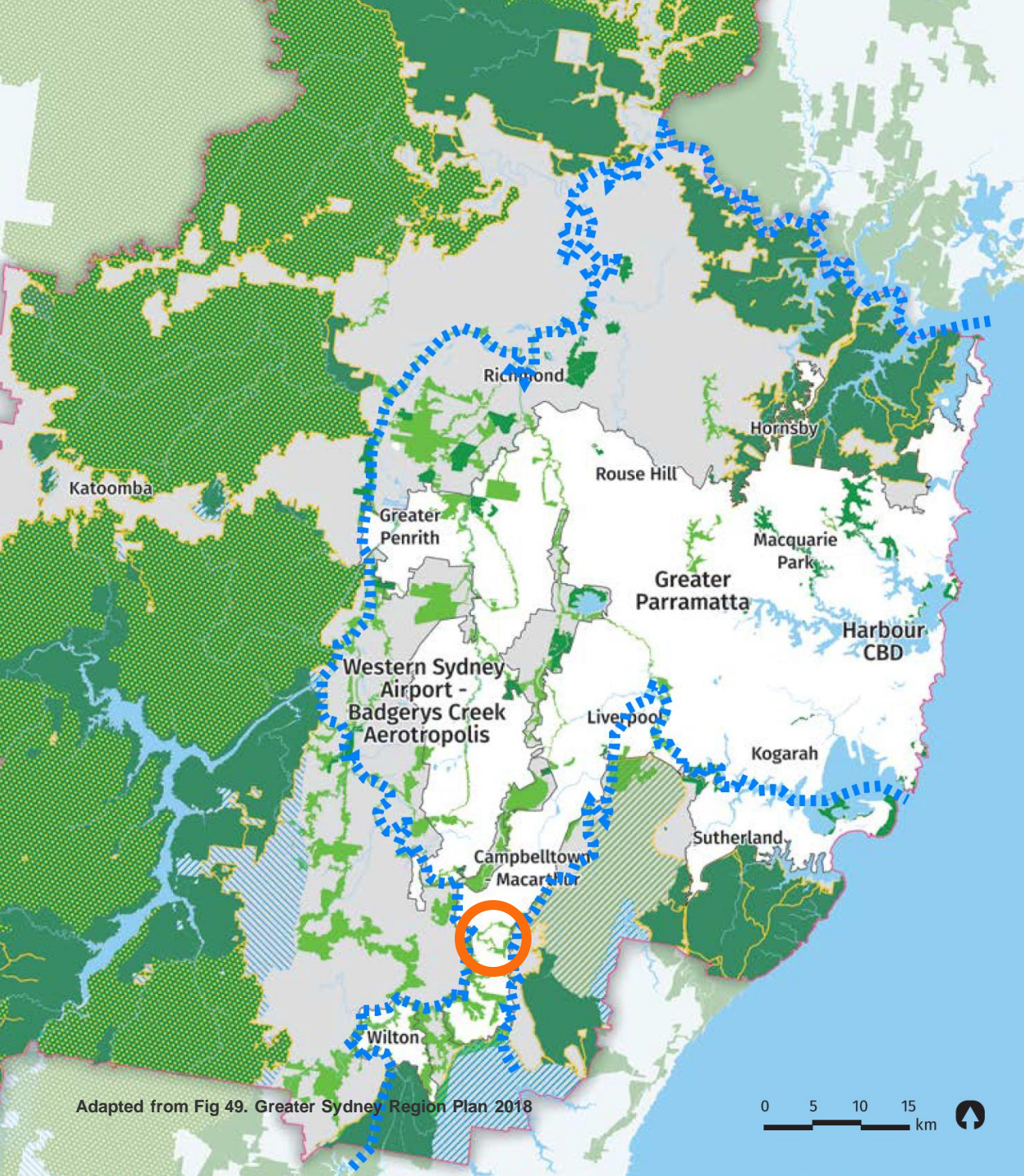


Koala Conservation at Gilead


NOVEMBER 2022





Lendlease acknowledges the Dharawal people as the traditional custodians of the project land and water.

We pay our respect to them and their Elders past and present. And we extend that respect to all First Nations people living in the Campbelltown-Macarthur area and beyond within the catchments of the Nepean and Georges Rivers.

This land  between two rivers is our meeting place.

This is Dharawal Country.

Adapted from Fig 49. Greater Sydney Region Plan 2018



Mount Gilead Estate

The Mount Gilead Estate is located in the southern part of the Campbelltown City Council local government area at Gilead. It comprises of three precincts.

Mount Gilead Homestead

The Mount Gilead Homestead was listed on the New South Wales State Heritage Register in 2020.

The privately owned 150-hectare historic property will be retained and protected in perpetuity with existing native bushland areas retained to provide wildlife connectivity.

Features of the estate include the historic homestead, tower mill and heritage dam.

Figtree Hill

The 216-hectare Figtree Hill precinct was approved for urban development in 2019 and earthworks commenced in 2022.

It will include 1,700 homes, parklands, conservation areas and community facilities.

Approvals under the Commonwealth Environment Protection Biodiversity Conservation Act (EPBC) and the NSW Biodiversity Certification Act (BCA) were granted in 2018 and 2019 respectively.

Gilead

The 495-hectare Gilead precinct is subject to planning approvals.

Nearly half of the Gilead precinct is proposed to be retained for environmental conservation.

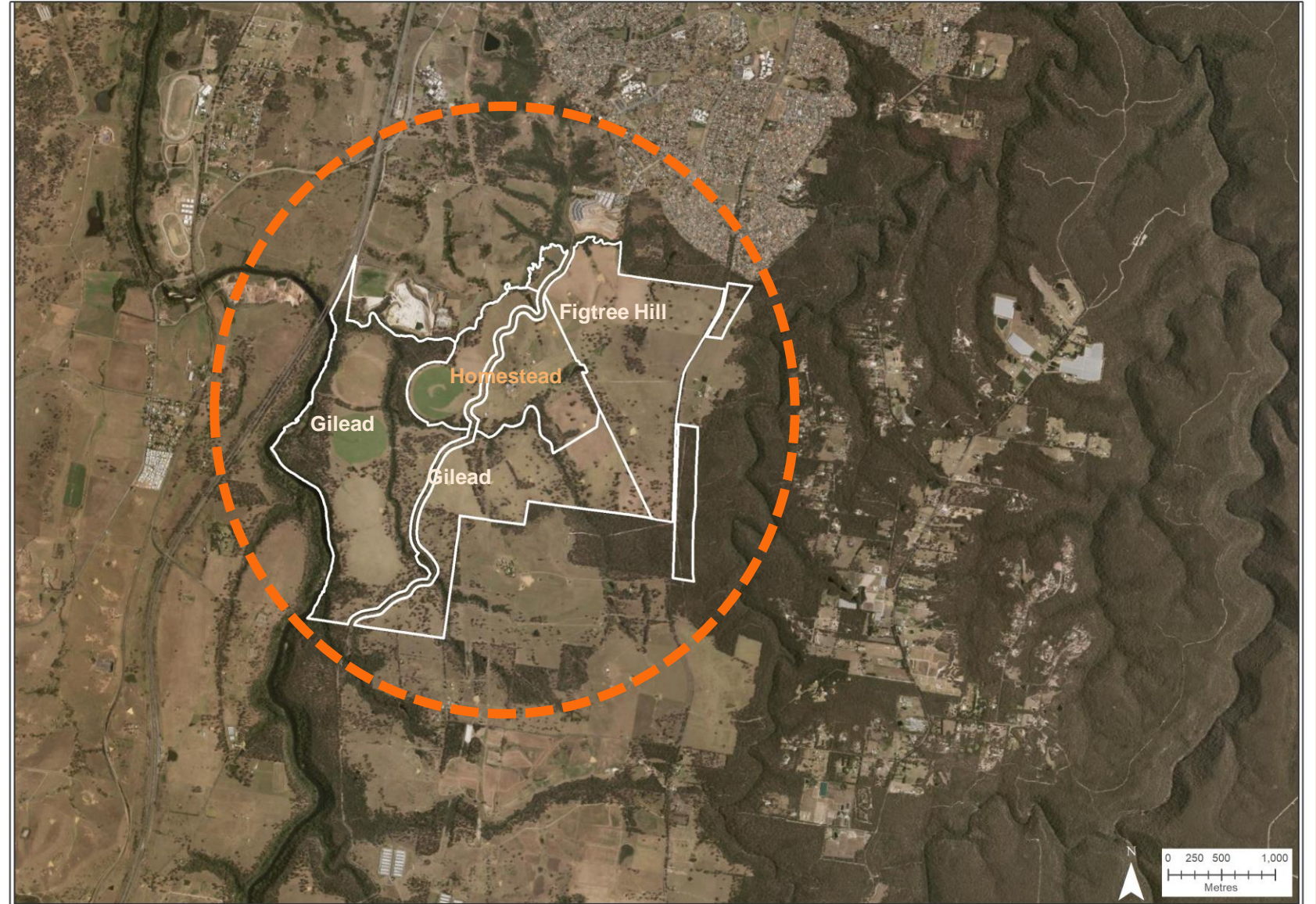
The remaining area is planned to be rezoned for urban development including 3,300 new homes, parks, schools and convenience shops.

An application for Biodiversity Certification and EPBC Act is in progress.

Location

The project is located in the suburb of Gilead within the Campbelltown local government area, south-west Sydney.

The Nepean River and Hume Highway is located west of the project, with Appin Road and the Georges River to the east.



History

Koalas evolve about 25 million years ago.

Dharawal Country



Australia's indigenous people arrive about 60,000 years ago.

Koalas are abundant when first described by Europeans in 1798.

1800

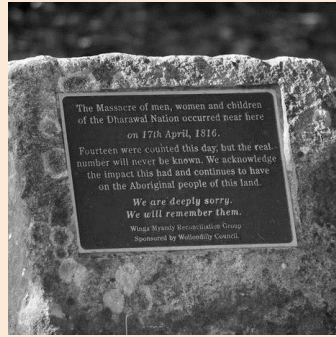


Reuben Uther granted 400 acres of land at Gilead in 1812 and clears 25% for farming over the next four years.

Governor Macquarie founds the town of Campbelltown in 1820.

As the new colony expands so began the loss of habitat.

1825



From 1812, open conflict is occurring throughout the region. The violence reaches a peak with the Appin massacre in 1816.

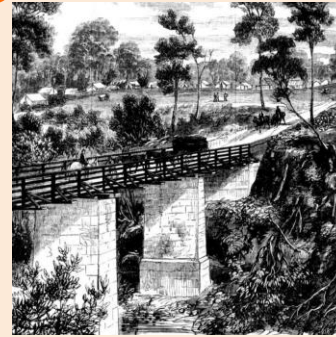
1850



New owner Thomas Rose renames the estate Mount Gilead in 1818.

He builds the colony's first dam and sandstone mill tower (c.1836).

1875



Edmund Hume Woodhouse acquires the property in 1864 to begin a dairy operation.

Construction starts on the Upper Canal in the 1890s to supply water to Sydney.

European settlers identify the koala as a source of fur to trade.

1900



History

Eight million koalas are killed for the international fur trade between 1888 - 1927.

1925



Local dignitaries visiting Gilead standing on top of the old windmill in 1912.

1950



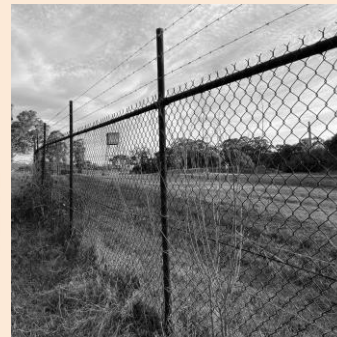
The Estate is bought by the Macarthur-Onslow family in 1941.

