



A historically multilayered conceptual design proposal for Fremantle port redevelopment area

- Learning how to incorporate indigenous values to create a contextualized design

Elvira Nordqvist & Cassandra Kallifatides

Independent work • 30 hp
Swedish University of Agricultural Sciences, SLU
Faculty of Natural Resources and Agricultural Sciences
Landscape Architecture Programme - Uppsala
Uppsala 2024

A historically multilayered conceptual design proposal for Fremantle port redevelopment area **- Learning how to incorporate indigenous values to create a contextualized design**

Ett historiskt mångskiktat konceptuellt designförslag för omgestaltning av Fremantle hamn
- Inläring av hur man inkorporerar urinvånarens värderingar för att skapa en kontextanpassad design

Elvira Nordqvist and Cassandra Kallifatides

Supervisor: Burcu Yigit Turan, SLU, Department of Urban and Rural Development; Landscape architecture Spatial planning

Secondary supervisor: Maria Ignatieva, UWA Design School, Discipline of Landscape Architecture

Examiner: Sofia Sandqvist, Department of Urban and Rural Development; Landscape architecture Spatial planning

Assistant examiner: Daniel Valentini, Department of Urban and Rural Development; Landscape architecture Spatial planning

Credits: 30 credits

Level: Second cycle, A2E

Course title: Independent Project in Landscape Architecture, A2E - Landscape Architecture Programme - Uppsala

Course code: EX0860

Programme/education: Landscape Architecture Programme - Uppsala

Course coordinating dept: Department of Urban and Rural Development

Place of publication: Uppsala

Year of publication: 2024

Cover picture: Conceptual visual for the Fremantle Harbour redesign

Copyright: All featured images are used with permission from the copyright owner, or made by © Cassandra Kallifatides or © Elvira Nordqvist

Original format: A3

Online publication: <https://stud.epsilon.slu.se>

Keywords: Historical layers, cultural perspectives, Noongar people, Traditional ecological knowledge, Nature based solutions, harbour redesign, Perth, Fremantle, Aboriginal people of Australia, Western Australia, ecology, restoration, native species

Swedish University of Agricultural Sciences

Faculty of Natural Resources and Agricultural Sciences

Department of Urban and Rural Development

Division of Landscape Architecture

Publicering och arkivering

Godkända självständiga arbeten (examensarbeten) vid SLU publiceras elektroniskt. Som student äger du upphovsrätten till ditt arbete och behöver godkänna publiceringen. Om du kryssar i JA, så kommer fulltexten (pdf-filen) och metadata bli synliga och sökbara på internet. Om du kryssar i NEJ, kommer endast metadata och sammanfattning bli synliga och sökbara. Även om du inte publicerar fulltexten kommer den arkiveras digitalt. Om fler än en person har skrivit arbetet gäller krysset för samtliga författare. Läs om SLU:s publiceringsavtal här:

<https://www.slu.se/site/bibliotek/publicera-och-analysera/registrera-och-publicera/avtal-for-publicering/>.

- JA, jag/vi ger härmed min/vår tillåtelse till att föreliggande arbete publiceras enligt SLU:s avtal om överlåtelse av rätt att publicera verk.
- NEJ, jag/vi ger inte min/vår tillåtelse att publicera fulltexten av föreliggande arbete. Arbetet laddas dock upp för arkivering och metadata och sammanfattning blir synliga och sökbara.

A circular graphic with a white background. Inside the circle, there is a landscape scene. On the left, a large, dark red crane structure is visible. The center and right of the circle are filled with lush green trees. In the upper right quadrant, several black birds are shown in flight against a light sky. The overall scene is framed by a thin white border.

ACKNOWLEDGEMENT OF COUNTRY

We acknowledge the Whadjuk, Noongar people, Traditional Custodians of the land on which we are shaping our work, and pay our respects to their Elders past and present. We extend that respect to all Aboriginal and Torres Strait Islander peoples.

For generations, the Whadjuk Noongar people have nurtured and protected this land, maintaining a deep spiritual connection to its landscapes, waters, and creatures. We acknowledge the wisdom, resilience, and cultural richness of the Whadjuk Noongar people, and recognize their ongoing contribution to the vibrant tapestry of Australian society.

As we engage with the land and its stories, we commit ourselves to learning from the wisdom of the Whadjuk Noongar people and to fostering respect, understanding, and reconciliation.

"We are all visitors to this time, this place. We are just passing through. Our purpose here is to observe, to learn, to grow, to love and then we return home."

- Australian Aboriginal saying (Barayamal First nation Entrepreneurship, 2023)

ABSTRACT

This study addresses the urgent need for resilient urban spaces amid climate change, urban growth and social injustice. Focusing on Fremantle harbor redevelopment area this paper explores how looking at the historical layers of a site can inform design decisions to enhance the understanding of the complexity of the site, meet its environmental needs, and foster a deeper human-environment relationship to its contemporary context. By delving into the historical layers of the site, the study examines the discourse surrounding reconciliation and decolonization of landscape architecture through cultural connective design, incorporation of local indigenous values, as well as historical aspects of the native landscape. The objective is to transform the reclaimed space into an ecological sustainable place provided with ecosystem services, while addressing social impacts. The research employs a Research by design methodology that includes pre-design, design and post design phases. The result is compiled into a conceptual design proposal of Fremantle harbor. The results show that there are different principle values that should be implemented into the design to foster positive impacts, advocating for a multi-layered approach that integrates critical elements from Fremantle's deep history. Amongst other things, the results show the importance of co-design implementation and how the Noongar (indigenous) values and knowledge could be reflected in the visual space along with keeping the contemporary values of the site.

SAMMANFATTNING

Inledning

I en värld där klimatet förändras, städer breder ut sig och förtätas, blir skapandet av mer motståndskraftiga stadsmiljöer med koppling till sin historia allt viktigare (FN Habitat, 2022). I Perth Metropolitan, beläget i Western Australia, syns detta tydligt genom stadens 150 km långa utbredning längs kusten och den resulterande förlusten av rika naturliga landskap med hög inhemsk biodiversitet (ABC NEWS, De Poloni, 2020).

Denna drastiska förändring har sina rötter i kolonialismen och den brittiska koloniseringen av Australien från 1788, då britterna betraktade landet som en koloni för bosättning och inte endast erövring (Muswellbrook Shire Council, 2020). När kolonisatorerna anlände tog de landet från den ursprungliga befolkningen, inklusive den lokala Noongar-folket som har en djup koppling till sitt land och dess naturliga omgivningar (National Museum Australia, 2023). Busk och våtmarksområdena i Perth har drabbats av dramatisk nedgång på grund av befolkningsökning och införande av nya växter. Denna nedgång har gjort Perth till en av de globala biologiska hotspots (Ignatieva, et al. 2023).

För att hantera utmaningarna med befolkningsökning, klimatförändringar och förlust av livsmiljöer är det viktigt att integrera grönområden i stadsplaneringen för att öka motståndskraften mot miljömässiga påfrestningar (The Greens, n.d). Genom att undersöka den historiska och ekologiska bakgrunden samt erkänna de ursprungliga invånarnas koppling till sitt land och dess vegetation kan insikter från First nation personers ekologiska

metoder användas för att främja hållbar stadsutveckling och ekologisk restaurering. Med omgestaltningen av Fremantle Harbour finns potential att skapa ett blomstrande grönområde som främjar en djupare koppling mellan människor och plats, samtidigt som ekologiska fördelar uppnås (Westport, 2024).

Vad är Fremantle och Fremantle Harbour?

Staden Fremantle (eller Walyalup på det lokala Noongar-dialektet, vilket betyder "lungor") ligger längs kusten av Western Australia, vid mynningen av Swan River, inte långt från Perth centrum. År 2021 hade staden 31 930 invånare och är både en industri- och kulturell knutpunkt (City of Fremantle, 2024f). Fremantle grundades eftersom det var en utmärkt plats att skapa en hamn vid flodens mynning, med tillgång till havet och inlandet med båt. Detta har varit en nyckel i tillväxten av Perth eftersom det under många år har tillhandahållit viktig transport av varor för ekonomisk tillväxt (Truban, 1978).

Idag är Fremantle stad en del av Perths stora storstadsområde som en av dess kommuner, men under större delen av sin existens var det en separat stad, till och med en kolonial rival under mitten av 1800-talet till bosättningen Perth. Fremantle är också delstatens mest populära turistmål, med platser som har blivit utvärderade av världsarvslistan, och har beskrivits enligt följande; "the historic resource is both so dramatic, extensive and complete and also so valued as to dominate their urban morphology, their identity and their policy options." (s. 155, Ashworth & Tunbridge 2000).

Flytten till Kwinana

Anledningen till flytten av hamnen, enligt företaget Westport (2024), som är ansvariga för flytten och byggandet av den nya hamnen, är följande: "trends towards larger vessels and increased congestion on key road routes in and out of Fremantle means it will be more challenging to move containers through the area." Det betyder att det inte bara är på grund av hamnen i sig som den kommer att flyttas, utan också på grund av det urbana nätverket runtomkring. Idag passerar ungefär 800 000 containrar genom Fremantle hamn varje år, vilket förväntas öka till tre miljoner containrar under de närmsta 50 åren.

Fremantle eller Walyalup har varit en arbetsport i 120 år och därför är det i denna förändringens stund en sällsynt möjlighet att omgestalta platsen (Regeringen i Western Australia, 2024a).

Detta är möjligheten som vi tar oss an i vårt projekt, med en twist av anknytning till landet och skapande av en djupare förståelse för platsen genom landskapsarkitektur.

SAMMANFATTNING

Mål

Vår studie syftar till att utveckla ett konceptuellt förslag för North Fremantle Harbour som tar hänsyn till dess historiska betydelse, där bland annat den Australiensiska urbefolkningen har stor betydelse, i vårt fall Noongar-folket. Vårt mål är att integrera mångfaldiga värden och berättelser i designlösningar som bevarar och erkänner flera historiska lager av platsen. Genom att inkludera avgörande historisk kunskap är vårt mål att bidra till hållbara designlösningar som är motståndskraftiga mot miljöförändringar och erbjuder ekologiska och sociala värden som kan främja en starkare människa-miljö relation.

Frågeställning

Hur kan området för omgestaltung av North Fremantle Harbour omformas för att öka förståelsen för dess komplexitet, uppfylla miljömässiga behov och främja en djupare människa-miljörelation, i samband med att hänsyn tas till platsens samtida värden och historia, med särskild vikt på Australiens urbefolkning?

Metod - research by design

Vår metodik och process för studien är inspirerad av Roggema (2007) forskning genom design för att undersöka hur historiska lager, traditionella kunskaper och naturbaserade lösningar på en specifik plats kan implementeras i vår landskapsarkitekt-praktik och vad vi kan lära oss av detta. Forskning genom design används för att beskriva hur design och forskning är sammanlänkade. Hur design involverar den komplexa processen att testa idéer och skapa innovativa konceptuella lösningar. Det innefattar också forskning om sociala, ekonomiska, estetiska, kulturella och etiska frågor som en del av grunden för designprocessen.

Ett resultat av detta kan vara att hitta nya och oväntade, till och med önskvärda, perspektiv inom stadsutveckling. Denna flexibilitet till komplexa processer gör metodologin särskilt lämpad att hantera komplexa problem, så kallade "Wicked problems". Wicked problems är problem som inte har ett enkelt svar och som ständigt förändras, vilket gör dem komplexa att lösa och ofta innebär att man måste väga olika aspekter mot varandra. Design i sin kärna är anpassning till situationen och kan därför ge den önskade förändringen (Roggema, R. 2007). Designprocessen kan delas in i tre steg: "pre-design", "design" och "post-design".