1975



Between 1956 and 2000 habitat on the Gilead Estate is estimated to have shrunk from 60% site cover to just 15%.

2000



The Upper Canal is fenced due to security concerns creating a barrier for wildlife movement.

Recent



The 150-hectare Homestead precinct is added to the State Heritage register in 2020.

Present



Koalas are listed as endangered in 2022.

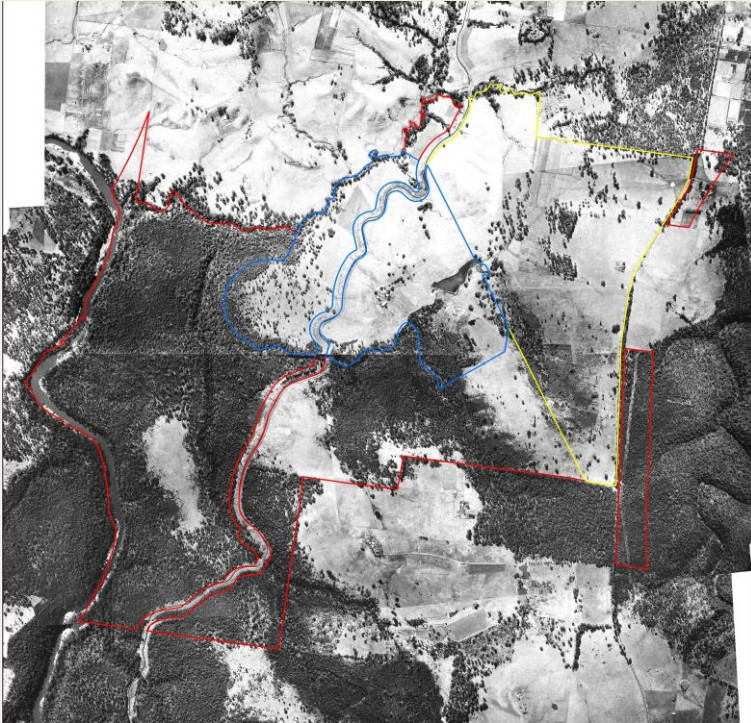
A population of 500 – 1000 koalas exist in Campbelltown.

Descendants of the Macarthur-Onslow family continue to own and manage the Homestead and farm.

Lendlease commences construction of the Figtree Hill project in 2022.

Loss of habitat

Continuous and progressive agricultural activities have occurred on the development site since the 1800s, which have led to the clearing of native vegetation across most of the site, other than along creek lines. Of the land to be protected by Lendlease for koala corridors approximately 30% will be completely restored habitat from what is bare paddock today.



1956



1984



2000

State of the Environment Report

The State of the Environment Report (2021) details the decline of Australia's biodiversity.

It shows that 7.7million hectares of threatened species habitat was cleared across the country between 2000 and 2017. That's an area bigger than Tasmania.

The State of the Environment Report calls for immediate action and investment to turn things around.

“Adequately resourced, innovative, responsive and collaborative management measures will foster investment and renewed action to turn things around.”

State of the Environment Report (2021)

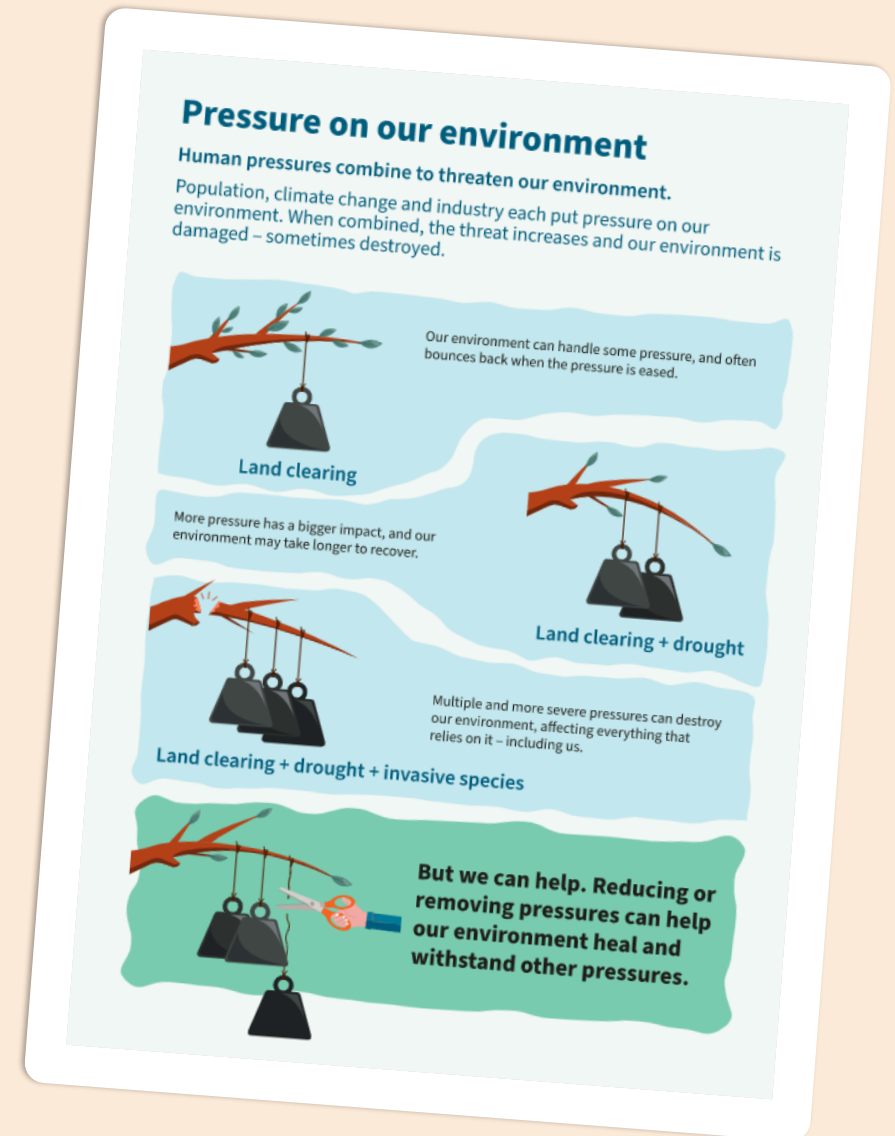
Lendlease responds to the call to action

Lendlease acknowledges that industry has an important part to play in working with government to repair environmental damage.

The project site has endured years of farming and continued land clearing that has impacted habitat and resulted in extensive erosion and loss of biodiversity.

Through significant investment in conservation the project has an ambitious plan to increase endangered habitat by 30% to what exists today.

The conservation work will help the local koala population that is now listed as vulnerable under national environment law.



A turning point for koala habitat at Gilead

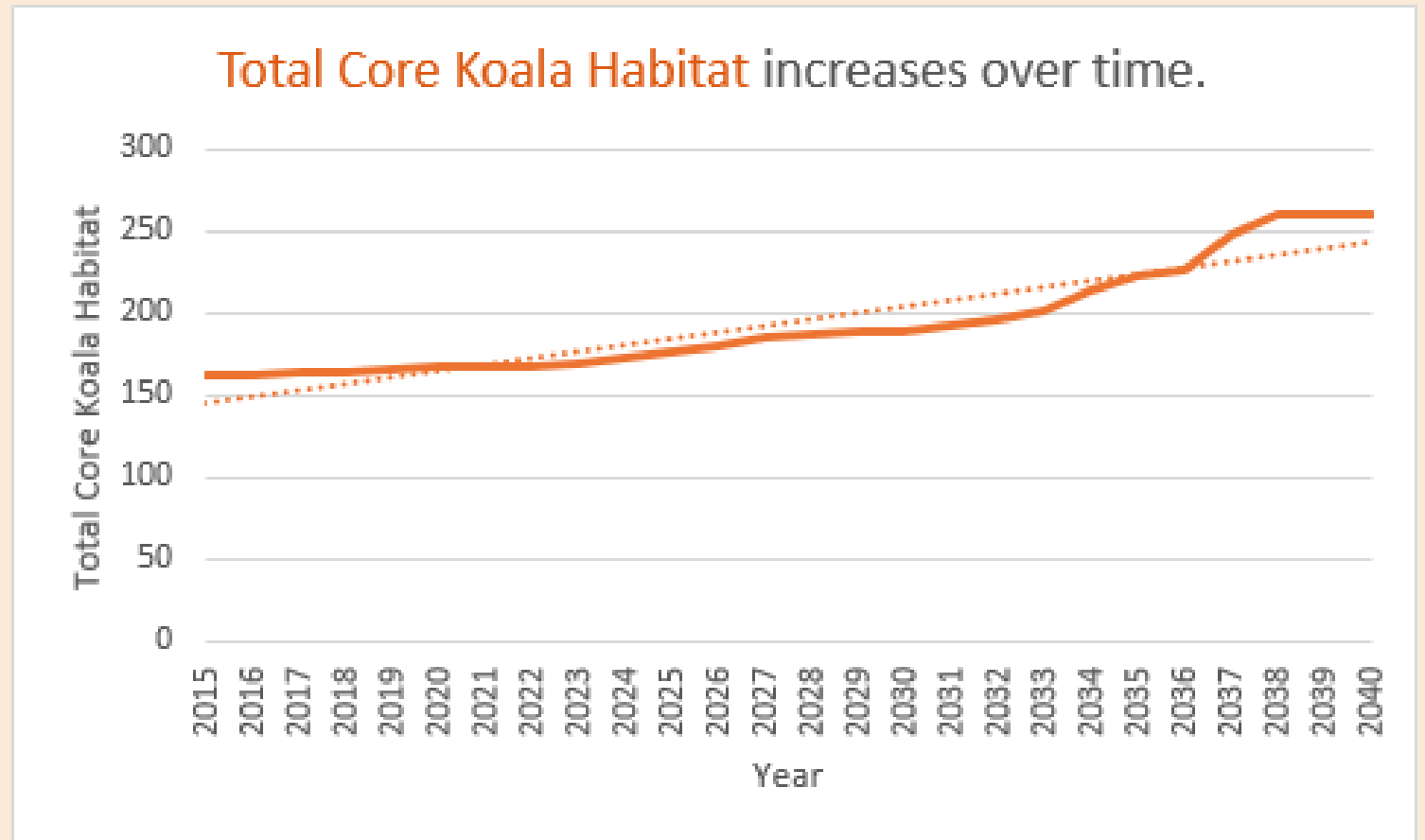
The Koala Conservation Plan will repair and protect over 280 hectares of habitat forever.

Lendlease commissioned Eco Logical Australia to undertake an assessment of the current koala carrying capacity of the Mount Gilead property to set a base line benchmark to assess a projected carrying capacity over time.

Dr Steven Ward, a recognised koala expert with considerable knowledge of the Campbelltown Koala population was independently commissioned to review the assumptions and data.

The assessment concluded that our conservation commitments have the potential to double the site's koala carrying capacity.

— Actual and Projected Core Koala Habitat
 Average rate of change



Campbelltown Koala Population

The expanding Campbelltown koala population is one of the most well studied in NSW.

The Campbelltown population is mapped in the Southern Highlands Areas of Regional Significance (ARKS) as part of the NSW Koala Strategy.

The northern sub-regional population (Campbelltown-Heathcote-Appin) covers approximately 51,000 hectares. A population of 500 – 1000 koalas currently exist and they are generally healthy and expanding their territory.

High numbers of observations have been associated with the Georges River corridor since the 1980s, and less frequent observations in areas of poorer quality habitat or modified habitat on rural land.

Estimates of the koala population vary but all generally correlate that koala density is higher where the quality of the habitat is also high.

Compared with other koala colonies the Campbelltown population are relatively low density averaging at just one per ten hectares of bushland.