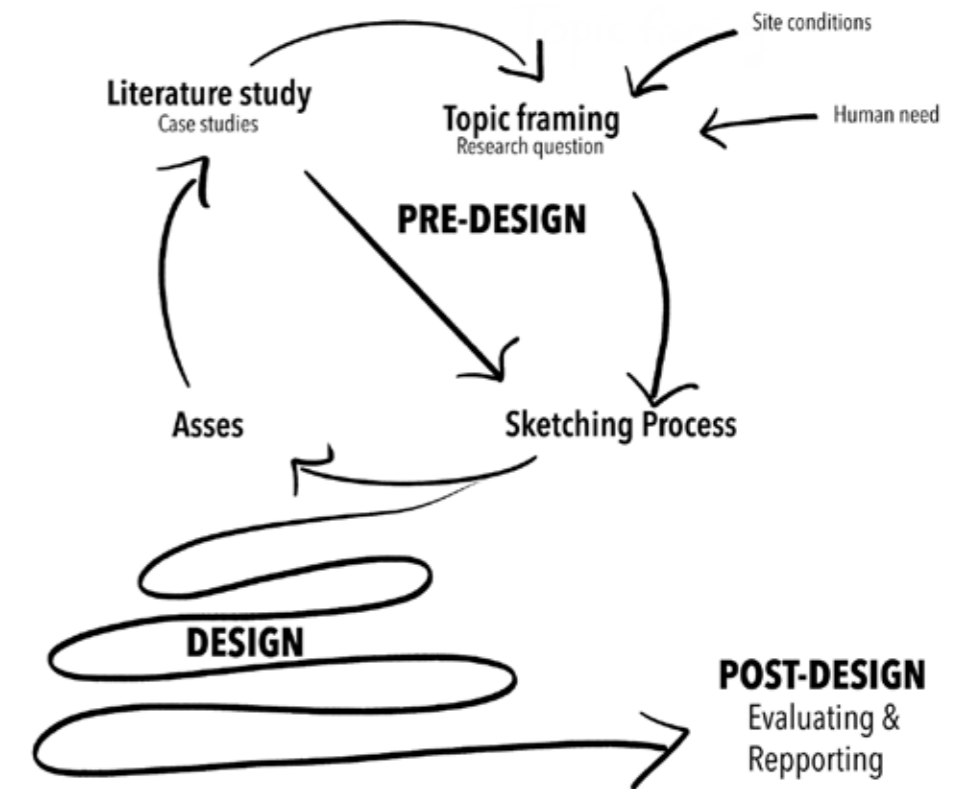


Figure 11: Diagram created based on information from Roggema, R. (2007) Research by design. Showing the intricate process of design work from pre-design, design and post-design.

SAMMANFATTNING

Bakgrund

I en värld av föränderligt klimat, stadsutbredning och förtätning där förlusten av naturliga landskap är mest påtaglig, blir skapandet av mer motståndskraftiga stadsmiljöer som är anpassade till framtida förändringar men fortfarande har en djup förbindelse till sitt arv allt viktigare för varje dag som går (FN habitat 2022). Perth Metropolitan, beläget i Västra Australien hänvisas till som ett exempel på den största stadsutbredningen i landet, som sträcker sig 150 km längs kusten; den urbana landskapsbilden tar upp mycket av det som en gång var rika naturliga landskap med en hög ursprunglig biodiversitet (ABC NEWS, De Poloni, G., 2020).

När började denna drastiska förändring då att ske? Från år 1788 koloniserades Australien av britterna (Muswellbrook shire council, 2020), detta ledde till att ursprungsbefolkningen, Noongar-folket i Västra Australien, som hade levt på denna plats i redan 47 000 år blev av med sitt land, samtidigt som stora bitar av det naturliga landskapet försvann (Seddon, 1972). I samband med detta uthärdade de illabehandling som har lett till ett historiskt trauma för ursprungsbefolkningen (Moorethe, B., 2021).

Ursprungsbefolkningar och Whadjuk har en djup förbindelse till sitt land - Country. Det är en del av dem



Figure 19: A symbolization of when humans prioritize themselves above all other forms of life, diagram: S. Lehmann, (2010).



Figure 18: A symbolization of living with the environment and not against it, diagram: S. Lehmann, (2010).

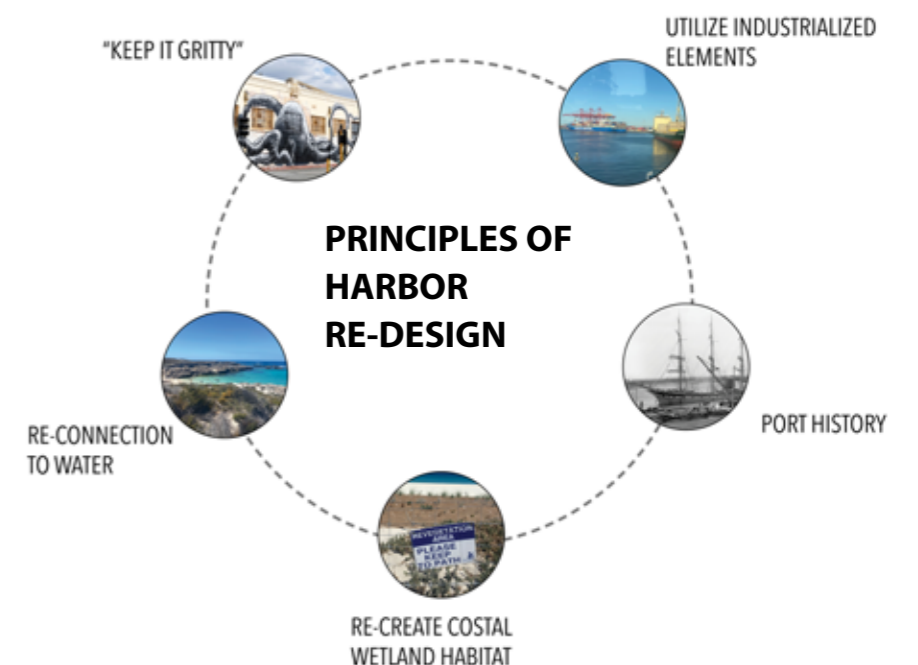
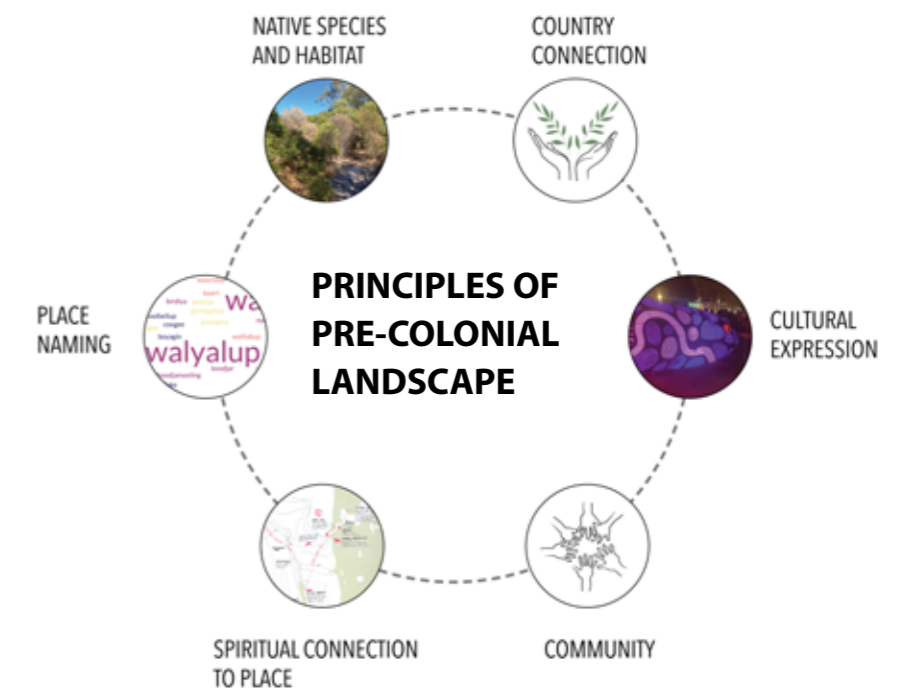
själva och en förlängning av dem själva, därför är viljan och behovet att vårda det starkt, de levde därmed med miljön och inte mot den. Man kan betrakta detta som en form av förvaltning och inte ägande (Sida A. Memmott, P. 2021). Genom att studera historien och inse hur djup historien är på denna plats, samtidigt som det finns en hel del att lära sig av denna kulturella ekologiska kunskap, finns det intressanta och betydelsefulla aspekter att ta med in i en multiskiktad design. Vilket är det vi tog med oss vidare in i skissprocessen genom att titta på de olika historiska lagrena i Fremantle Harbour.

Skissprocess

För att belysa det förkoloniala lagret har vi identifierat sex landskapsvärden som skulle behöva beaktas vid inkorporeringen i det industriella landskapet. Eftersom det är viktigt att bevara de värden som redan finns på platsen, identifierade vi även fem landskapsvärden för det postkoloniala lagret att bevara, men också att utveckla. Med dessa landskapsvärden och bakgrundundersökning, fann vi viktiga principer som ledde oss vidare in till skissprocessen.

Våra principer har lett oss till en djupare forskning av sambandet mellan människor och deras miljö. Våra fynd har lett oss till insikten att landskapets och miljöns förhållanden formar ursprungsbefolkningens liv. Som nämnts i bakgrunden, interagerade de med miljön runtomkring och kunde försörja sig på vad den kunde erbjuda, såsom skydd från sol och vind, eller mat att äta. Genom att leva med vad miljön kunde erbjuda och inte mot den, samt att inte ta mer än vad den kunde ge, upprätthölls också de ekologiska systemen, inhemska habitat och därmed hög biologisk mångfald. Med

denna princip i bakhuvudet, samt de pre-koloniala landskapsvärdena skissade vi på olika idéer som vi sedan tog med oss vidare in i förslaget för att inkorporera med det post-koloniala industri-lagret.



SAMMANFATTNING

Resultat

För att besvara på frågeställningen gjordes ett konceptuellt förslag utifrån de olika landskapsvärden vi fann från de olika historiska lagren för platsen. Därav rotas den konceptuella designen för Fremantle Harbour i dess rika historiska lager och syftar till att återknyta och förstå platsens mångfaldiga historia. Det konceptuella förslaget syftar till att återskapa det historiska landskapet med dess unika sanddynor och inhemska växter, som i sin tur är ett landskap som ursprungsbefolkningen, Noongar-folket har till detta historiska landskap. Genom att skapa platser som inspirerats från principerna som tagits fram från ursprungsbefolkningens kunskaper och levnadssätt kunde en plats skapas med en starkare människa-natur koppling, där besökaren kan få ta del av naturen utan att förstöra den. Mitt i detta bevaras delar av den industriella hamnen för att även bevara dess historia och betydelse och låta fler historier berättas samtidigt. Vi strävar efter att generera idéer som kan inspirera till förändring och bevara den djupa kopplingen till landet och samtidigt gynna biologisk mångfald och ekosystem.