As more research time is recorded and new technologies, especially thermal imaging by aerial drone improves the efficacy of research, more koalas are being observed and counted.

In recent years, healthy koala colonies have been recorded in the Sutherland Shire and around the army base at Holsworthy. These koalas share contiguous habitat with the Campbelltown – Wollondilly population.



Campbelltown is
KOALATOWN

It's not just about koalas . . .

Koalas are an iconic species but our biodiversity effort is focussed on ecological communities that host a wide range of species from platypus in the Nepean River to common species such as wallabies, gliders, echidnas and wombats.

Our conservation commitments are just as important for the protection and regeneration of Cumberland Plain Woodland (CPW) and Sandstone Shale Transition Forrest (SSTF) both endangered ecological communities which are fragmented across the site.

The conservation corridors will improve biodiversity and have a positive impact on local wildlife.

- Rehabilitation of riparian corridors and creation of wetland areas will provide improved conditions for aquatic animals.
- Landscaping of detention basins within the conservation corridors will help retain and treat water as it reaches the waterways. Providing a vital water source for wildlife inside the protective koala fencing.
- Installation of tree hollows will create more homes for bats and birdlife.
- Regeneration of the forest floor with logs and debris will create new habitats for pollinating insects and the Cumberland Plain land snail.
- Underpasses will provide connection for ground dwelling fauna.
- New ariel structures high above the road for arboreal creatures.



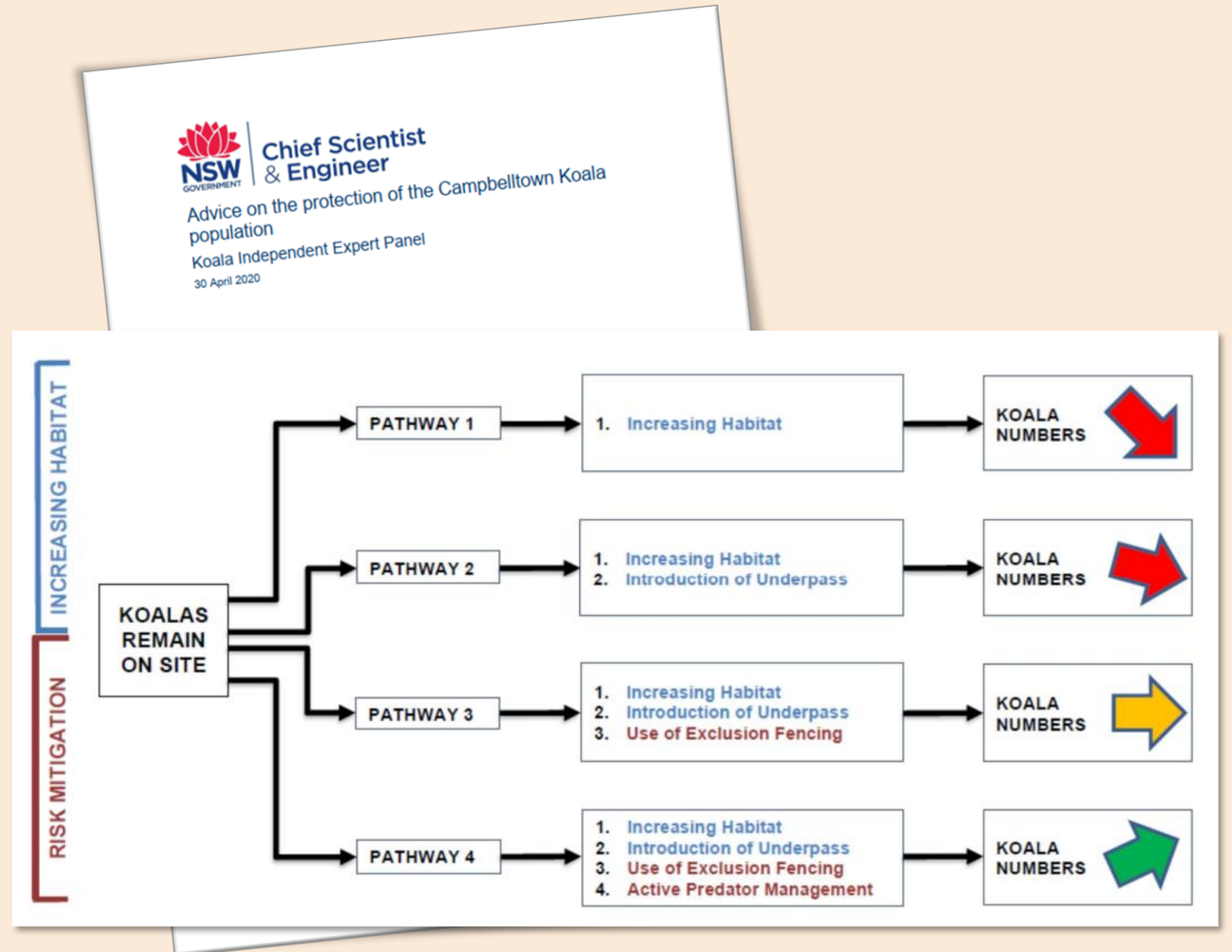
Koala Expert Advice

The Koala Conservation Plan follows the expert advice, provided by the NSW Chief Scientist & Engineer, to deliver the necessary environmental infrastructure and improved habitat to ensure that the local koala population thrives.

We are committed to **Pathway 4** which introduces risk mitigation and is the only way to grow koala numbers in the region.

Our plan will set a new benchmark for the industry and provide the necessary funding so we can take immediate action to start regenerating and reconnecting the bushland.

The do-nothing scenario does not present good prospects for local koalas.



Planning & Environment

In December 2021, the NSW Department of Planning & Environment adopts into official policy the Lendlease proposal to construct two fauna underpasses of Appin Road and re-connect two koala corridors at Gilead.

The Department has published an indicative map outlining the koala corridors at Gilead. View the map on their [website](#).

The Lendlease proposal is currently the only funded plan to deliver the necessary infrastructure and will be the catalyst for the implementation of the identified strategic biodiversity links at the regional scale of the Greater Macarthur.

Lendlease has progressed an application for approvals and preliminary documentation under the:

- NSW Biodiversity Certification Act (BCA)
- Commonwealth Environment Protection Biodiversity Conservation Act (EPBC)

These environmental approvals provide an additional layer of security and compliance for the delivery of the conservation outcomes over the Site.



Koala Conservation Plan

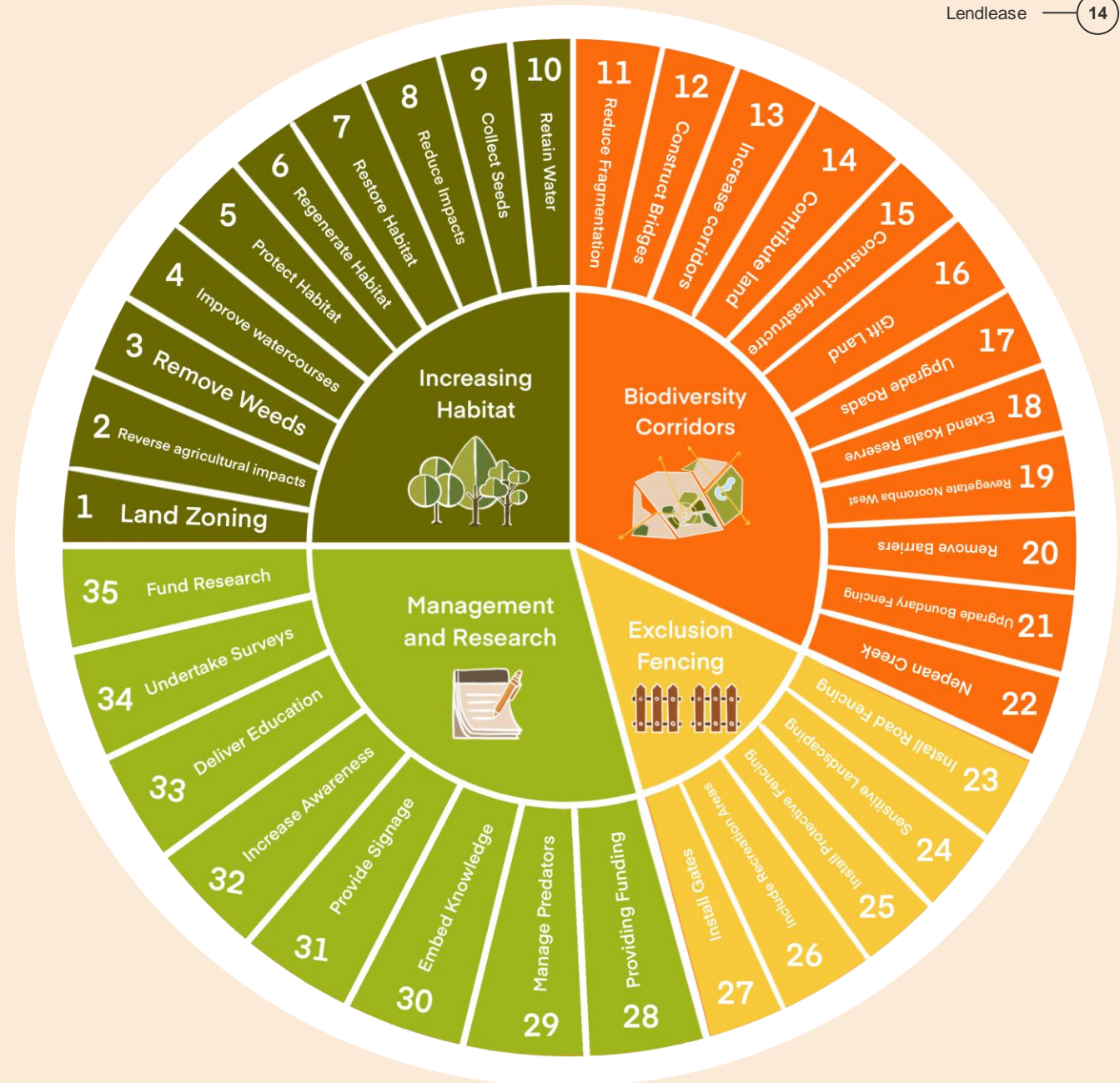
The Lendlease proposal includes 35 actions designed to increase habitat and mitigate risks so that local koalas can thrive. These actions were developed based on advice from the Office of the NSW Chief Scientist & Engineer (2020 and 2021).

Lendlease has committed \$35 million to deliver these conservation actions. It will include a 10-15 year regeneration program which will restore and protect the conservation areas forever.

Funding priorities

- Habitat restoration
- Biodiversity corridors
- Exclusion fencing
- Management and research

The following pages explain each of these actions, the intended effect and progress.



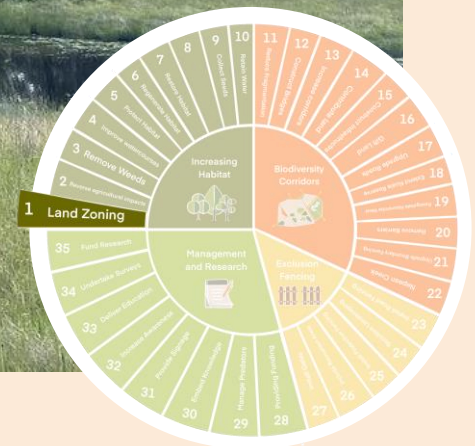
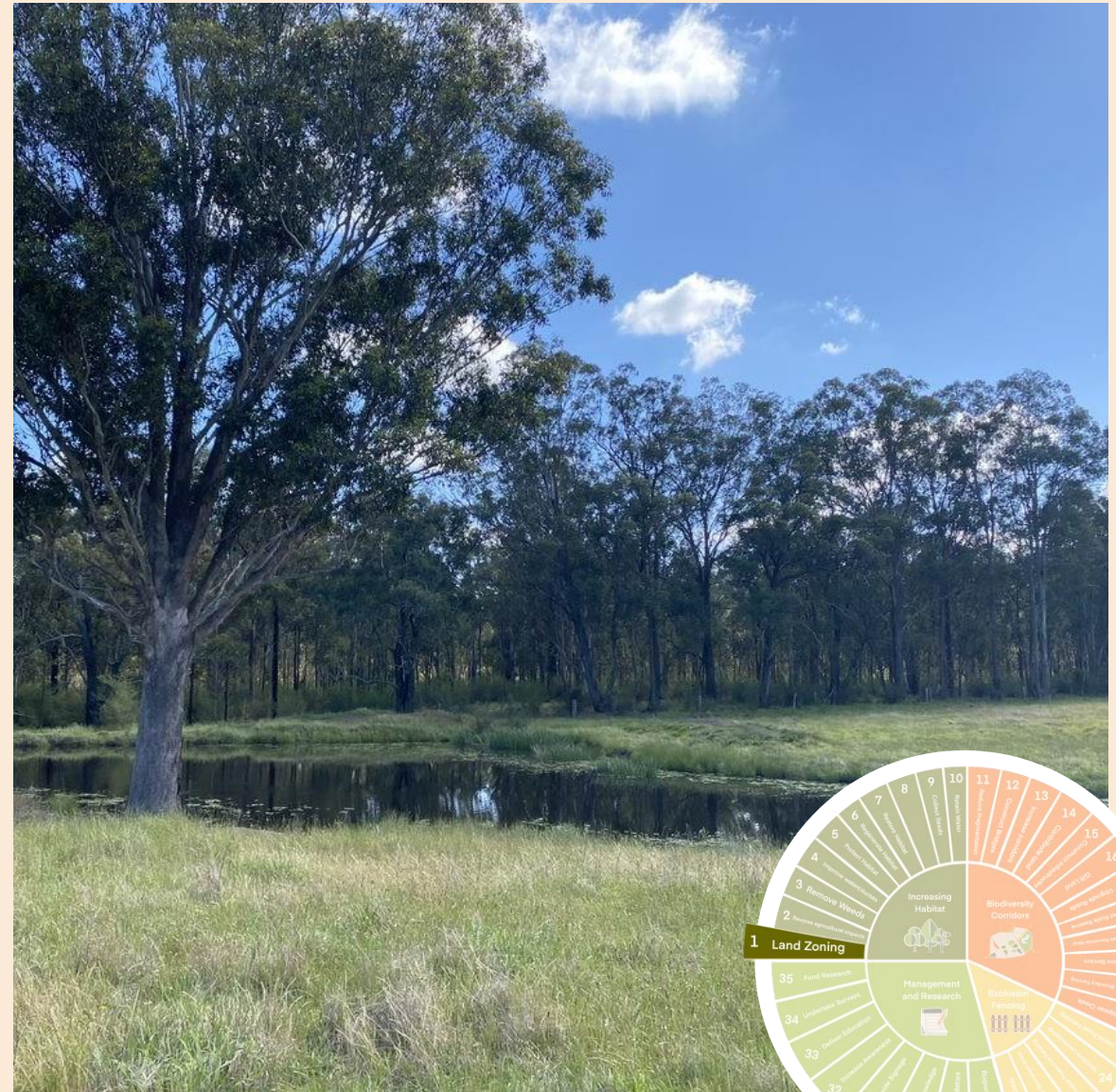
1. Set aside 280 hectares of land for biodiversity conservation

In the early planning stages Lendlease recognised that fragmented areas of Cumberland Plain Woodland and Sandstone Shale Transition Forrest (SSTF) were under threat and would continue to decline across the site.

Lendlease will regenerate 280 hectares of land to be rezoned and protected for environmental conservation. Under current NSW land clearing legislation, including the Koala State Environmental Planning Policy (SEPP), there is no real protection for koala habitat against agricultural practice.

Actions

- Dedicate 280 hectares of land for conservation to support the expanding Campbelltown koala population. This includes land across Gilead, the Homestead and Figtree Hill.
- Regenerate areas of native vegetation, not included in conservation corridors, that will be retained in areas of open space to protect endangered communities and support arboreal species such as bats, swift parrot and grey-headed flying fox.



2. Remove livestock and stop the negative impacts of farming

This conservation plan provides an opportunity to transition away from the continuation of native vegetation and habitat decline under multiple generations of rural management.

"The site contains remnant patches of native vegetation, heavily vegetated riparian corridors and gullies, and agricultural land that has a long history of disturbance associated with cattle grazing and horse agistments since the 1850's."

NSW Chief Scientist and Engineer, 2020

Actions

- At Figtree Hill, the fenced conservation areas are already showing signs of natural regeneration.
- Removing livestock access and the installing of fencing will help protect the conservation areas.
- Improving soil conditions, that have been altered by farming, will help the growth of native plants.
- While natural regeneration is expected in some areas once livestock is excluded, planting will also be required to achieve revegetation.



3. Remove exotic weeds

The conservation areas contain exotic grasses, vines and plants which have invaded and suppressed native plants and spread diseases and pests. In some areas they have permanently changed plant diversity.

The spread of weeds can have a significant impact on the quality of koala habitat and prevent the growth of koala food trees.

Bush regeneration will aim to reduce the impacts of exotic weeds through removal, ongoing management and monitoring.

This work has started with the removal of a substantial infestation of the invasive African Olive (*Olea europaea* subspecies *cuspidata*).

Actions

- Weed removal and management following best practices guidelines and techniques.
- Ongoing monitoring and adaptive management of weed species.
- Management of pests and disease caused by weeds.
- Investigation of traditional cultural burns and seed germination to help manage weeds.



4. Restore the natural watercourses

Several watercourses run through the site, flowing north into Menangle Creek and eventually the Nepean River.

Most of the watercourses within the project area have steep banks with both native and exotic vegetation.

The plan will regenerate the watercourses and sensitive urban design will minimise the impact of road crossings in these areas.

Actions

- A combination of weed removal, soil regeneration and planting will be used in the restoration of riparian areas.
- Creation and maintenance will be conducted by experienced bush regeneration contractors.
- Soil stabilisation will be required in some of the reaches as bank erosion is likely to be a risk particularly when weed vegetation is removed.



5. Protect high quality habitat

Protecting high quality koala habitat is important to provide food trees for the local koala population.

Extensive site area surveys have been undertaken by qualified and experienced ecologists to identify and map the presence of koala habitat across the site.

High quality habitat can be described as intact, good condition remnant woodland/ and forest. The site survey showed that this high quality habitat was largely restricted to the Nepean River corridor and other patches of vegetation that had been previously fenced from grazing pressures.

Actions

- Protect 124 hectares of existing high koala habitat that is fragmented across the project site.



6. Regenerate and repair remnant vegetation

The repair and reconstruction of habitat will help increase quality and reconnect sections that are currently fragmented across the site.

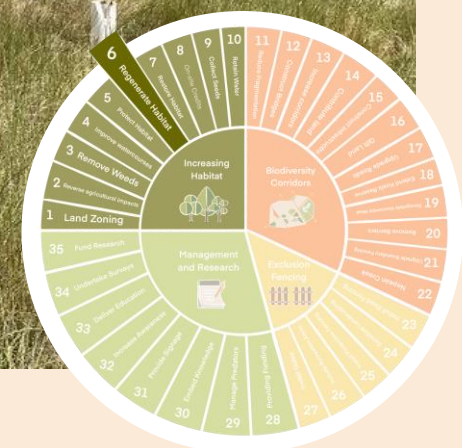
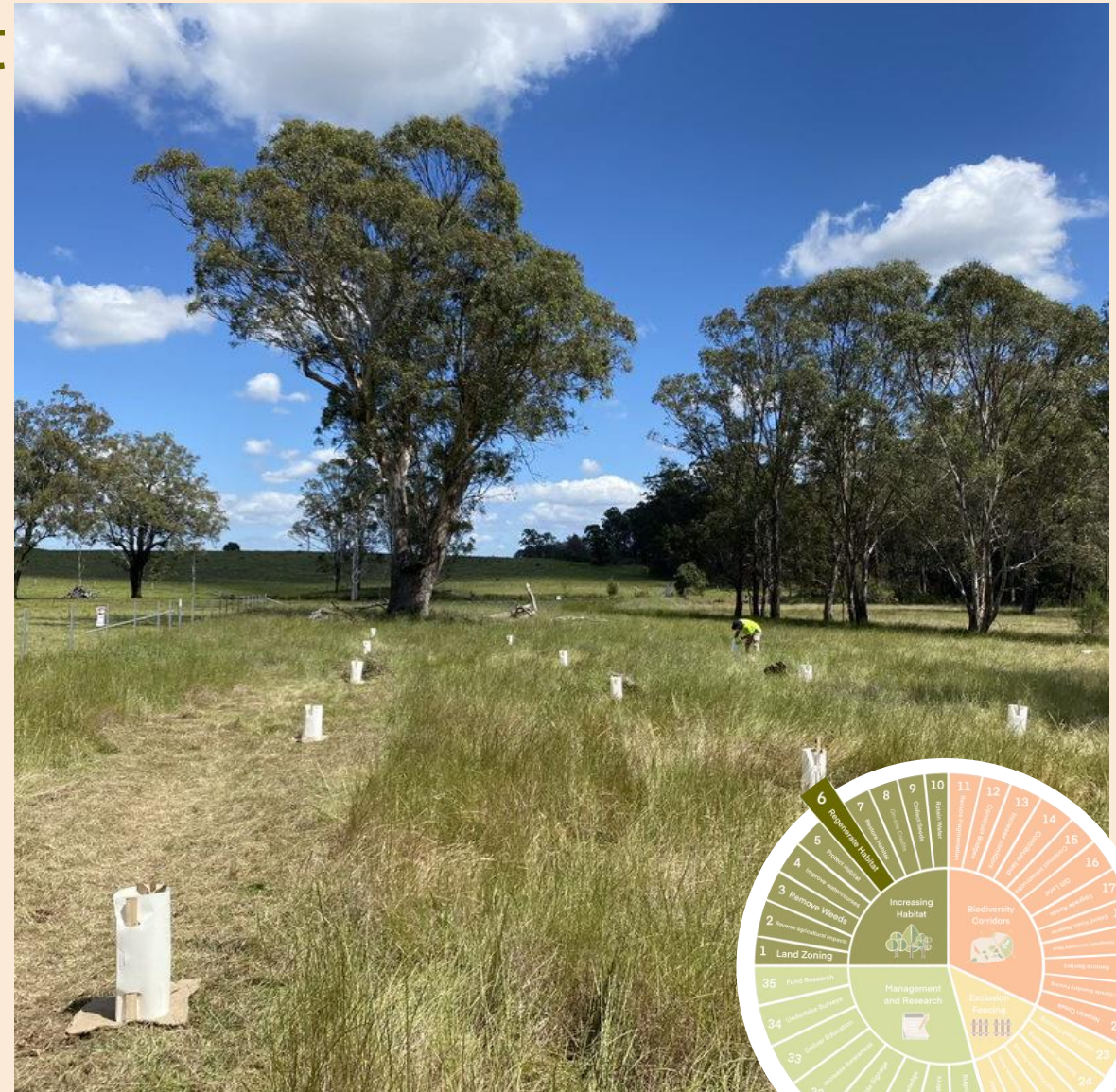
The bushland rehabilitation process has begun with the planting of thousands of new plants – future habitat preferred by local koalas within the Figtree Hill conservation areas.

Bush regeneration will continue to reconnect habitat and increase the size of the conservation corridors.

Overtime critically endangered Sandstone Shale Transitional Forest and Cumberland Plain Woodlands will be restored to high quality bushland.