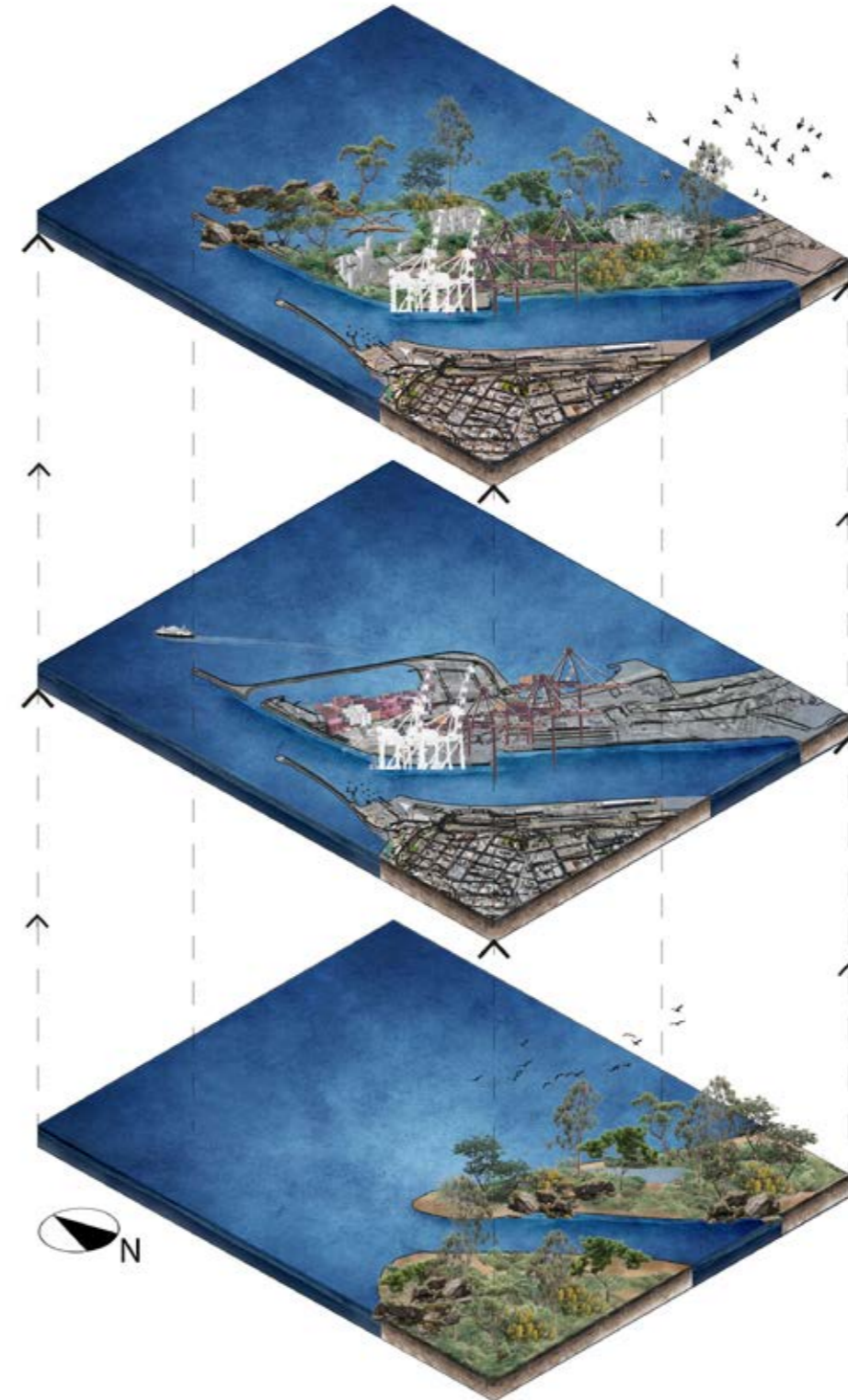


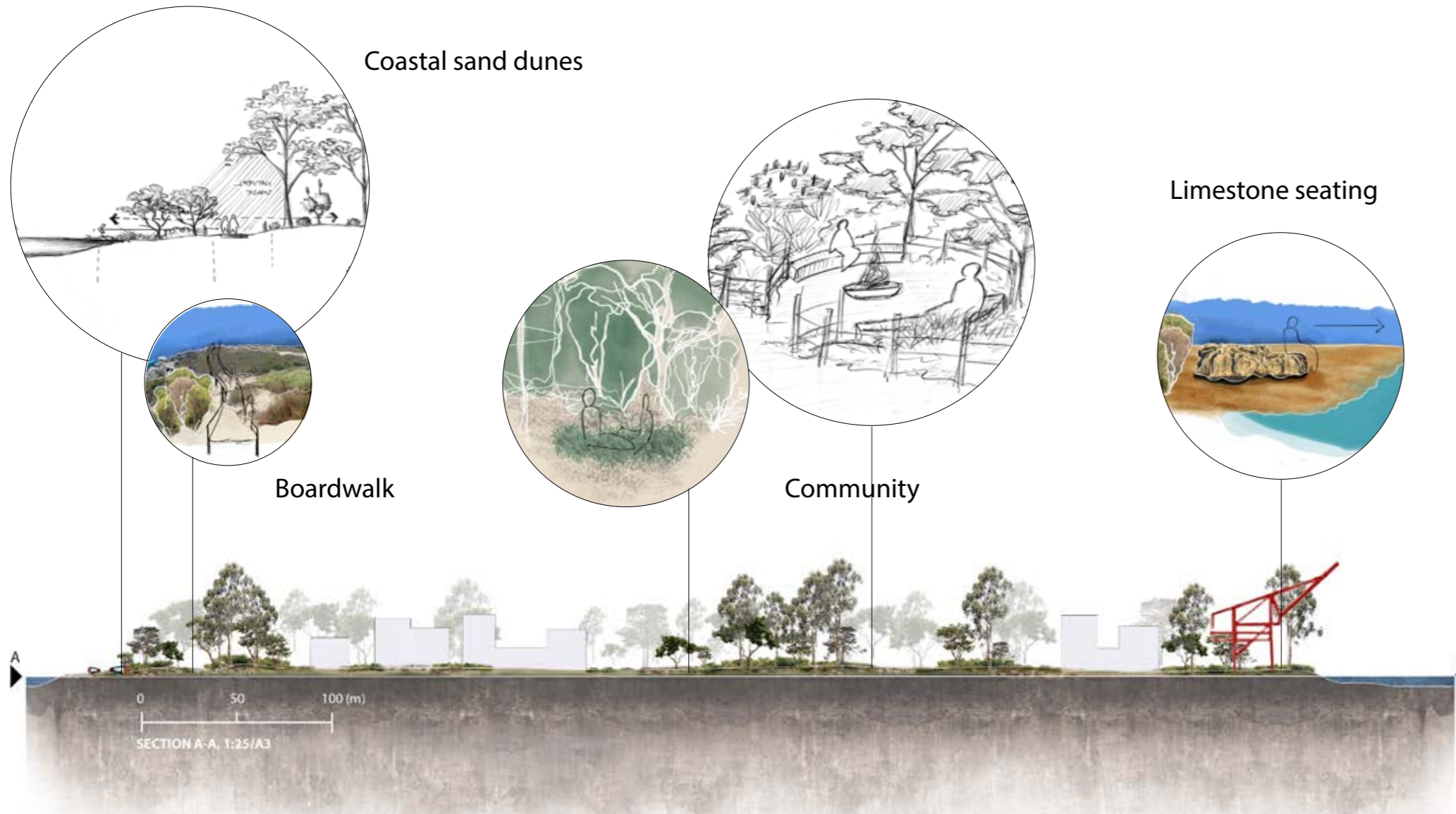
Figure 62. What we see the conceptual design proposal will do. To bring the landscape pre colonization back up to the surface and make it a visual layer incorporated in the industrialized landscape.

SAMMANFATTNING

Konceptuella förslaget

Den konceptuella planen fokuserar på att återställa den inhemska vegetationen genom att åter skapa topografin hos sanddynerna med "spearwood dune sand". Detta skapar ett vegetationssystem som fungerar som buffert mot havsnivåförändringar och vattenerosion. Inkluderade inhemska arter bör vara vanliga för Cottesloe-området och bidra till biodiversitet och ekologiska fördelar, såsom

ätliga bär och frukter. Tre viktiga biotoper integreras med avsikt för att åter skapa Noongar-folkets traditionella marker och skydda hotade arter. Genom att bevara kranstrukturen och industriella funktioner samtidigt som det gröna nätverket främjas, skapas fler lager av historiska och nutida element för att berika platsen och främja lärande och mänsklig anknytning.



Section A-A shows an example on the dynamic of the pre-colonial and post-colonial landscape.



Figure 71: Master plan for the conceptual proposal.



Section A-A detail 1. Showing detailed spatiality of redesign.



Section A-A detail 2. Showing detailed spatiality of redesign.

SAMMANFATTNING

Diskussion

Resultatet av designprocessen är ett förslag som inte bara baseras på dagens industriella landskap och hamnområden utan strävar också efter att återuppliva det ursprungliga landskapet före koloniseringen och Noongar-folkets traditionella marker. Genom att integrera element från både det nuvarande och det historiska lagret, syftar förslaget till att skapa en plats med djupare förståelse för dess komplexa historia och identitet. Viktiga inslag inkluderar inhemsk vegetation med betydelse för Noongar-samhället och industriella element som bär på historiska berättelser. Det är av vikt att komma ihåg att den förkoloniala marken inte var orörd av människan, och Noongar-folkets förvaltning av landet erbjöd ekologiska och kulturella fördelar. Designförslaget syftar till att återskapa förbindelsen mellan människor och miljö, inspirerat av ursprungsbefolkningens harmoniska samexistens med naturen. Genom att skapa en sådan koppling hoppas man inte bara på ett ökat välbefinnande för både människa och miljö, utan också på mer motståndskraftiga urbana utrymmen gentemot klimatförändringar och förlust av biologisk mångfald. En multi-skiktad design kan också bidra till en djupare förståelse av platsen genom att synliggöra dess historiska skikt och berättelser, vilket ytterligare förstärker besökarnas upplevelse och koppling till miljön.

Slutsats

Sammanfattningsvis visar våra resultat hur förståelsen för historiska lager och den inhemska kunskapen om en plats, särskilt inom Noongar-samhället, kan ge en kontextuell sanning om dess förflutna och potentiella framtid, särskilt i skapandet av hållbara urbana platser med en starkare människa-natur relation. Det understryker vikten av att vidga vårt perspektiv och ta rollen som observatörer som designers för att lära och lyssna från olika perspektiv. Samutformning (co-design) baserad på ömsesidig respekt och förståelse är avgörande för meningsfulla resultat, och vår kontinuerliga läroresa erkänner att det alltid finns mer att lära. Insikten att vår utbildning inom landskapsarkitektur inte alltid omfattar all nödvändig kunskap betonar vikten av att förstå historiska lagren och platsens specifika krav, särskilt i sammanhang där urbefolkningen har en lång historia av harmonisk samexistens med sin omgivning. Ursprungsbefolkningar är kunniga förvaltare av marken och deras röster måste förstärkas i utformningen av inkluderande och hållbara urbana landskap. Detta är inte bara ett krav utan ett avgörande steg för att skapa en bättre framtid.



END OF SUMMARY

TABLE OF CONTENTS

INTRODUCTION.....	16	Bilya Marlee School of Indigenous Studies, UWA, Perth.....	67
Who are we and why are we doing this?.....	17	Prawn Bay.....	68
Framing the topic.....	20	Shifting Sands.....	70
Fremantle in Western Australia.....	23	SITE ANALYSIS.....	71
The move of Fremantle harbour Walyalup's container port to Kwinana	25	Future challenges and future needs of Fremantle Harbour.....	72
AIM.....	27	Site visit - Fremantle (Walyalup) Harbour.....	74
Research question.....	28	Site conditions.....	78
DELIMITATION.....	29	Biophysical attributes.....	78
METHODOLOGY - Research by design.....	31	Biology of the site.....	79
PRE-DESIGN.....	33	The sand dunes formation.....	79
Literature Review.....	33	Erosion risk and rising sea levels.....	80
Site Analysis.....	33	Changing vegetation line.....	80
Stakeholder Engagement.....	33	Summary of site analysis - SWOT analysis.....	82
Design.....	33	RESULT.....	83
Create and sketch.....	33	Conceptual ideas.....	84
Post-design.....	34	Landscape values of the historical layers.....	85
THEORETICAL CONCEPTS.....	35	Sketching process - Interpretation and testing of concept.....	89
Decolonization, contemporary colonialism & Landscape architecture.....	36	Conceptual proposal - Compiled design ideas.....	94
Traditional ecological knowledge.....	36	The native vegetation.....	94
Nature based solutions.....	37	The biotopes.....	94
IN-DEPTH BACKGROUND.....	38	Creating multi-layeredness.....	95
Colonialism, land and the aboriginal people in Australia.....	39	Concepts for the vegetation.....	101
The vegetation loss in Western Australia.....	42	In summary.....	111
Indigenous values and stewardship of land.....	43	DISCUSSION.....	112
The Whadjuk Noongar people in Western Australia.....	44	Discussion of results.....	112
The six seasons.....	48	What we have not done but would have wanted to.....	112
Swan river - Derbal Yaragan and its foreshore.....	50	What do we take with us going forward?.....	113
Indigenous design and art connected to Country.....	54	Discussion of method.....	113
Native habitat and vegetation of Western Australia.....	54	CONCLUTION.....	114
The fire adapted flora.....	55	DICTIONARY OF TERMS.....	115
Animal life and habitat loss on the site.....	56	SOURCES.....	117
Coastalwetlands.....	57	Physical prints.....	117
History of Fremantle and its Harbour (Walyalup).....	58	Websites and Online articles.....	118
Incorporate indigenous landscape values into design and planning.....	62	Video recording.....	120
Implementation.....	63	Personal communication.....	120
CASE STUDIES.....	65	Figures.....	120
Curtin University Yarning Circle, Perth, Australia.....	66		

We would like to thank

*Our primary supervisor, **Burcu Yigit Turan**, for your time and guidance through a learning experience of a lifetime.*

*Secondary supervisor, **Maria Ignatieva**, for making this research happen, as well as providing us with invaluable knowledge of native flora and the Australian context.*

*Senior Aboriginal engagement officer, **Brendan Moore** for meeting us and taking the time to share your experience and invaluable knowledge to guide our work.*

*Principal Landscape Architect, **Francis Kotai** at Ecoscape, for providing us with local knowledge of our site and to discuss your work.*

*Last but definitely not least we would like to extend our gratitude to the **Noongar community** for translating your knowledge into available information forums such as books and websites, which has been a crucial basis for us to create this work and to learn.*

INTRODUCTION

The introduction is segmented into four parts, the first presenting who we are and why we are doing this work, whilst the second part is framing the topic of our work. Further, we introduce the site area followed by the project area and the changes it will go through.




WHO ARE WE AND WHY ARE WE DOING THIS?

We are two landscape architecture students from the Swedish University of Agricultural Sciences. During the spring of 2024 we flew to Perth in western Australia to deepen our understanding of Nature based solutions and Traditional ecological knowledge, both concepts we had encountered earlier in our education.

We started our research and stumbled onto the Fremantle Harbour redevelopment project and thought this was an interesting opportunity to turn an industrialized space into an ecologically sustainable landscape. In the process of researching Fremantle harbor we quickly understood that there is a second layer of history and stories connected to this place that predates the European settlement and this led us into the indigenous history and knowledge of Fremantle and its harbor.

With this information we realized that doing this redesign without any knowledge of the traditional custodians of the land and their extended ecological and site knowledge, the design would fall short. This is why we have to try and learn about their connection to land and knowledge of Country, as a way for us to contextualize our design work. Both as a form to create a deeper understanding of the place on which we are creating our work but also as a form of connecting to this new country as outsiders. We are not local and therefore we are on a journey of learning of Australian indigenous history and knowledge throughout this process, in the hopes to build upon our understanding of such knowledge and the importance it holds in landscape architecture. We believe that it is an important part of learning to try and see our practice from a



new perspective upon trying to deal with degradation of habitat, inequality and disconnection to land. This means going to places that are out of our own and putting us in a position of being the outsider (see figure 1), with the objective to widen our own perception of our practice and therefore also ourselves.

We want to note that we are no experts in this field and this thesis is only a reflection of our own learning experience which is limited. It has been a process of not only taking in new ideas but also to question our held beliefs, such as theoretical methods or perception of place, that we have learnt through our studies in Sweden. We are only a product of our own time and context, which is reflected in our work, but we do have the agency to acquire new skills and widen our perspectives.

Although we do not possess the acquired knowledge of the topic ourselves and we never will, as the true custodians of this knowledge are the Elders of the Noongar people, it has been compiled and translated to comprehensive works such as books and websites that has been the pillar basis of our work. Alongside involving ourselves in community projects and culture experiences such as provided by museums and cultural centers in Fremantle. On the other hand, due to limitations of resources and time we have not been able to engage with the local community directly to the extent that we understand would be needed, although the process of this work has built our own knowledge and understanding. Therefore it is important to note that the proposal is not a true reflection of the landscape prior to colonization nor indigenous knowledge, but hopefully a step in the right direction.

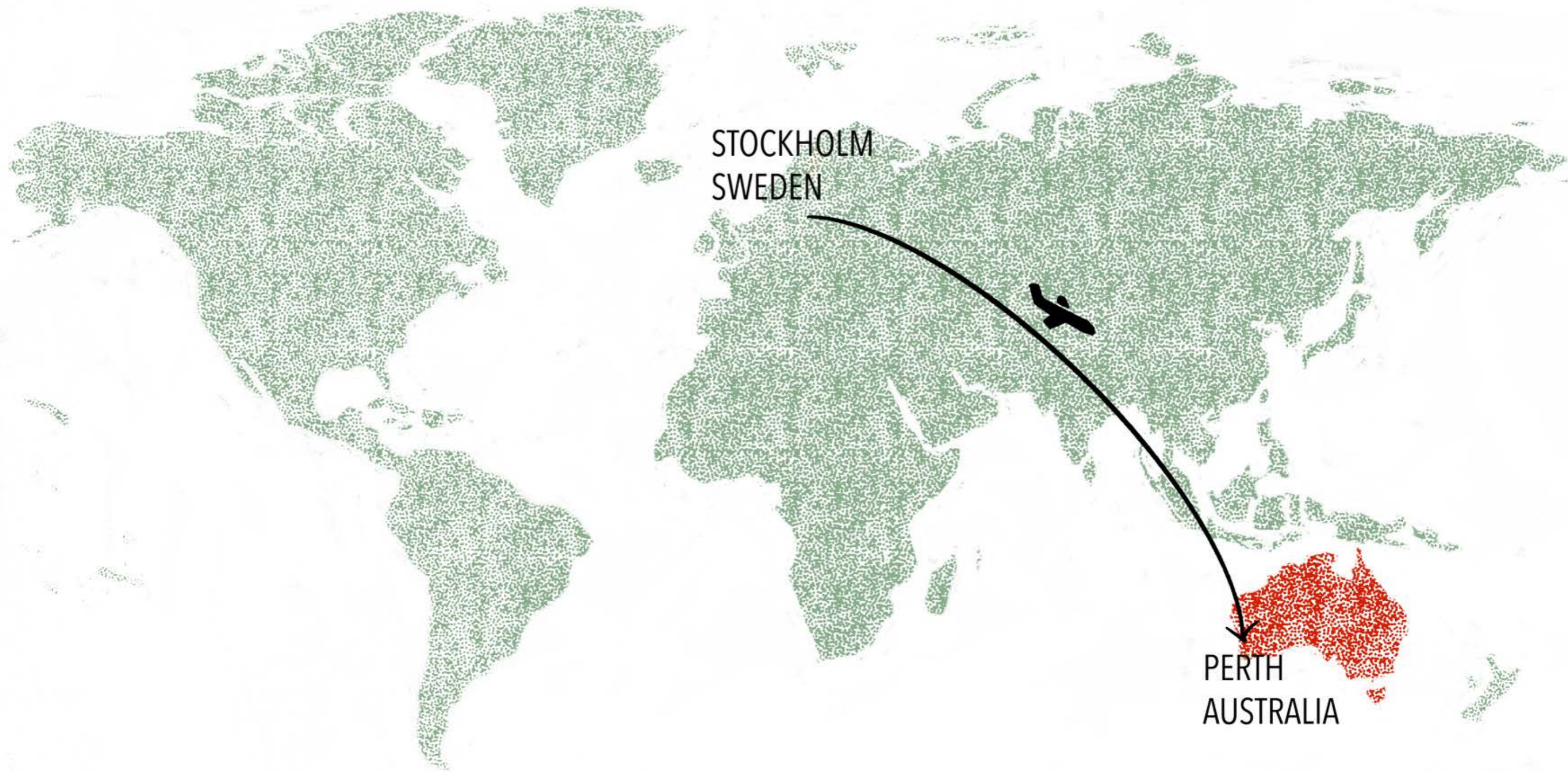


Figure 1. Map of the world with our trip from Stockholm, Sweden to Perth, Australia. Showing where in the world we are conducting our work and where we are from.

Framing the topic

In a world of changing climate, urban sprawl and densification where the loss of natural landscapes is most prevalent, the creation of more resilient cityscapes that are adapted to future changes but still have a deep connection to their heritage grows more important by the day (UN habitat 2022). Perth Metropolitan situated in Western Australia (see figure 3) is referred to as an example of the largest urban sprawls in the country, stretching 150 km along the coastline, the urban landscape takes up much of what once was rich natural landscapes with a high native biodiversity (ABC NEWS, De Poloni, 2020).

When did this drastic change even begin? From the year 1788, the British treated Australia as a colony of settlement, not of conquest, and they took over aboriginal land (Muswellbrook shire council, 2020).

The British captain James Stirling founded Perth on Whadjuk country in 1829. In 1850, convicts from England were sent to western Australia to start building roads and other public infrastructure. Before this happened, the land was inhabited by the indigenous people of Australia, approximately 6000 to 10 000 Noongar people living in the south-western part of Australia, where they had been living for at least 47 000 years (National museum Australia, 2023). Thus, when the colonizers arrived, they took the land of the indigenous people, while very quickly making a lot of native landscapes disappear. Consequently, the indigenous people were forcibly displaced from their ancestral homeland (Seddon, 1972), alongside enduring mistreatment (Moorethe, 2021).

The local indigenous group, the Noongar people, like many indigenous people, have a deep connection to their land. The Noongar have a mindset that people, animals, rocks, plants, water, earth and air are all living things. Everything starts and ends with the country, and they would see the country almost as a family member. This deep connection translates into an adaptation to the environment, fostering a lifestyle attuned to the local conditions, including climate and natural surroundings. As a result of this, their built environment in combination with the natural landscape, made their cultural landscape, a landscape that has now disappeared in a lot of places in Australia (Page and Memmott, 2021).

In the years since, more than three quarters of bushland and wetlands have been destroyed in conjunction with population growth, which has led to loss of indigenous cultural landscapes and natural habitats (Ignatieva, M., et al. 2023). More specifically, 75% of Perth's original bushland and 80% of its original wetlands have vanished. These native habitats are so fragile, making it impossible to restore to its fully original condition. Consequently, this has precipitated a decline in the resilience of these landscapes to the impacts of climate change (The greens, n.d).

The dramatic loss of these native habitats and introduction of new plants has made Perth into one of the 35 global biodiversity hotspots (Ignatieva, et al., 2023). Projections indicate continued population growth for Perth, potentially reaching 3.5 million residents by 2050. Thus, it is important to protect the natural



Figure 2. taken North of Fremantle, with Fremantle harbor visible in the horizon, on South Cottesloe beach.



landscapes that still exist, but also to ensure efforts are made to restore the natural landscapes to the greatest extent possible. Addressing the challenges posed by population growth, climate change, and habitat loss requires integrating green spaces into urban planning strategies. This not only promotes public health but also enhances resilience to environmental stresses (The greens, n.d). To achieve this, we need to look into the historical layer of the native landscape structure and ecology, but most importantly acknowledge the strong connection that the indigenous inhabitants have to their land and native vegetation, which reflects their valuable and important knowledge. Drawing insights from indigenous ecological practices could offer valuable guidance for fostering sustainable urban development and ecological restoration.

Fremantle Harbour, situated along the coastline south of Perth (see figure 2), a site with a deep historical background and significance for the industrialization of the west, is about to undergo big redevelopment as the cargo port is going to be moved to Kwinana (Westport, 2024). This creates the opportunity to redesign the area in accordance with the site's unique conditions.

In light of this, there is potential to cultivate a thriving greenscape aimed to foster a deeper connection between people and the land, while also delivering ecological benefits. This can be done by delving into the history of the site, the history prior to colonization, as well as the creation of the harbour. This enables one to see the layers of history and how it can be synergized into the visual space.

We firmly believe that those possessing the most profound knowledge of the pre colonial land are the traditional custodians of the land - the indigenous community. Therefore, this endeavor underscores the importance of learning about their ecological knowledge and wisdom, as well as their connection to land as the site goes through changes. For example drawing insights from the interconnective lifestyle of the Noongar to the environment and how native flora and fauna has sustained their lifestyle with a holistic approach for thousands of years.

This will hopefully help to reconnect human environment relationships, as it is vital for humans to understand their environment, or "nature", as a part of themselves, to create a will to protect it. From our perspective, most of the world's population is living in cities and urban landscapes (The World Bank, 2023), therefore building the connection to our environment needs to happen in this space for it to be accessible and catalyze change.



Figure 3. Map showing the whole of Australia to the right and part of South Western Australia marked, to the left the area is enlarged with Perth metropolitan area marked. Map to the right @ Google 2024

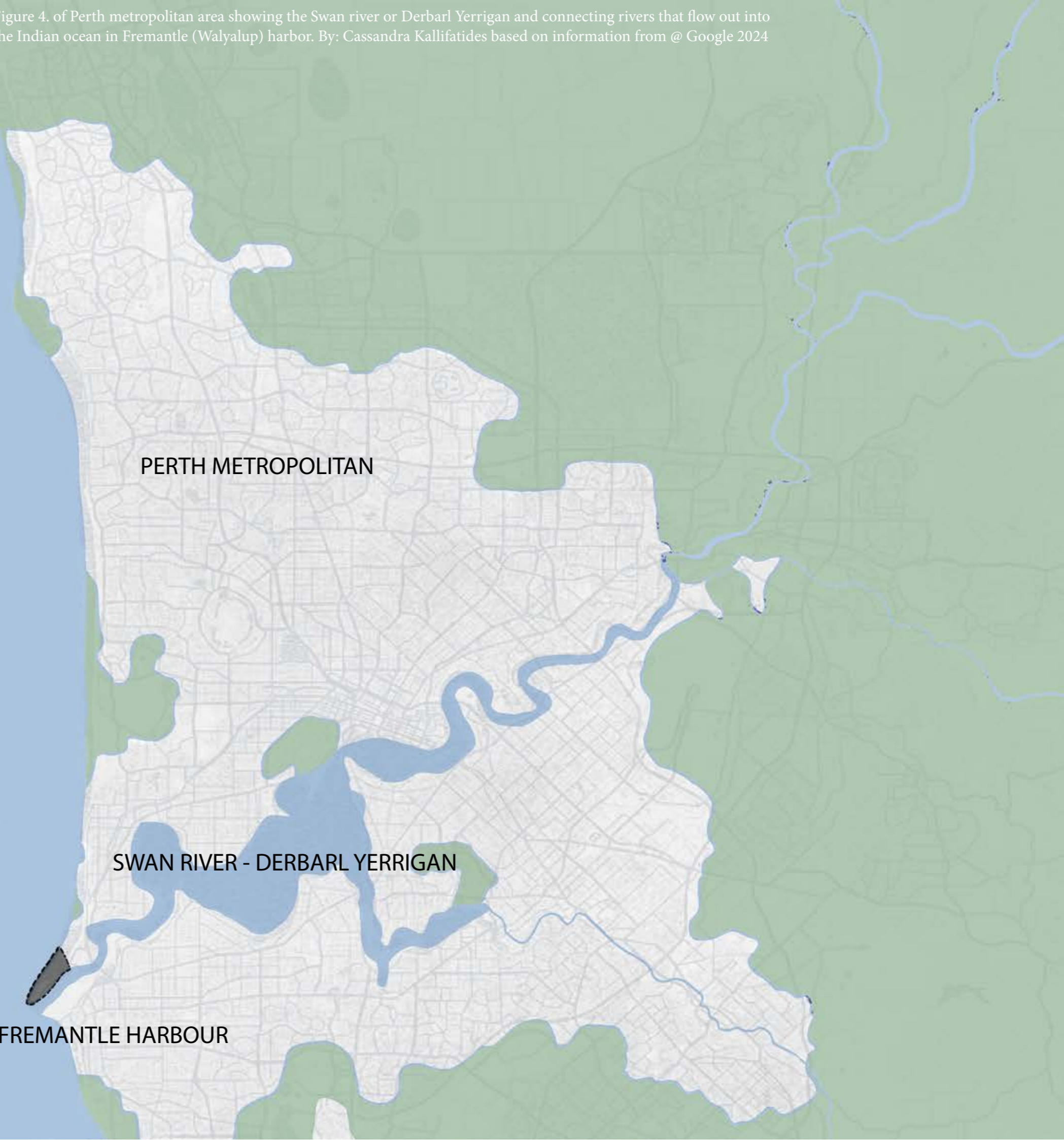
Figure 4. of Perth metropolitan area showing the Swan river or Derbarl Yerrigan and connecting rivers that flow out into the Indian ocean in Fremantle (Walyalup) harbor. By: Cassandra Kallifatides based on information from @ Google 2024

FREMANTLE IN WESTERN AUSTRALIA

The city of Fremantle (or Walyalup in local Noongar dialect meaning 'lungs') is situated along the coast of Western Australia, in the mouth of Swan river, not far from downtown of Perth. The city has, by the year 2021, 31,930 inhabitants and is both an industrial and cultural hub (City of Fremantle, 2024f). Fremantle settlement was created as it was a prime location to create a harbor in the mouth of the river, with access to the sea and the inland by boat. This has been a key part in the growth of the Perth metropolitan area as it has for many years provided important transport of goods for economic growth (Truban, 1978).