Actions

- Extensive restoration of 24 hectares of low-quality habitat which includes scattered paddock trees.
- Regeneration of 21 hectares of moderate quality habitat which includes vegetation where canopy has been thinned, the shrub layer removed, and ground cover modified by grazing and/or pasture improvement – little eucalypt regeneration
- Minor restoration of 124 hectares of high-quality habitat that will be subject to weed and feral animal control to improve and maintain quality.



7. Restore 80 hectares of cleared land

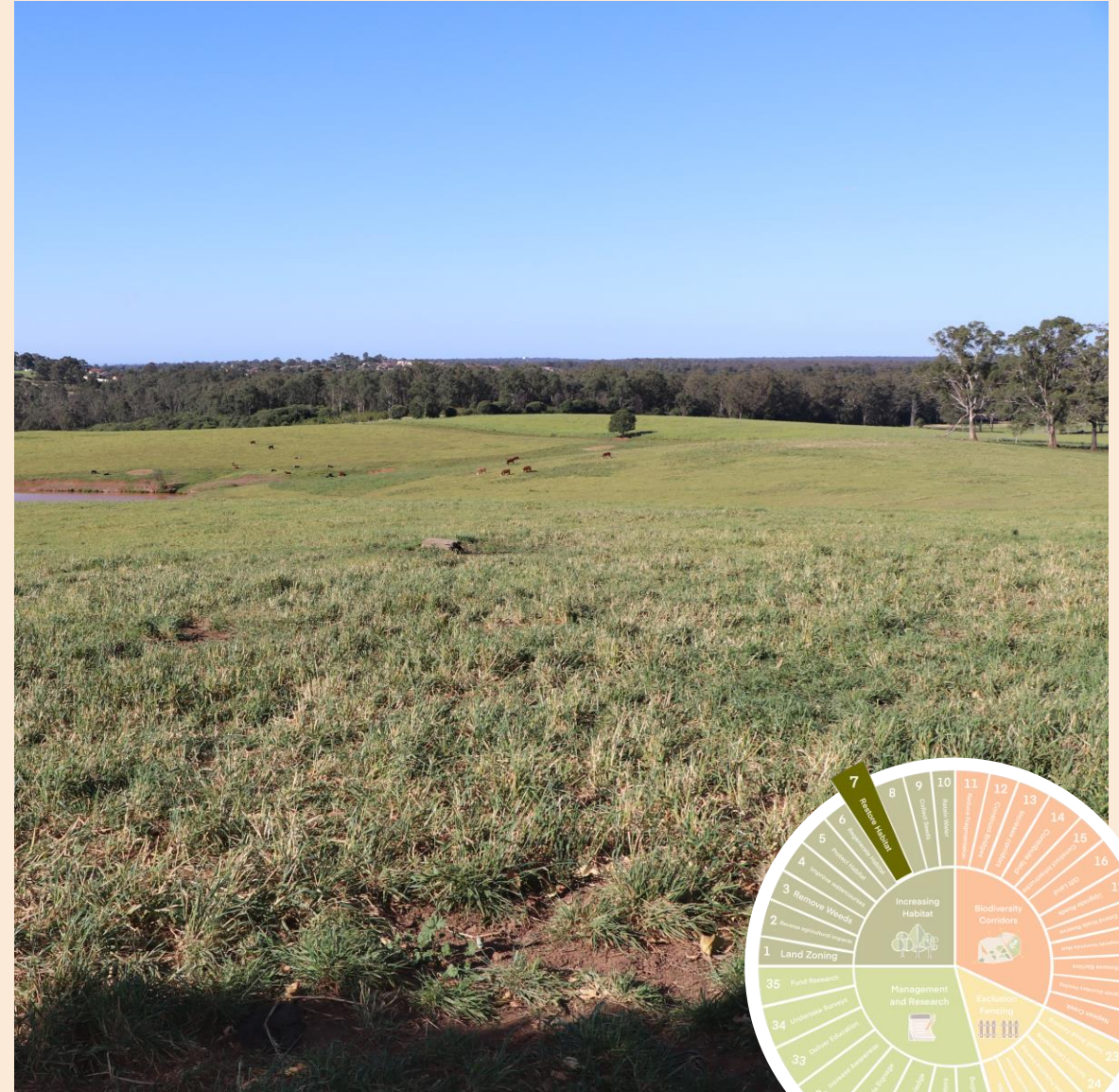
Continuous and progressive agricultural activities have occurred on some areas of the development site since the early 1800s.

Restoration of cleared land will play an important part in expanding the size of the conservation corridors, creating new habitat and maximising connectivity within the corridors.

Our extensive studies onsite has identified 80 hectares of cleared land and grassland that will require intensive reconstruction.

Actions

- The plan will fully restore over 80 hectares of cleared land.
- It will involve soil preparation, weed removal and management, extensive planting and revegetation.
- Ongoing monitoring will be undertaken by Lendlease to measure changes in biodiversity.



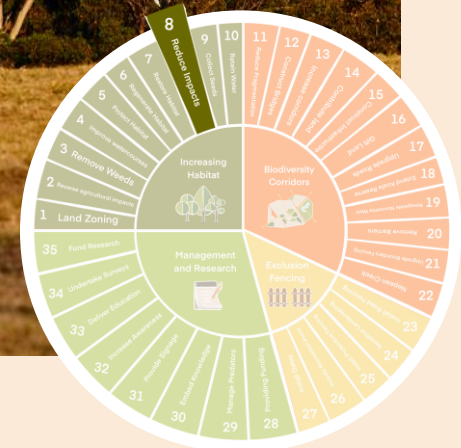
8. Reducing biodiversity impacts

As part of the projects biodiversity certification Lendlease has undertaken an assessment of the project's impact on native vegetation and threatened species.

Due to the extensive onsite conservation measures all ecosystem and species impacts will be significantly improved for the Gilead precinct.

Actions

- Obtain on-site credits for all ecosystem and species impacts.
- As part of the Figtree Hill biodiversity certification requirements Lendlease purchased species credits from the local Noorumba Reserve Biobank site.
- All surplus ecosystem and species credits generated by on-site conservation measures will be retired in accordance with the certification requirements.



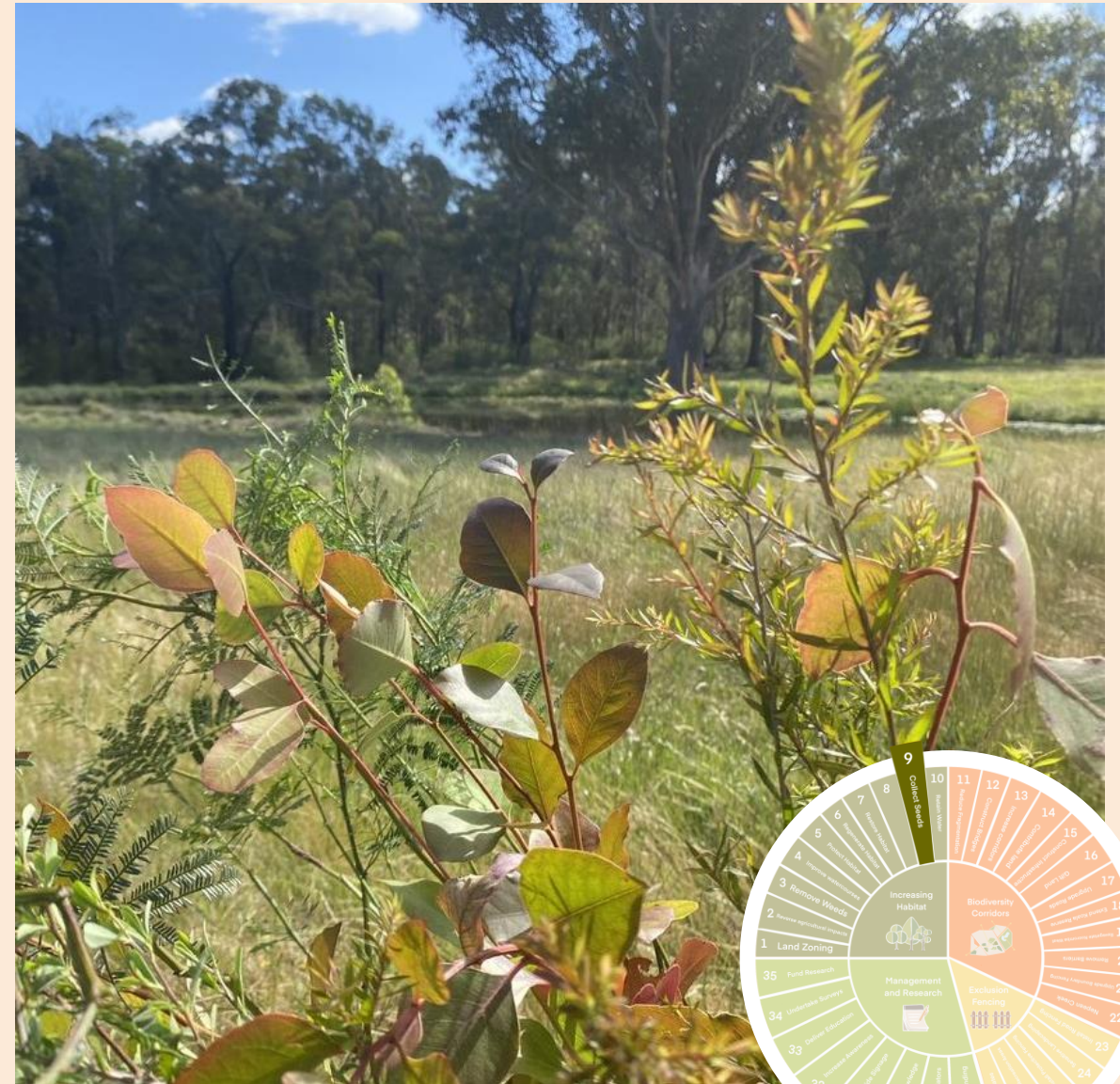
9. Collect endemic seed to propagate new habitat

As part of the bush regeneration program plants are from local stock with preference for stock that has been grown from seeds collected on-site and from the adjoining the reserves.

Lendlease will continue to work with our conservation partners to collect seeds from local trees for propagation.

Actions

- Seed collection will be undertaken in accordance with Florabank Guidelines.
- It will be undertaken by an appropriately experienced bush regeneration contractor with appropriate licences and permits to collect seed from protected flora.
- Plants will be propagated by a local nursery or the bush regeneration contractors.
- Seeds will be stored to allow for propagation of replacement stock when required.



10. Retain water in the landscape - a drought tolerant habitat

Current climate change projections predict hotter and drier climates, and this can limit the koalas current range. The Chief Scientist stated that the vegetation along rivers and creeks is critical refugia habitat in times of drought.

“The Campbelltown koala population is expanding and therefore, it is essential that this habitat supports the movement of koalas such that dispersing koalas can move through the landscape, can breed to ensure genetic diversity, and can access refugia in times of stress, drought or other threats.”

NSW Chief Scientist (April 2020)

Actions

- Include detention basins within the conservation corridors to help retain and treat water as it reaches the waterways.
- Regenerate the riparian corridors that are contained within the conservation areas and help retain water.
- Install watering stations in time of drought to provide clean water to all local wildlife.



11. Strategic commitment to two east-west koala corridors

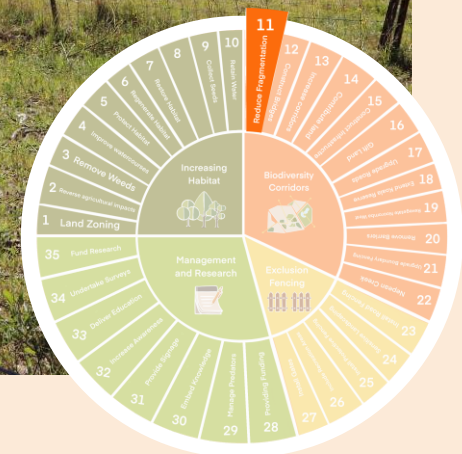
The Plan will reinstate habitat links in this region, which are vital to connecting koala habitat, and establish a safe passage between the Nepean and Georges rivers for the first time in more than a century.