Today Fremantle City is part of the wide metropolitan area of Perth (see figure 4) as one of its municipalities, but for most of its existence it was a separate city, even a colonial rival during the mid-19th century to the settlement of Perth. Fremantle is also the most popular tourist destination of the state, with sites that have been evaluated by the world heritage listing, and has been described as a "historic gem" by Ashworth and Tunbridge (2000). They describe further that "the historic resource is both so dramatic, extensive and complete and also so valued as to dominate their urban morphology, their identity and their policy options." (p.155, Ashworth & Tunbridge 2000).

PROJECT AREA - FREMANTLE HARBOUR



Fremantle has for thousands of years been a place where people come together and connect, and its identity is deeply colored by its historic port. This has influenced the architecture of the area and has made Fremantle a space for creating, openness and cultural exchange (see figure 5-8). Therefore, it is important for stakeholders that the future of the new harbor area showcases these ideals (Government of Western Australia, 2023a). The harbor identity of Fremantle is an important aspect of understanding our site (see figure 10). However, the reflections do not hold the whole context and there is more to this area that directly meets the eye. Through our research, a different identity connecting the site unravels for us.



Figure 5: High street, in the city of Fremantle, showing the characteristic post-colonial architecture. Source: Wikimedia, 2015.



Figure 6: The ferris wheel in Fremantle, in a central park close to the ocean.



Figure 7: The cranes at the Fremantle Harbour. Source: Wikimedia, 2018.



Figure 8: Graffiti on building in Fremantle, which is recurring in Fremantle.

Figure 9. The move of the port to Kwinana and the redevelopment area of Fremantle harbor, as well as the development of transportation from Kwinana and the underwater ways to facilitate access of large vessels into the port. Based on information from Westport (2024).

The move of Fremantle harbour Walyalup's container port to Kwinana

The driving factor for the move of the harbor, according to Westport (2024) (the company in charge of the relocation) is stated as following; "trends towards larger vessels and increased congestion on key road routes in and out of Fremantle means it will be more challenging to move containers through the area." This means that it is not only because of the harbor itself that it will be moved but also because of the urban network around. Today Fremantle harbor has approximately 800,000 containers passing through its port each year, which is predicted to reach three million containers over the next 50 years.

Fremantle or Walyalup has for 120 years been a working port and therefore in the moment of change, it is a rare opportunity to reimagine the place - see figure 10 for our selected project area (Government of Western Australia, 2024a).

- This is the opportunity that we are taking on in our project, with a twist of connection to land and creating a deeper understanding of the place through landscape architecture.

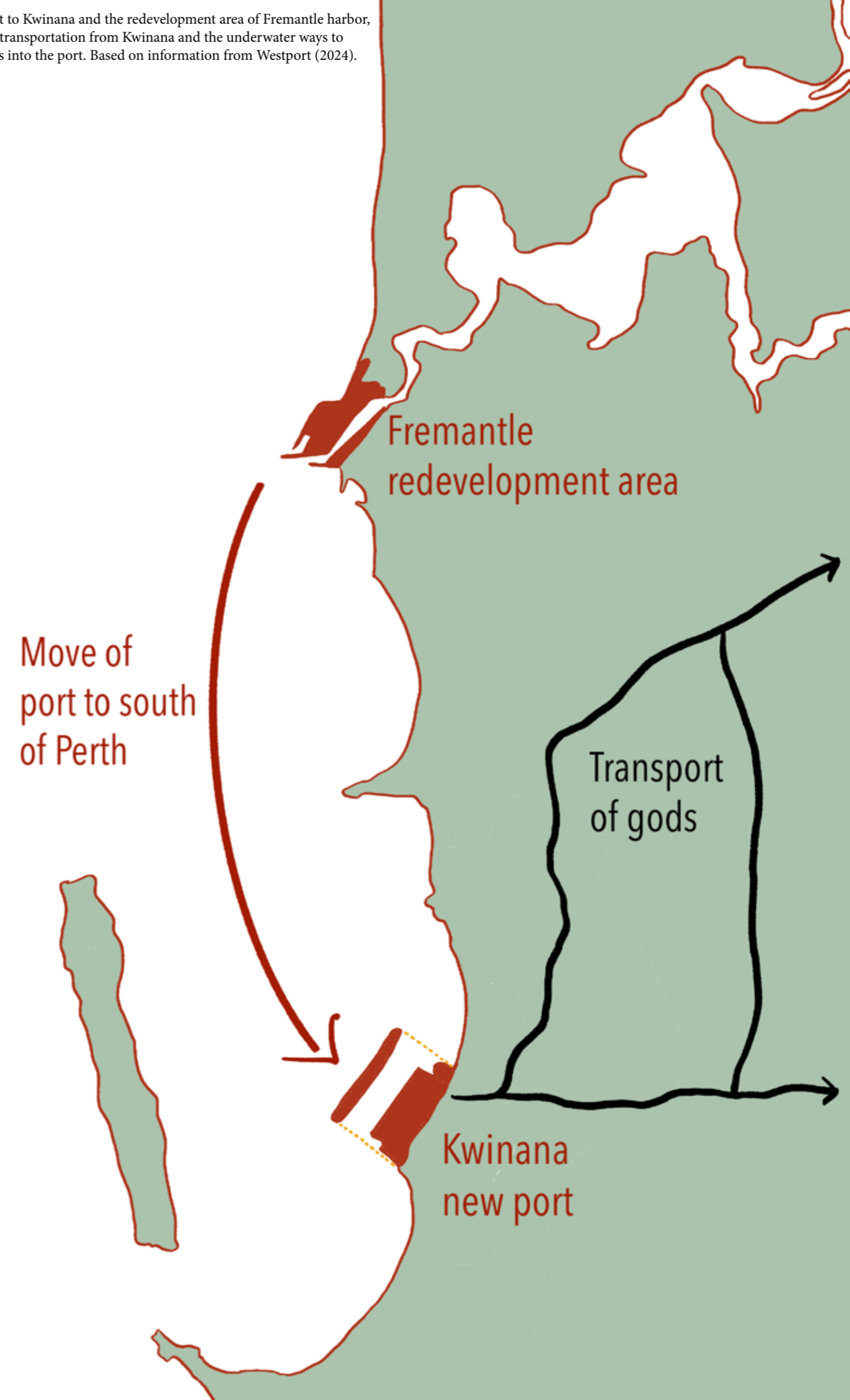


Figure 10. The northern part of the project re-development area, which we are focusing our project on (note that our project area does not include the full redevelopment area of Fremantle port). Map from Google Earth modified by Elvria Norqvist.

0 125 250 375 m



ROUS HEAD

NORTH QUAY

PROJECT AREA

A circular graphic containing a landscape. On the left, a large, rust-colored crane structure is visible. The background is a hazy, greenish landscape with a large, rounded hill. In the foreground, there are several trees, including a prominent one with yellow flowers. Several birds are flying in the sky. The text 'AIM' is overlaid on the left side of the circle.

AIM

Our study aims to develop a conceptual design proposal for North Fremantle Harbour that takes its historical significance into consideration, with an emphasis on the Aboriginal people of Australia, in our case the Noongar people. Our aim is to integrate diverse values and narratives into design solutions that preserve and acknowledge multiple historical layers of the site. Through including crucial historical knowledge, our objective is to contribute to sustainable designs that are resilient to environmental changes and provide ecological and social values that can contribute with a stronger human-environment relationship.



RESEARCH QUESTION

- How can the redevelopment area of North Fremantle Harbour be redesigned in order to enhance the understanding of its complexities, meet environmental needs, and foster a deeper human-environment relationship, while considering the site's contemporary values and history, with particular regard for the Noongar people?

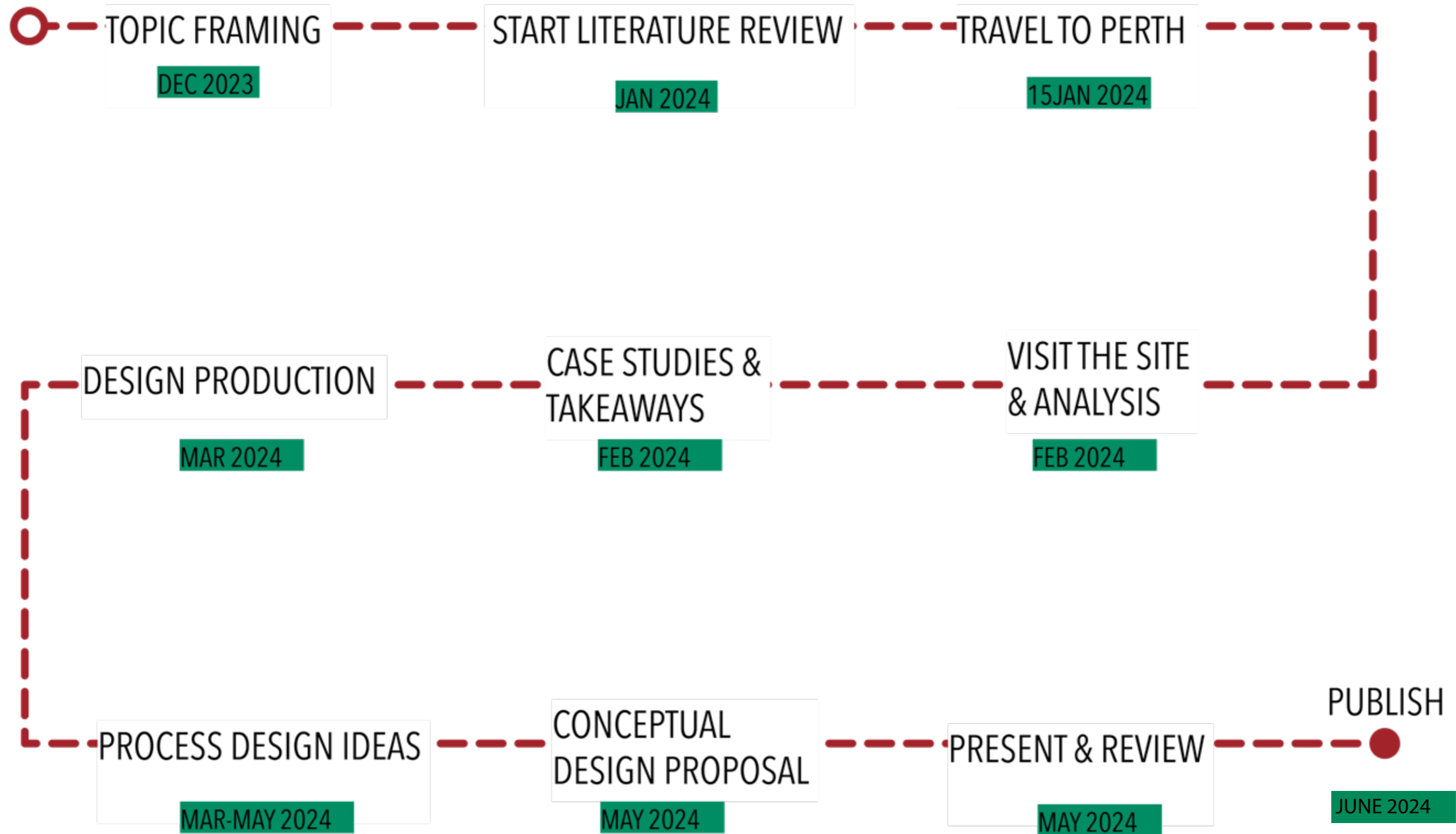
DELIMITATION

This thesis will be limited to the north redevelopment area of Fremantle harbor, as it is projected to be a remade urban space. The thesis will be compiled during the spring semester of 2024, consisting of 5 months full time work (see timeline of work on next page).

The design process will only include a conceptual design proposal and recommendations for implementation, not a detailed design proposal. The reason for this is that we believe more time and effort must be dedicated to researching how to incorporate the historical layers, rather than creating a full design proposal, due to our inability to carry out a co-design with indigenous people. With this in mind, we will not be able to communicate a viable design that truly reflects the indigenous knowledge of the site because our research is mainly based on indirect literature and online sources, although many of the sources come from the local Noongar community. This research has contributed to our understanding of how to incorporate such knowledge and views into our landscape architectural practice in the future.

We have chosen to limit our outreach to Elders because we recognize that they are not obligated to share their knowledge with us. However, we wish we would have had more time to engage more deeply with their community to learn from. We are grateful for the available knowledge from various sources and have received valuable guidance on our approach from Senior Aboriginal Engagement Officer Brendan Moore.

TIMELINE OF WORK



METHODOLOGY - Research by design

Our methodology and process of the study is inspired by Roggema (2007) Research by design approach to investigate how the indigenous history, traditional knowledge and nature based solutions of a specific site can be implemented in our landscape architectural practice and what we can learn from it.

To be able to answer our research question, we decided to use the Research by Design methodology by Roggema (2007) as design encompasses the exploration and experimentation with ideas, materials, and technologies, leading to innovative conceptualizations. It delves into researching cultural, social, economic, aesthetic, and ethical dimensions. Hauberg coined the term "research by design" as a strategic approach to elucidate the intricate interplay between design and research, generating novel insights about the world through the act of designing.

The methodology is a strategic approach to generate ideas and insights through designing and researching. A result of this could be to find new, and unexpected, even desirable perspectives within urban development. The flexibility and complex process makes the methodology particularly suited to deal with Wicked problems. Wicked problems are problems that don't have one straightforward answer and that is always changing, this makes them complex to solve and often involves weighing different aspects against each other. Design at its core is adaptation to the situation and therefore it can provide the preferred change (Roggema, 2007). Therefore, we think it is a suitable methodology for our research as we want to know how the historical layers of Fremantle Harbour can inform our design, for example a type of design that can create a stronger human-environment relationship, but also create a greater understanding of our site, which can almost only be done through a creative process that will generate different ideas.

This investigation will be made by looking at the Fremantle Harbour and connecting history, for example the traditional ecological knowledge from the Noongar community.

The design process can be divided into three stages Pre-design, Design and Post-design shown in (figure 11) and will be explained further on the next page (Roggema, 2007).

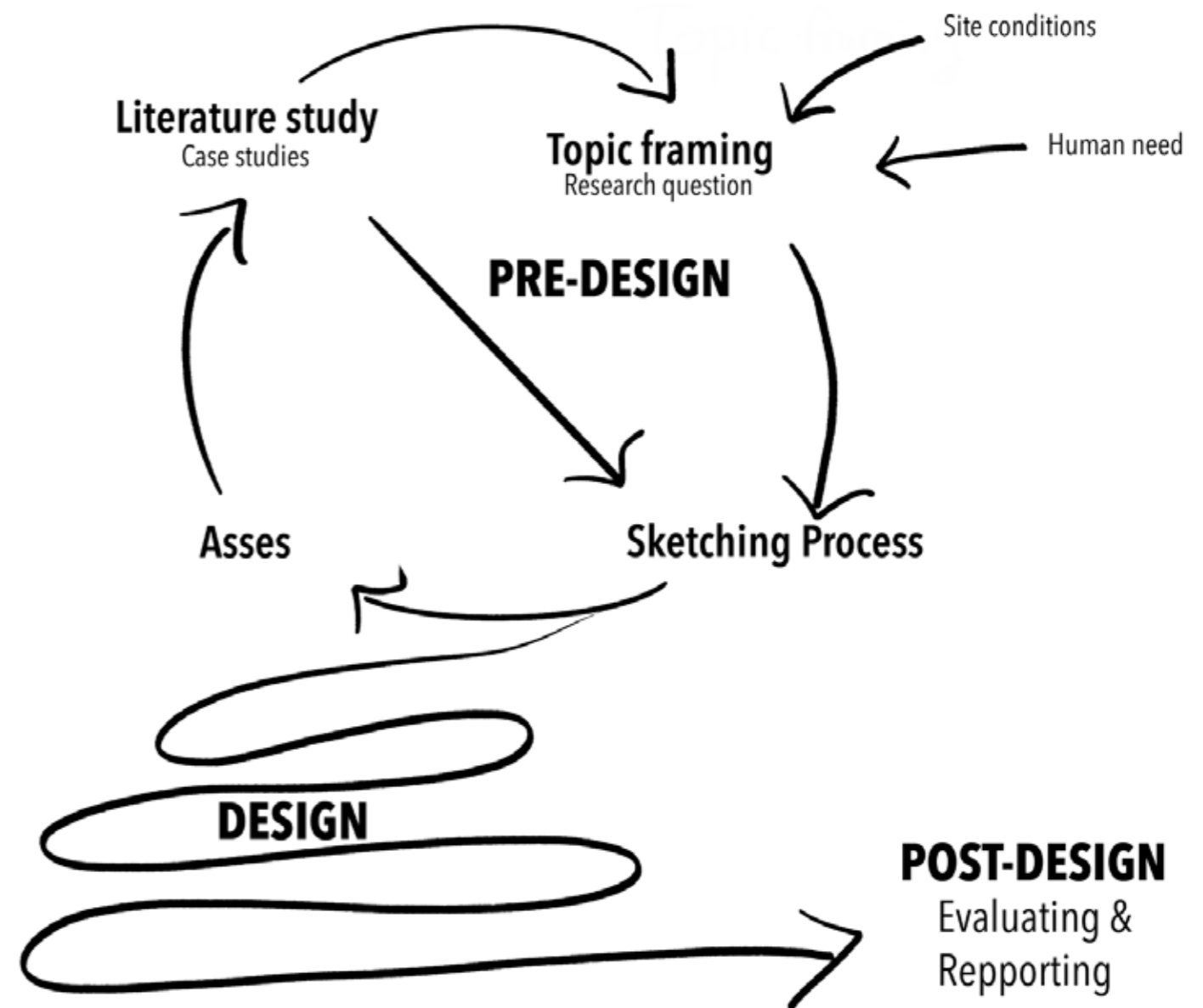


Figure 11: Diagram created based on information from Roggema, R. (2007) Research by design. Showing the intricate process of design work from pre-design, design and post-design.

PRE-DESIGN

In the pre-design research phase we learn about the site and its unique conditions as well as take inspiration from similar projects and potential solutions to the posed dilemma of the site. The background research is drawn into the design, with systemic, adaptive and analytics models (Roggema, 2007).

Literature Review

A literature review has been made of existing literature on the historical landscape of Fremantle, as well as aboriginal history, knowledge and design, with a focus on the Whadjuk region, the Noongar people and their connection to Fremantle harbor. Moreover, we have studied the harbour history itself of the Fremantle Harbour, to be able to gain an understanding of all of the different historical layers of the site. Along with TEK, NBS, urban resilience, and sustainable urban design in order to implement our findings in the creation of the multi-layered design.

Case Study Analysis

In order to gain inspiration and insights from other projects, we have been analyzing some case studies of urban projects that have integrated native species and cultural heritage, creating a multilayered landscape of urban change. Some of the case studies are examples of projects where they have implemented a co-design methodology with the local Noongar community, whilst all of the studied site's have included native species into the design.

Site Analysis

The site analysis has been done with inspiration from the

book Landscape analysis; Investigating the Potentials of Space and Place (2017) by Stahlschmidt, P., Nellemann, V., Primdahl, J. and Swaffield, S. The analysis is made on the Fremantle Harbour to be able to identify the characteristics, structure and content of the site. Identify challenges and opportunities of the site and for the integrations of NBS connected to the cultural ecological dimension.

In the book as earlier mentioned, the analysis is grouped into seven dimensions, whereas the dimensions relevant for our site analysis has been;

- natural factors (climate, hydrology, ecology, etc)
- biophysical (terrain, elevation, soil types, vegetation cover, ecotones, built infrastructure, etc)
- spatial patterns, element and features which combine to create landscape character
- human functions (food production, recreation, etc)
- human interests (ownership, customary use, etc)
- sensory qualities (visual, sound, smell etc)
- associated meaning (history, names etc) and value (price, identity, spiritual etc)

To conclude our analysis we compiled a SWOT analysis that frames the internal sites strengths, weaknesses and at the same time evaluate the environmental opportunities and threats (Pirselimoğlu Batman and Ender Altay, 2023).

Stakeholder Engagement

To be able to gain a better understanding about the incorporation of historical values, we have been engaging with local communities (see figure 12) and having had personal communications with experts in this topic.

Design

According to Roggema (2007) the core of the research by design process is the design phase, which is the phase where the background research is brought into design and the interactive approach is intensified. This phase has been done through finding principles for the different historical layers to incorporate into the design. Thus, the research and design are molded together - which lead us to our conceptual design proposal.

Create and sketch

In the process of brainstorming and sketching, we developed design principles based on our background, which we then used as a basis for our sketches. These sketches was tested and compared to each other, which led us further towards different design ideas to incorporate into the conceptualized proposal.

To understand how we as Landscape architects creates and shapes space and how that communicates different sets of actions in humans, we have decided to present a theoretical understanding from the book *The planting design handbook* by Robinson (2016). Robinson explains the differences between linear and irregular motive spaces and their effect on the visitors movement, as well as the differences and effects that enclosed and open spaces have.

The shape of a place is affecting the dynamics and how one approaches the area. An enclosed area is a place that suggests a place of arrival, gatherings, or a place to slow down, to stay at - this has been a primary approach for us in the creation of places for gatherings, which have been important for the creation of places for community

- which we will explain later on in the result. Further, we have explored the creation of a dynamic landscape with varying vegetation.

Robinson (2016) explains that a length of an area can be interrupted by bending spaces, corners or changes in the topography. The alteration of concealment and revelation creates a curiosity to explore what's to come around the next corner, whether it is incident, anticipation, surprise or arrival (Robinson, 2016).

These perceptions of space has been used as our tools for describing and creating space in our sketching process. Although we recognize it does not reflect how the indigenous people perceive space and the environment, it is important to understand how we as products of our own context understand space. We also want to show how we as landscape architects, with our knowledge and expertise can work with space whilst bringing in other perspectives into our practice.

Post-design

During the post-design phase the result is compiled into a comprehensive report and conceptual design proposal for Fremantle harbor documenting the methodology, findings, and recommendations. Presenting the proposed conceptual design for Fremantle Harbour, emphasizing its potential impact on urban resilience, cultural heritage, and ecological value. As well as our findings from the design process and what impact it might have.

Figure 12: Truth telling initial smoke ceremony on the forshore of Bathers beach.



THEORETICAL CONCEPTS

To understand the work that we have done we first have to establish a few theoretical concepts. Firstly we will present an introduction to decolonization, contemporary colonialism & landscape architecture. Thereafter we will present traditional ecological knowledge and lastly Nature based solutions.

Decolonization, contemporary colonialism & Landscape architecture

Landscape architecture and colonization are inseparable concepts in our view as colonization is including the act of seizing land and transforming it, such as extracting from land or imposing sovereignty (Kaewen Dang, 2021). Therefore, there is a need to establish a few concepts relating to this discourse around land and our practice relating to the effects of colonization and how it is related to our practice today.

Decolonization is a distinct political project that strives for the complete abolition of colonial power structures, but often metaphorical decolonization discourses by non-indigenous peoples are just mitigating the effects of colonization. Thus, such measures lead to upholding these structures rather than to dismantle them (Kaewen Dang, 2021).

A local example of actions to recognize the history connected to urban planning described by Brendan Moore (2024), Senior Aboriginal Engagement Officer, working for the city of Fremantle, is the place naming of the Yagan Square in downtown Perth. During our personal communication Moore describes that Yagan who was an important figure of resistance and leadership for the Noongar people. The land that the Yagan Square is situated, is not a part of today's Perth metropolitan that Yagan comes from; meaning the land that today's Yagan Square sits on is another person's land. This shows

that there are intentions to achieve recognition for the history, however, because of minimal engagement with the local Noongar community, the efforts are out of touch with the context. Although, there have been some efforts made in Perth to try to connect and heal. An example of 2024, is when city of Fremantle launched a one year long Truth-telling program, that focuses on the truth aspect of the history and how it is the start to understand where to go forward together (City of Fremantle 2024b).