“Corridors play an important role in partially compensating for habitat loss and fragmentation by linking habitats and helping to maintain ecosystem health”

NSW Chief Scientist, 2020

Actions

- Fund and construct two koala crossings underneath Appin Road at Noorumba Reserve and Beulah Reserve to ensure the habitat is safely linked either side of Appin Road.
- Facilitate safe koala passage across the Upper Canal which is fenced near Menangle Creek and obstructs the corridor.



12. Menangle Creek bridge – avoid a functional dead-end

The Chief Scientists made specific comment on the negative impacts of creating a functional ‘dead-end’ at the north end of the Nepean River corridor where the Hume Highway crosses the Nepean River.

We recognise that dead-ends increase threats and could create a population sink where koalas continue to move into the habitat, only to be killed by threats. Which in turn creates a koala vacancy and therefore enticing more koalas to move in.

Actions

- Avoid the dead-end and create a high bridge to connect habitat.
- Look at the possibility of putting a fence under the motorway to discourage koala movement
- Create high quality habitat along the Menangle Creek corridor to encourage koalas to move into the connected habitat.



13. Nepean River corridor

The Nepean River corridor contains high quality koala habitat and has been identified as a primary corridor by the Department.

The Gilead site covers around 3km of the 31km corridors that runs from Mount Gilead in the north to Wilton in the south and straddles both sides of the river.

The corridor connects koala populations to the south east in the Sydney Catchment and then further to the Southern Highlands.

Habitat within the Nepean River corridor is greater than minimum average width set by the NSW Chief Scientist and Engineer.

Actions

- Conserve and protect all habitat within the Nepean River primary corridor.
- Install fencing around the corridor area.
- Remove weeds and manage the exotic species that are overgrown on the banks of the Nepean River.



15. Appin Road underpass at Noorumba Reserve

Appin Road is the key arterial road between Campbelltown and the Illawarra region with significant daily traffic resulting in Appin Road being a known black spot for koala fatalities.

Currently there are 3 to 4 koala fatalities along Appin Road per year.

The underpass at Noorumba Reserve is critical to ensure functionality of the Menangle Creek corridor.

The underpasses will effectively link habitat either side of Appin Road and provide safe passage for local wildlife.

Actions

- Construct an underpass near Noorumba Reserve, designed according to best practice principles.
- Install exclusion fencing either side of the underpass entrance.
- Ensure a fully funded agreement is in place for the maintenance and monitoring of the infrastructure in perpetuity.



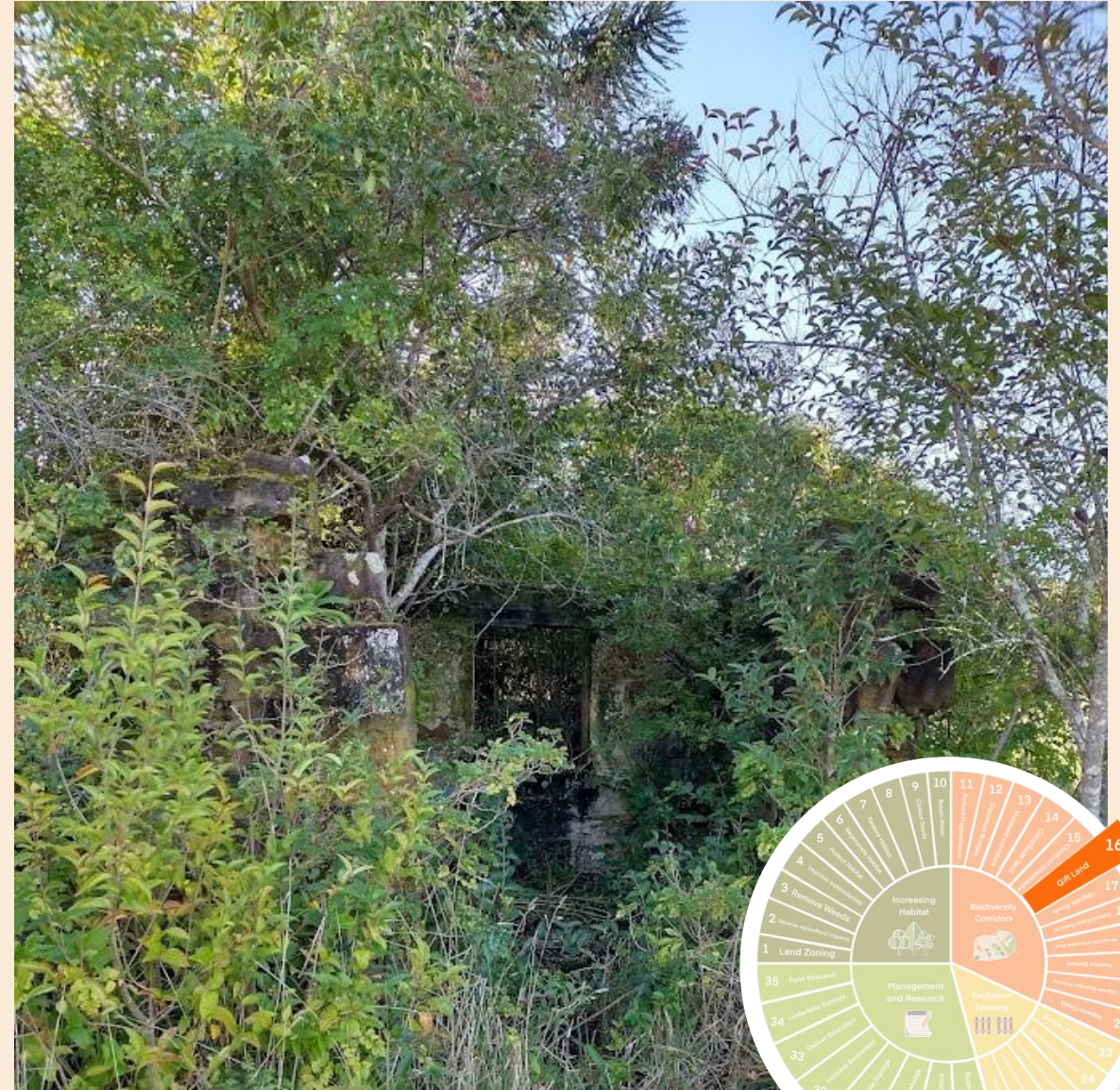
16. Incorporate Glen Lorne into the Georges River koala park

Glen Lorne is an archaeological and landscape site. The remains of the homestead have been removed due to general dilapidation of the property over several decades following a fire in the 1980s.

Glen Lorne is currently being considered a site for a temporary archaeological project that will help research students and the community learn more about the heritage of the site.

Actions

- Following the potential archaeological project, the land at Glen Lorne will be gifted to the George's River Koala Reserve.
- Seek to install education signage to provide information about the historic site.
- Create an entry point for the community to access the walking trails through Glen Lorne into the Dharawal National Park.



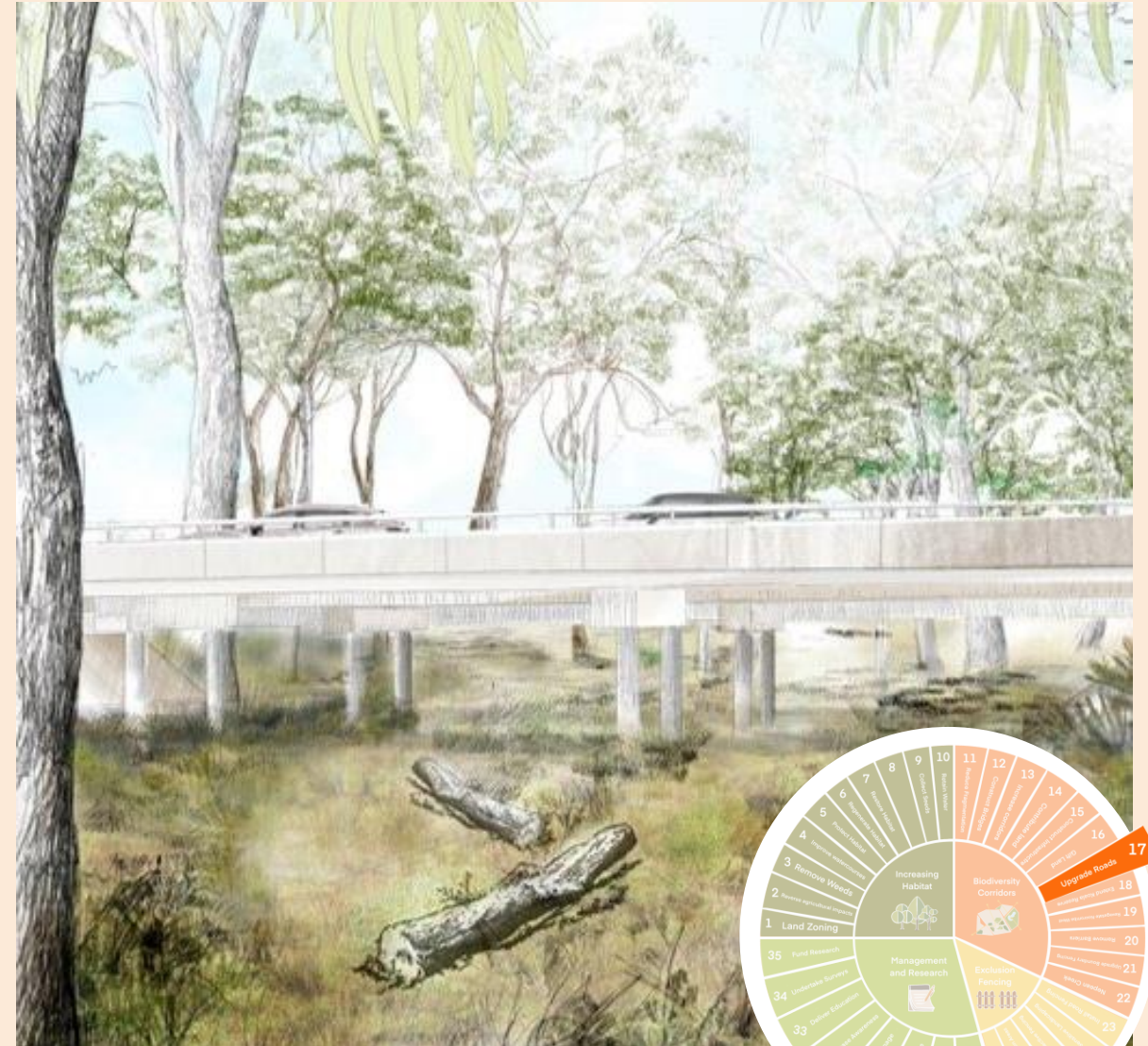
17. Appin Road underpass at Beulah Reserve

Vehicle strike hotspots occur where roads dissect koala habitat. There are a number of hotspots identified by the NSW Chief Scientist along Appin Road including Beulah Reserve.

This hotspot has heavy traffic flow and higher speed limits.

Actions

- Construct an underpass near Beulah Reserve, designed according to best practice principles.
- Work with Transport for NSW on a proposal to raise the new road above the existing landscape with a bridge like structure that will encourage all fauna including koalas to move east-west.
- Install exclusion fencing either side of the underpass entrance.
- Ensure a fully funded agreement is in place for the maintenance and monitoring of the infrastructure in perpetuity.



18. Include Browns Bush in the Georges River Koala Reserve

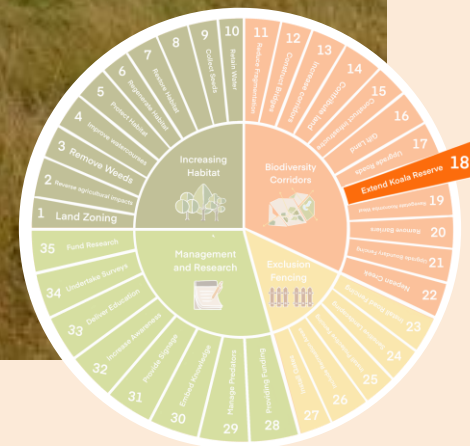
Browns Bush is located on the east side of Appin Road. The area has been identified in the Cumberland Plain Conservation Plan as strategic koala habitat.

The establishment of the Georges River reserve was recognised by the NSW Chief Scientist as essential to the persistence of the 'Southern Sydney koala population'.

The reserve will protect and manage up to 1,830 hectares of new conservation land which could include the Browns Bush site which is located on the eastern side of Appin Road, adjacent to the Georges River.

Actions

- Gift 28 hectares of land at Browns Bush so that it can be included in the Georges River Koala Reserve.



19. Noorumba West Parkland

Lendlease has submitted a proposal to regenerate the Noorumba West parkland that traverses the northern portion of the Figtree Hill project and is currently zoned for residential use.

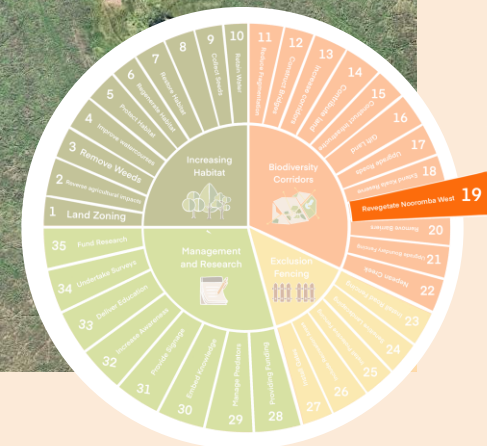
The proposal follows the expert advice of the NSW Chief Scientist and Engineer and contributes to the conservation corridor along Menangle Creek and Noorumba Reserve.

The proposal has been submitted to Campbelltown City Council and has been on public exhibition.

Image: Intersection between the Upper Canal and Menangle Creek.

Actions

- Revegetate 18 hectares of cleared land along Menangle Creek at the northern end of the Figtree Hill development.
- Undertake reconstruction work to modify fencing and make it safer for wildlife to overcome barriers, like the Upper Canal, which currently blocks koala connectivity at this point.



20. Remove barriers at Upper Canal and Menangle Creek

Particular consideration needs to be paid to the design and construction of the habitat at the confluence of the Menangle Creek and Nepean River where a number of road bridges are planned, to ensure koalas will use the connection.

Actions

- Remove fencing barriers for wildlife connection. We have suggested modifications to the fence lines around the upper canal.
- Seek approvals from WaterNSW to remove barrier fencing that blocks east-west koala movement along Menangle Creek.



21. Upgrade farm fences for safe koala passage

The historic Mount Gilead Homestead and surrounding landscape, located in the middle of the project, is listed on the state heritage register and protected for its heritage and biodiversity value.

“In a further step to protect the state’s koala population, the NSW Government has listed Mount Gilead Estate with its sweeping landscape and historic homestead in Sydney’s south-west, as an item of state heritage significance to be protected in perpetuity.”

Matt Kean, Minister for the Environment (2020)

Actions

- Rural fencing around the Heritage Homestead will be retained and restored to prohibit grazing stock from entering the conservation areas.
- Modify the bottom boundary fences around the Homestead Estate to allow safe access for koalas to the rural and habitat areas.
- Regenerate existing native bushland on the Homestead estate by Lendlease to increase habitat quality and connectivity.



22. Nepean Creek access to Upper Canal

The Nepean Creek to Beulah corridor (Corridor C) was studied by the Chief Scientist expert panel, who made the following conclusion.

“Should Corridor B become secured, the relative importance of Corridor C is reduced in terms of its function in connecting the Beulah Biobank site to the northern end of the Nepean Corridor.”

NSW Chief Scientist and Engineer, 2020

Actions

- Look at ways to overcome obstacles along the canal to ensure there is east-west connection.
- Retain the riparian landscapes to benefit the ecological communities.



23. Protection from vehicle strike

Roads are considered one of the major contributors to koala mortality in the region. Our plan will introduce exclusion fencing to protect koalas from vehicle strike along Appin Road.

“Appin Road is currently a hot spot for koala mortality, so the Panel finds the use of fencing to stop koalas entering the road surface from either the east-side or west-side to be a fundamental requirement for the success of protecting koalas in the region.”

NSW Chief Scientist and Engineer, 2020

Actions

- Install exclusion fencing on both sides of Appin Road adjacent to the project.
- Introduce signposts and traffic calming devices to local streets adjacent to conservation areas to raise awareness of koalas.
- Establish a 50 km/h speed limit within the local streets where conservation areas are fenced, where fencing is not used a lower speed of 40 km/h should be observed.



24. Discourage koalas from accessing the urban zone

Lendlease has home design guidelines to discourage koalas from entering the urban areas and lower the risk of koalas being injured within the urban environment. Landscaping and streetscaping will also discourage koalas from the urban zone.

“The Panel agrees with the proposed approaches of not including koala food tree species in backyards and streetscapes, as they can be an attractant to koalas to leave their domain and enter higher risk areas.”

NSW Chief Scientist and Engineer, 2020

Actions

- Mandate dog-proof boundary fencing to keep dogs in private yards.
- Mandate the use of non-climbable fencing to exclude koalas from entering private yards and swimming pools.
- Exclude the planting of koala habitat trees within the urban areas.



25. Exclusion fencing to exclude predators from koala corridors

A combination of fencing, grates and gates will provide a physical barrier separating koalas and dogs from all public areas.

“Koala exclusion fencing can successfully prevent koalas leaving the corridor and walking onto roads and meeting neighbourhood dogs. Exclusion fencing will also prevent dogs from entering the habitat.”

NSW Chief Scientist and Engineer, 2020.

Actions

- Install exclusion fencing around the conservation corridors.
- Ensure that fencing is well maintained and managed throughout.



26. Adequately cater to the needs of dog owners in urban zone

One of the main causes of koala mortality in the region is dog attacks. It is recommended to keep dogs enclosed in yards and within the urban parklands.

Actions

- Design dog areas within urban parklands to provide to adequate opportunity for socialising and exercising dogs.
- Develop a community education program to show residents how they can reduce the risks of dog attacks and keep koalas safe.



27. Controlled gates and limited access

Controlled gates will help to reduce threats to koalas within the conservation areas. To help protect these areas over 25 kilometres of fencing will provide controlled access into conservation corridors.

The gates will enable the community to be able to enjoy the conservation areas for bushwalks and passive recreational activities.

Actions

- Install controlled gates that permit limited access to the conservation areas.
- Install educational signage when entering the conservation areas.
- Retain and modify rural fencing to prohibit grazing stock from conservation areas while retaining koala connectivity into rural areas.



28. \$15 million investment in biodiversity trust

Rehabilitation, management and funding for the conservation areas will be undertaken through the registration of Biodiversity Stewardship Agreements.

The Biodiversity Conservation Trust is the NSW Government agency established under the Biodiversity Conservation Act 2016 (NSW).

The biodiversity stewardship program establishes a funding mechanism which contributes to in-perpetuity protection of habitat for threatened species and ecological communities.

Actions

- Register the Biodiversity Stewardship sites.
- Fund the rehabilitation and ongoing management of the conservation areas.
- Provide annual reporting of the implementation of management actions, monitoring of condition of vegetation and threatened species.



29. Predator management plan

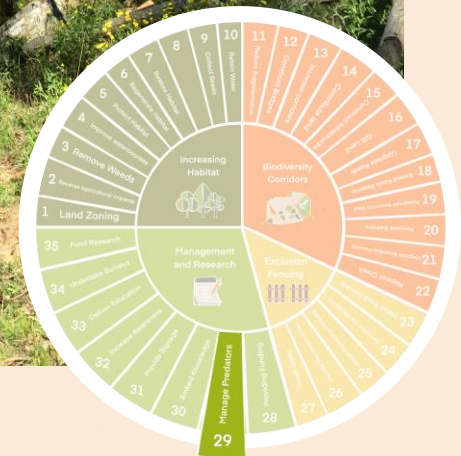
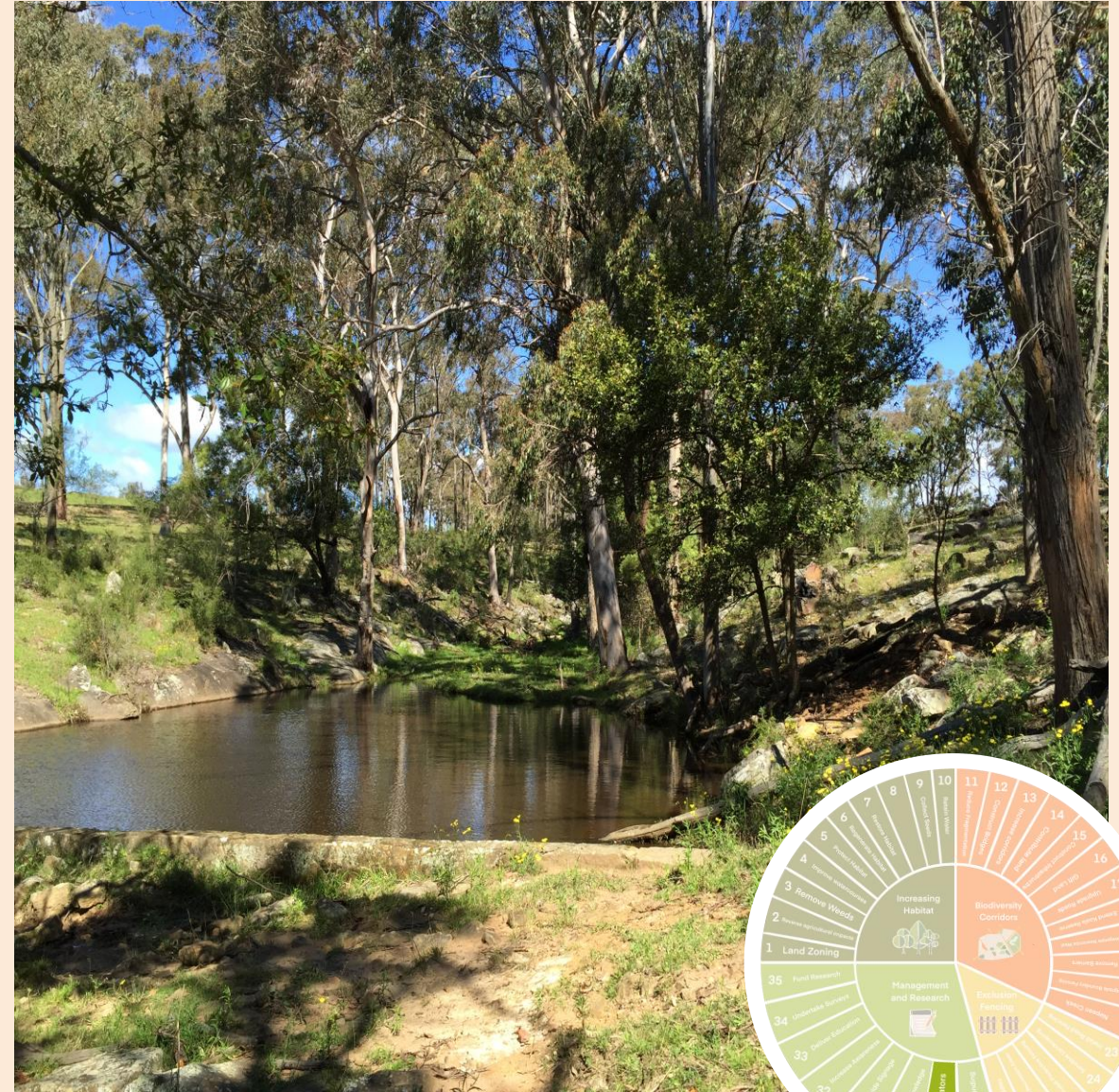
Predator Management targeting wild dogs, foxes and also rabbits which hinder bush regeneration efficacy.