Contemporary literature critic aims to address how landscape representation does have power over land, although attention should also be given to the field itself, to understand the geopolitical power it holds but also its underlying coloniality (Kaewen Dang, 2021). This leads us to recognize that our project is merely an attempt to recognize the importance of learning of this discourse and does not fully reflect a political project and call for power structure transformation, although it does reflect our personal attempt to deal with our own coloniality and reflect our own practice methods and decision making. Thus we do recognize that this is not enough for real change to happen and decolonization is a much more complex process that would take further dedication. Although we do believe that starting with ourselves is a powerful source to spark change.

Traditional ecological knowledge

One crucial theoretical concept that has greatly contributed to our understanding of the historical connection between humans and the environment at our site is the Traditional Ecological Knowledge of the Noongar people. We've explored this knowledge to be able to answer the question: whether it can provide insights into the site's environmental requirements, as well as foster a deeper connection between humans and the environment?

Traditional ecological knowledge (TEK) is the knowledge of hundreds of years that humans have been living in contact with the environment. The close contact with the environment have made many indigenous people form a life and harmony with nature, and organized their lives around a highly refined awareness of the environment (Inglis, J. T., 1993). This traditional ecological knowledge encompasses practices and beliefs that evolve through adaptive processes and are transmitted across generations through cultural means. These knowledges and practices can include the relationship between living beings (animals, plants and humans), as well as the relationship with the environment (Gómez-Baggethun, et al. 2012). This applies to the connection that the Noongar people in Western Australia have. The interactions and experiences they have had with the environment - known as Country - are knowledge that the Elders of the Noongar community preserve (Hughes-Hallett, 2010).

Recent studies highlight its importance in tackling today's environmental challenges. It shows that over time, these communities have developed ways to adapt to disturbances in their environment by creating rules and practices unique to their areas. In summary, TEK and shared belief systems play integral roles in facilitating collective action among communities, enabling them to effectively confront crises and sustain the health of their environment over the long term (Gómez-Baggethun, E., et al. 2012).

This concept is important to understand as we will attempt to learn from the local Noongars ecological knowledge and connection to land, as it is an intrinsic part of understanding the site and its pre-colonial landscape and ecology. This value systems and knowledge can inspire sustainable planning and management practices into the urban context.

Nature based solutions

As we investigate the historical landscape for inspiration in our design process, our proposal also entails a form of restoration involving native plants, thus aligning with the concept of Nature Based Solutions.

Nature-Based Solutions (NBS) in itself is a comprehensive concept utilized as a tool for ecologically sensitive urbanism within urban design and planning. It is multifunctional, cost-effective actions that are used for protecting, developing or creating ecosystems, as well as increasing resilience while reducing vulnerability. With today's climate changes and crises, nature based solutions are used for tackling both climate change and biodiversity loss (Naturvårdsverket, 2022). Therefore, NBS can serve as a tool for transforming cities into nature-positive environments by integrating nature into urban spaces and fostering closer connections between people and nature (Ignatieva, M., 2023). As we want to investigate how this proposal can meet our specific site's environmental needs, these are aspects that we hope that our design can encompass.

IN-DEPTH BACKGROUND

The in-depth background is presented under five main subjects. Firstly there will be a introduction on colonialism, land and the aboriginal people in Australia. Further, we will go more in-depth about the local Whadjuk Noongar community and their connection to Country. Furthermore, we will frame the native habitats and vegetation of the site, followed by a historic collection of the harbour. Finally we present how the incorporation of indigenous landscape values can be made into design and planning.

Colonialism, land and the aboriginal people in Australia

To understand our sites deep history and identity we need to look back in history and present the indigenous Aboriginal (First Nation) people of Australia, who first came to Australia 60 000 years ago (Ignatieva, et al., 2023), which encompasses a long history, culture and connection to land that has been shaped over thousands of years. The Aboriginal worldview is based on a different set of ideas than the western, described in the book *Design Building on Country* by Alison Page, an Aboriginal Walbanga and Wadi woman, she explains how everything starts and ends with Country (land), how it is part of an endless continuum that becomes a flow of life and ideas emanating from Country, which is referred to as the Dreaming (see figure 22 for more information about the Dreaming). She describes how in this view everything is living, people, animals, plants, rocks, earth, water and air. Therefore there is a strong and powerful connection between people and the land - Country (Page & Memmott, 2021).



Figure 13: W.A. Cawthorne (dod 1925), Public domain, via Wikimedia Commons Aboriginal family traveling through Country. Note, seen from a western percep-

Further, the creation of the landscape itself is said to be formed through the actions of ancestral creational beings, for example the formation of features of the landscape such as the rivers. These creators populated the world with animals and vegetation, and created the first humans (Arthur & Frances, 2019).

When the British settled in the west, with a rapid immigrant population from 1829, they forever changed the landscape and built their society through industrialization and urban expansion, which led to the degradation of the native aboriginal land (Seddon, 1972). Over the years this has led to a change in way of life and displacement from Country for the Indigenous population (SWALSC, 2024c) traced back to colonialism and imperialism that has impacted many indigenous communities around the world and still does (Minority rights Group, 2017). This led to an initial decrease in the aboriginal population. In June 2021, the aboriginal population was estimated to be approximately 980 000 Aboriginal and Torres Strait Islander people, representing 3.8% of the total Australian population (Australian Bureau of Statistics, 2023), in figure 14 and 15 one can see the distribution and population of the aboriginal people from today.

“You came to our country, you have driven us from our haunts, and disturbed us in our occupations: as we walk in our country we are fired upon by white men; why should white men treat us so?”

- Influential Noongar, Yagan, son of Midgegooroo, whose land was south east of Perth in canning river region. Early 1800. (SWALSC 2024e)

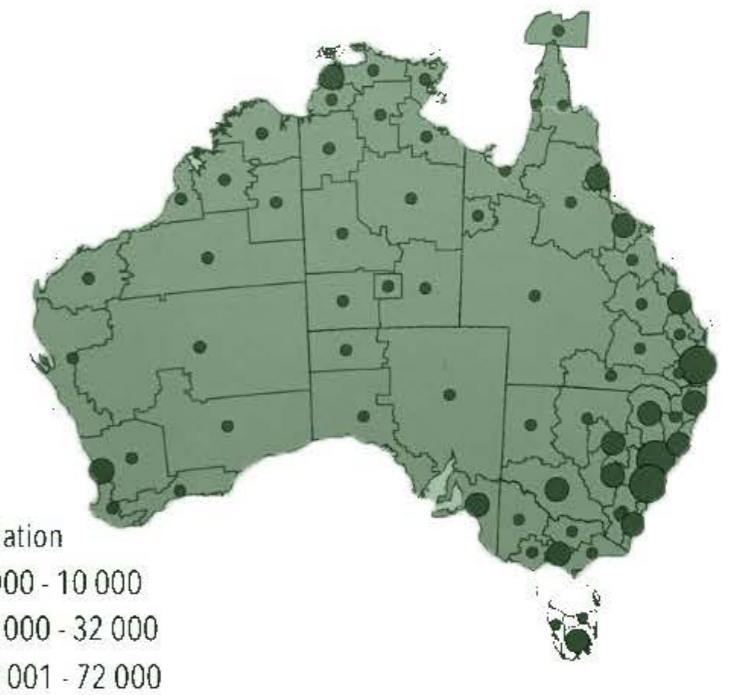


Figure 14: Map showing the indigenous population as a percentage of the total population in Australia year 2016. From the book *Atlas of Indigenous Australia* (2005) by Arthur, B., and Frances, M.

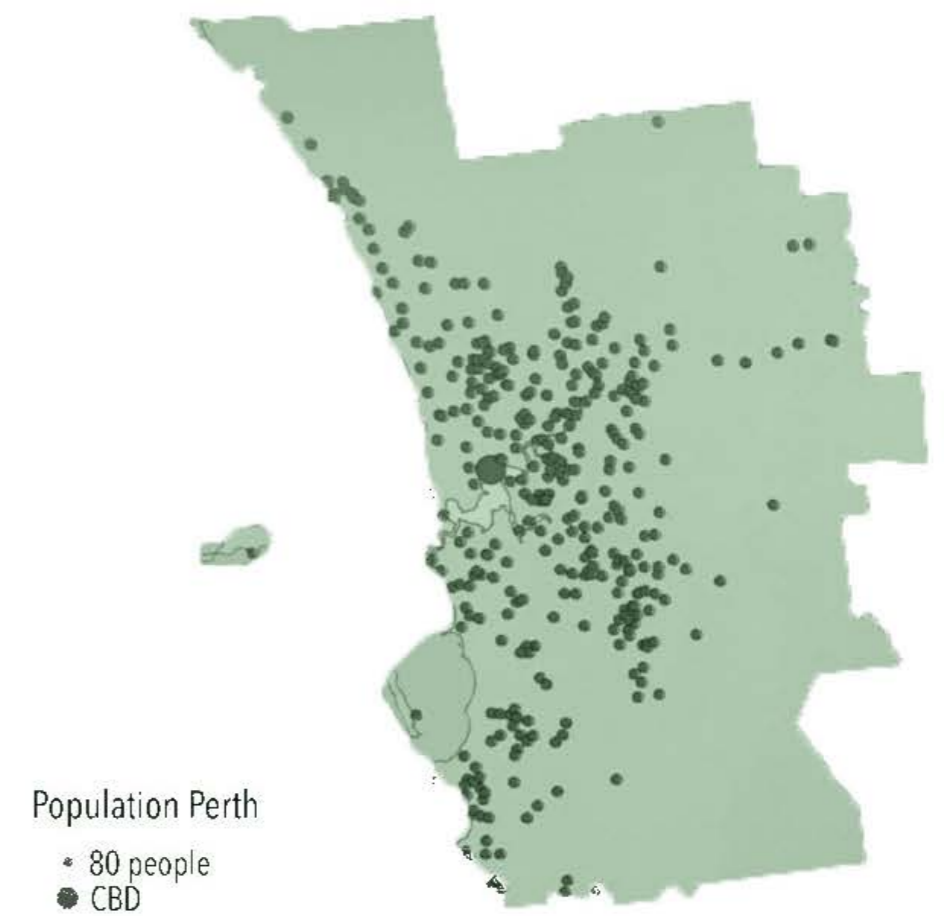


Figure 15: Map showing the indigenous population as a percentage of the total population in Australia year 2016, over the area of Perth. From the book *Atlas of Indigenous Australia* (2005) by Arthur, B., and Frances, M.

Colonialism is defined as “the policy or practice of acquiring full or partial political control over another country, occupying it with settlers, and exploiting it economically.” (Oxford University Press, 2024). Provided by the Noongar Boodjar Language Cultural Aboriginal Corporation, this map gives a visual representation of the history of the surrounding area, post-colonization from their perspective.

It is also important to note that the effects of colonization are not only things of the past as an example Paul Memmott (2022) describes in the book *Gunyah Goondie + Wurley* The aboriginal architecture of Australia how today this history is manifested in a variety of crises for Aboriginal and Torres Strait Islanders people related to architecture, such as housing, infrastructure deficiencies and inappropriate architecture and planning that deflect the social flow of the community.

Furthermore, while it is well known that colonialism has had a significant impact on the indigenous societies, little is known and recognized the significant roles they play for Australian society today and the impact they have (Page & Memmott, 2021), including the contributions to the field concerned with land. Therefore the focus of this thesis is not to dissect the impacts of colonialism but to delve into the topic of current implementation, and how a Country first approach can be reflected in our work and understanding. All the while presenting the truth of the past is important, vital even, it would be a whole thesis work in and of itself, therefore we have only give a condensed representation of this discourse.

More over impacts of colonialism such as displacement from the Country for the traditional custodians, leading to them not being able to care and practice their traditions on land to the extent as before (SWALSC 2024e), such as forestry, the country has gone through a degradation of its natural habitats. In the book *Mapping Boodjar Walualup Fremantle* (2022) by Noongar Boodjar language Cultural Aboriginal Corporation, they show the passage of events during the arrival of the settlers, from a Noongar perspective represented in different maps (see map 16). Showing the history from their perspective and pinpointing important event.

One of the reasons for this is the European settlers changing the landscape for other agricultural uses and European development, with the use of exotic species, the landscape is forever changed and under threat (Ignatieva, et al. 2023), which will be explained further in the next chapter.

The vegetation loss in Western Australia

This land was carefully cared for by the indigenous community and is today considered a biological hotspot (as seen in figure 17). A biological hotspot is a place that contains a minimum of 1,500 endemic species vascular plants not found anywhere else on Earth and has lost at least 70 percent of the primary native vegetation (Mittermeier, et al. 2005). This degradation of the landscape is directly connected to colonization and globalization of Australia as the main causes of these changes are the urban development and the introduction of exotic species based on European planning. A lot of the native Australian vegetation have not been able to compete against the introduced ones, which have led to losses in many native ecosystems. Thus, since European colonization, the human impact has led to a fragmented landscape and the loss of a lot of native ecosystems (Ignatieva, et al., 2023).