“Regular monitoring and control of predators (such as dogs) within the corridor will be an important ongoing management tool, as will measurements of koala population dynamics.”

NSW Chief Scientist and Engineer, 2020

. Actions

- Include monitoring of predators, within the management plan of the conservation areas.
- Undertake specific tasks around the entrances to the underpasses to track predators and use by other animals.
- Provide fencing maintenance to ensure that no new predators are entering the conservation areas.
- Include adaptive management to ensure ongoing predator capture and controls.



30. Embed knowledge from Traditional Custodians

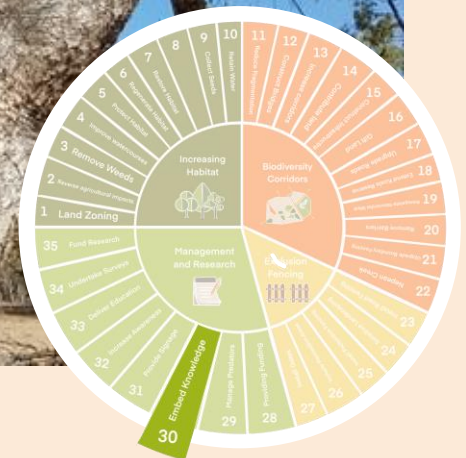
As traditional custodians of the land, First Nations peoples have a unique role to care for and manage Country.

Lendlease will commit to working in partnership with Traditional Custodians to implement the short-term conservation management plan and opportunities for long-term management.

Lendlease will actively consult with First Nations people to seek advice for the management of ecological corridors and for the protection of Aboriginal cultural heritage, artefacts and sites.

Actions

- Embed knowledge from Traditional Custodians within the conservation management plan
- Work with the Dharawal People to undertake small area burns where appropriate, to help manage and maximise the success of high diversity regeneration.



31. Prohibit dogs from conservation areas

Lendlease will seek to exclude dogs from entering the protected conservation areas to reduce threats to koalas and other local wildlife.

Where permitted and appropriate it is best practice to contain domestic dogs in new residential areas consistent with relevant Council guidelines. Dogs should not be allowed within the conservation areas.

Actions

- Work in partnership with Campbelltown City Council on how to help protect the conservation area and prohibit dogs by an Order of Council.
- Develop community education programs to support responsible dog ownership.
- Develop an engagement program to encourage the community to report dog threats in the local area.



32. New resident community education program

Lendlease will help future residents that move into the community with local knowledge about the koala population and what they can do to help protect them.

Lendlease will draw upon the very successful Campbelltown City Council Koalatown program that raises awareness and empowers the community to actively support the conservation of koalas at their homes and in their neighbourhoods.

Actions

- Deliver an induction program for new residents on how they can help koalas.
- Deliver conservation actions with residents, such as tree planting and bush regeneration, within the project's conservation areas.
- Connect the community with wildlife carers so they know what to do with sick or injured koalas.
- Share updates and latest news with residents and the wider community.
- Promote citizen science and koala population monitoring programs.



33. School education program

A local school education program will help raise awareness about the presence of koalas and the threats they face.

It will also provide opportunities for local schools, located within or in close proximity to the project, to participate in hands on koala conservation and monitoring activities.

Actions

- Develop a curriculum – linked education program for local school age children to engage in conservation activities and promote local stewardship.
- Support existing programs, like Campbelltown City Council's successful Koalatown education program, to help educate and inspire local students.



34. Annual koala population survey

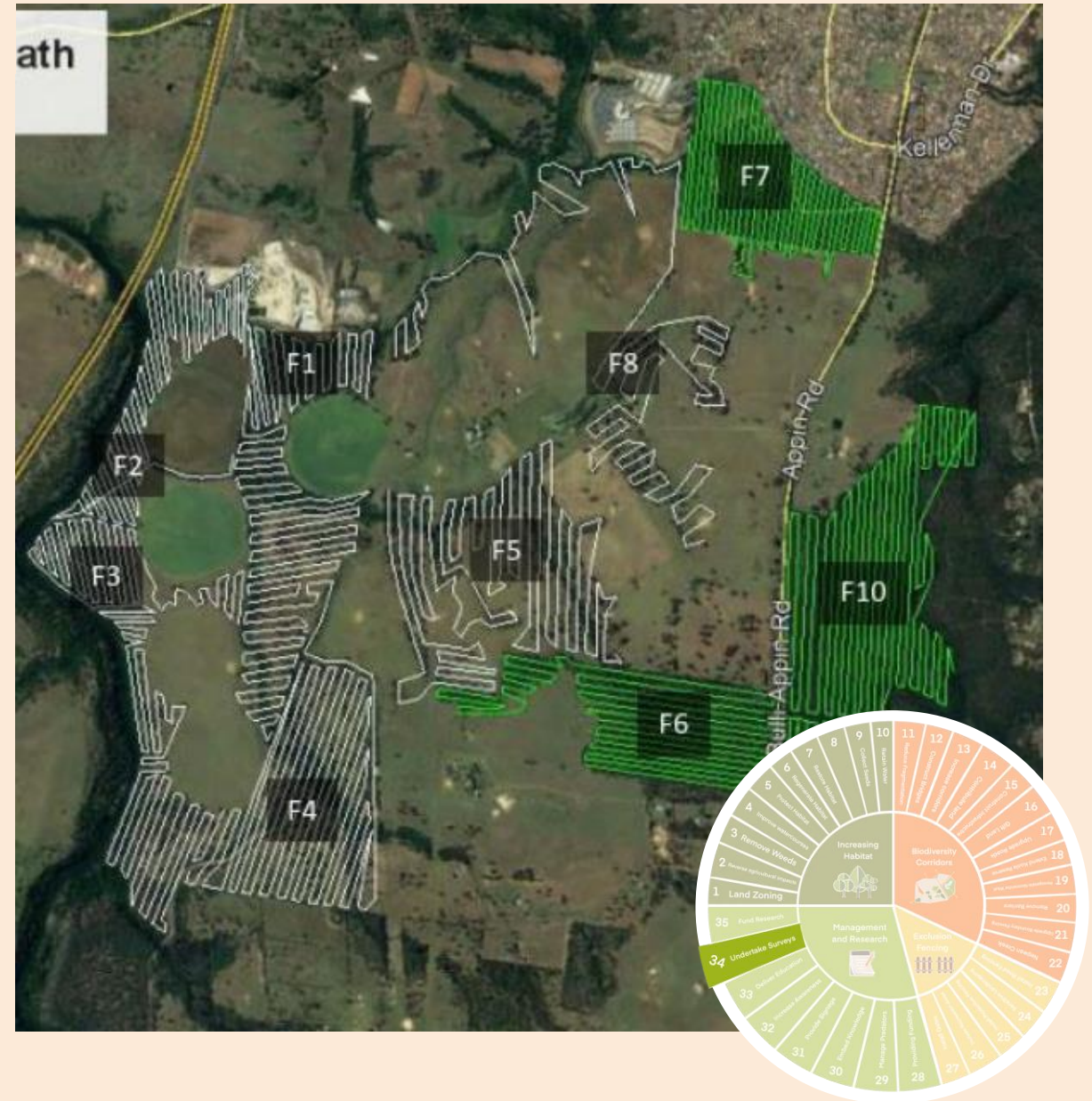
Lendlease will undertake annual koala population surveys and benchmark this data as appropriate. A baseline survey was undertaken in 2021 and subsequently in 2022 to understand the current status of the population.

If koalas are observed in multiple periodic surveys, the site should be designated as one of the dedicated monitoring sites under the NSW Koala Strategy.

This would present opportunities to study and understand the population through out the life of the project.

Actions

- Follow the Chief Scientist recommendations to monitor the Campbelltown koala population.
- Undertake annual surveys and monitoring efforts to compare population trends over time.
- Utilise data from the survey to help inform adaptive management approaches.



35. \$1.5 million research fund

Lendlease acknowledges that there are a number of issues facing koalas and our plan needs to be informed by the best available science. Research priorities will be aligned with our conservation outcomes.

The Chief Scientist recommended the use of new techniques and technologies, such as sensors, to study the koala population and inform ongoing management.

There is a range of research opportunities including koala ecology, health and disease, monitoring, climate change, conservation and habitat restoration.

Actions

- Identify research that is being undertaken into the local koala population and other communities.
- Work with universities and research institutions on collaborative projects.
- Offer the conservation areas across the project as a potential research or testing site.
- Share research results with Campbelltown City Council, and other stakeholders to help inform other programs.



Assessment of actions

Our Plan meets or exceeds all 31 principles outlined by the NSW Chief Scientist expert panel for Koala Protection in the Greater Macarthur and Wilton Growth.

Principles	Meets	Exceeds
<i>Habitat and Connectivity</i>		
1. Strategic planning		✓
2. Protected and connected	✓	
3. Avoid dead ends and population isolation	✓	
4. Corridors provide habitat		✓
5. Corridor widths	✓	
6. Larger area, shorter edges	✓	
7. Habitat buffers separate from asset protection	✓	
8. Target shale soils	✓	
9. Earlier planting leads to more mature trees -		✓
10. Prevent degradation of habitat		✓
11. Plan for climate change		✓
<i>Fauna crossings for linear infrastructure</i>		
12. Safe movement	✓	
13. Fencing underpasses	✓	
14. Underpass design	✓	

Principles	Meets	Exceeds
<i>Threat Mitigation</i>		
15. Exclusion fencing	✓	
16. Spatial and temporal planning for threats	✓	
17. Reducing impacts from construction		✓
18. Sensitive urban design	✓	
19. Avoid stressors that repel koalas	✓	
<i>Disease management</i>		
20. Avoid chlamydia incursion	✓	
21. Identify koala routes and monitor for disease	✓	
22. Vaccine trials	✓	
23. Adaptive management for disease	✓	
<i>Adaptive management</i>		
24. Baseline data set	✓	
25. Surveys and monitoring	✓	
26. New monitoring technologies		✓
27. Interface monitoring with NSW Koala Monitoring Framework	✓	
28. Adaptive management informed by triggers	✓	
29. Timely mitigation	✓	
30. Understand alternatives	✓	
31. Risk-based emergency response protocols	✓	

References & Resources

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[Campbelltown City Council, Biodiversity Certification Application Mount Gilead Stage 2 | OverToYou \(nsw.gov.au\)](#)

[Department of Agriculture, Water and the Environment, Australia State of the Environment \(2021\) \(dcceew.gov.au\)](#)

[Department of Climate Change, Energy, the Environment and Water, EPBC Act referral guidelines for the endangered koala \(2022\)](#)

[Eco Logical, Mt Gilead Koala Carrying Capacity Assessment | Prepared for Lendlease Communities \(Figtree Hill\) Pty Limited](#)

[Greater Sydney Commission, Greater Sydney Region Plan 2018: A Metropolis of Three Cities \(2018\)](#)

[Matt Kean MP, Member for Hornsby, State's Koalas Further Protected with Heritage Listing of Sydney Estate \(2020\)](#)

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[NSW Chief Scientist and Engineer, Advice on the protection of the Campbelltown Koala population \(April 2020\)](#)

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