The reason for this extreme change in the ecosystem is because of the sensitivity of the native flora, there is no other urbanized and industrialized country that is as ecologically vulnerable as Australia. When compared to Europe, the Australian environment developed under completely different conditions, such as a whole other environment and culture. These two factors have led to a unique perspective of urban nature. In 1970 an environmental movement took off. This drew attention to the uniqueness and the importance of the native

biodiversity that had dramatically degraded due to urban development (Ignatieva, et al. 2023).

This environmental movement also highlighted the distinctiveness and significance of indigenous biodiversity, which had suffered significant degradation as a result of urban expansion. This underscored the crucial role of native ecosystems in fostering a sense of belonging and identity, a sense of place. A way to bring nature back to the cities is to return native species and natural habitats, for example wetlands or plant native species into parks and road verges. Especially in those places where they have disappeared or have become rare (Ignatieva, et al. 2023).

'We can identify and feel close to the natural bush but when you keep on destroying that bush, we lose who we are, not that we want to live in it [the bush] but it reminds us of our past, the old people and our culture.'

- Anonymous Aboriginal perception (Macintyre, K. Dobso, B. 1999)

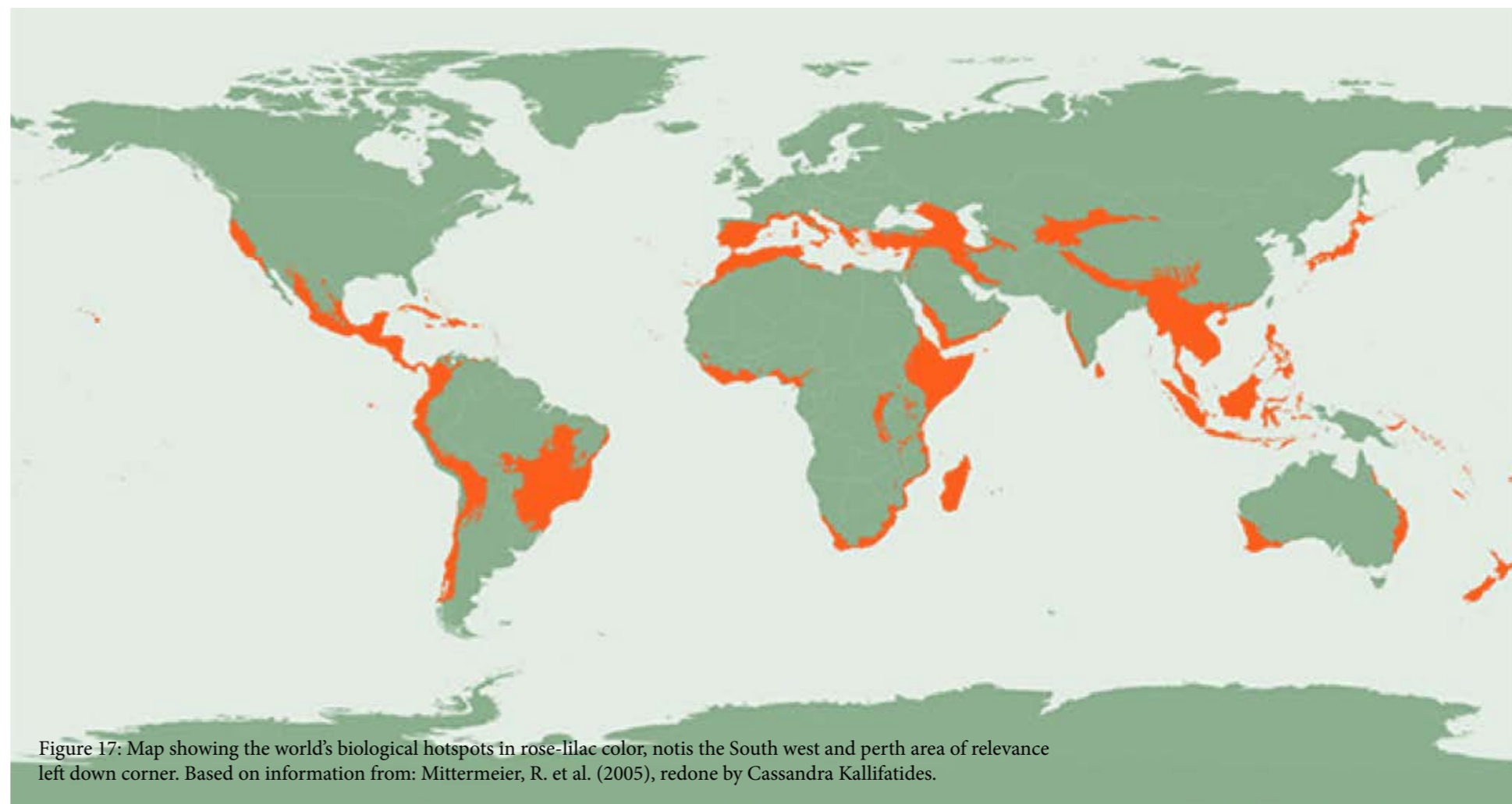


Figure 17: Map showing the world's biological hotspots in rose-lilac color, notis the South west and perth area of relevance left down corner. Based on information from: Mittermeier, R. et al. (2005), redone by Cassandra Kallifatides.

Indigenous values and stewardship of land

Indigenous peoples and the Whadjuk have deep connection to it's land - Country. It is part of, and an extension of themselves, therefore the will and need to care for it is strong, a symbolization for this can be seen in figure 18, which shows how they live with their environment, and not against it as in figure 19. One can look upon this as a form of stewardship and not ownership (Page & Memmott, 2021).

As described by Elder Vivienne Hansen in her book about native edible plants, the native flora was used for many things, the trees provided material to create spears boomerang, digging sticks and bowls. Bark was used to wrap food and provide shelter and flowers provide nectar for a sweet treat. The skins of kangaroos were made into soft and durable cloaks (booka) and jams were used to make flour (Hansen & Horsfall, 2019).

But the land does not only bring them sustenance, it gives them food for the soul, as the Country is interconnected with the Aboriginal spiritual belief and way of life (Page & Memmott, 2021). Aboriginal spiritual sites link cultural tradition to place, how people and land are intertwined over time. These sites are and have been for thousands of years a significant role in the cultural heritage of the aboriginal people (Hughes-Hallett, 2010). The ceremonies and rituals of the Noongar people have been performed over thousands of years and have reinforced their connection to Country which in turn reflects their sustainable use of the environment (see figure 18-19). It is an important part of Noongar culture and practices that are passed down by their Elders through the generations. (SWALSC 2024a)

"We never catch marron when the creek didn't run, or the river didn't run. Always catch marron when the water runs. That's our culture. You gotta give 'em a chance to breed."

- Partick Hume, oral history, SWALSC (2024a), 2008

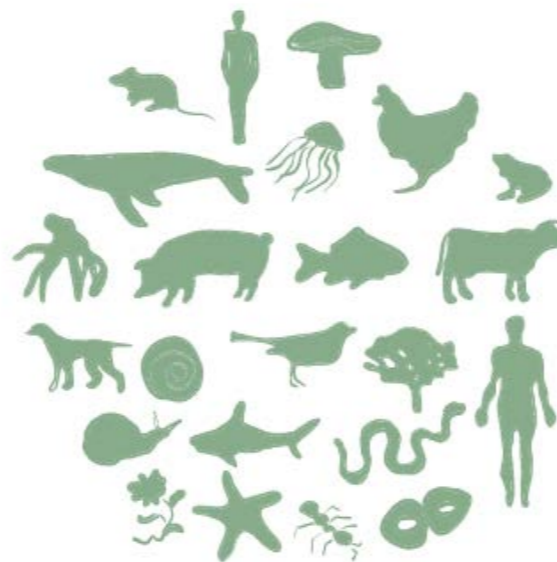


Figure 18: A symbolization of living with the environment and not against it, diagram: S. Lehmann, (2010).

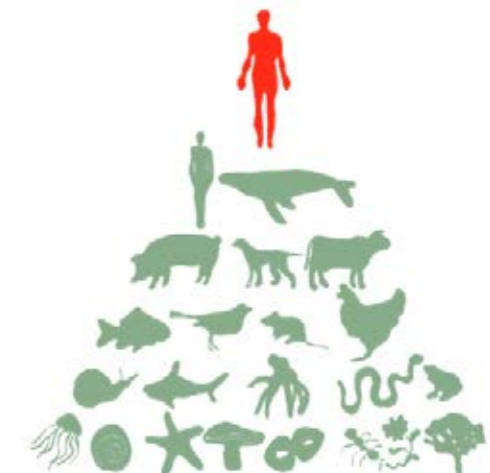


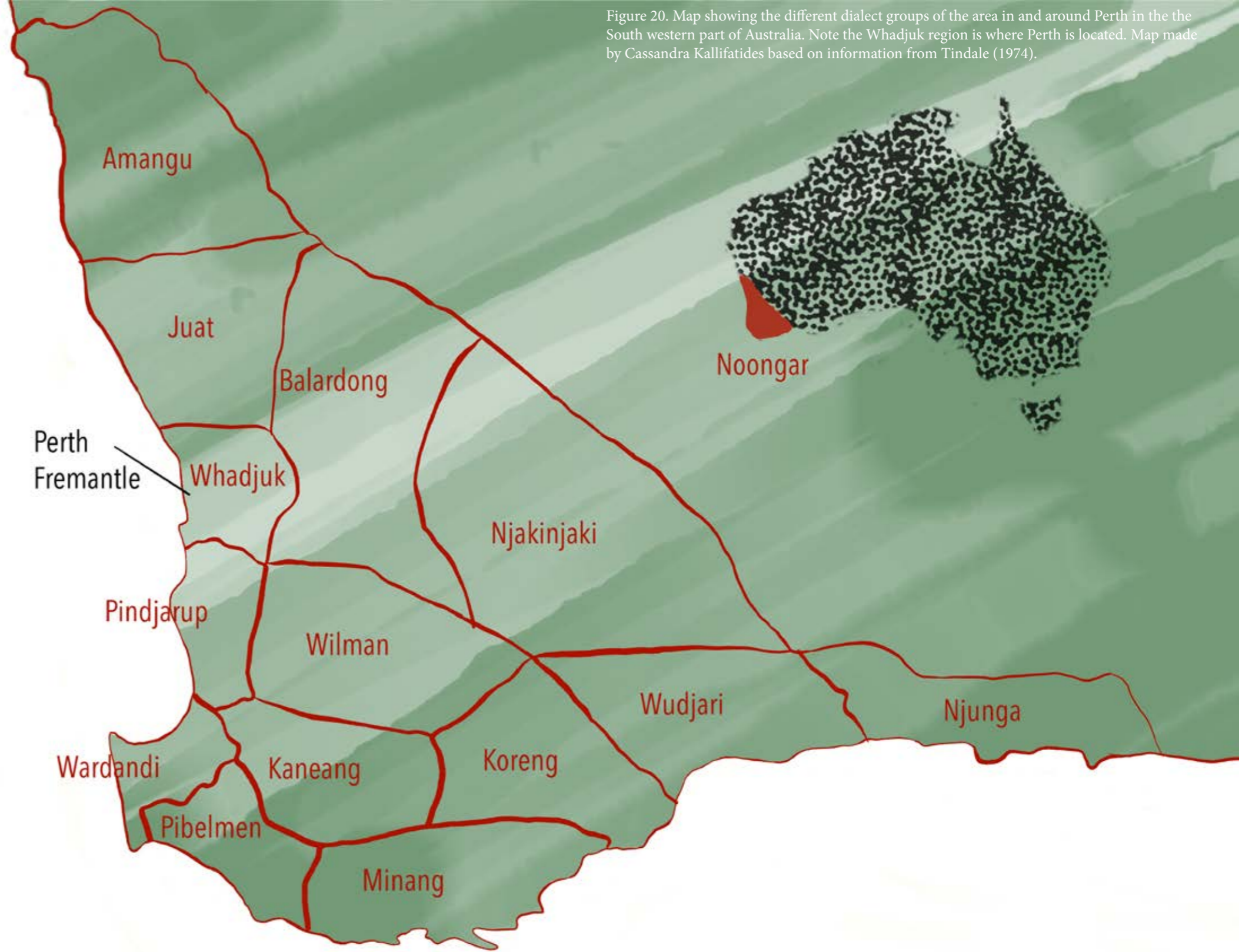
Figure 19: A symbolization of when humans prioritize themselves above all other forms of life, diagram: S. Lehmann, (2010).

Figure 20. Map showing the different dialect groups of the area in and around Perth in the the South western part of Australia. Note the Whadjuk region is where Perth is located. Map made by Cassandra Kallifatides based on information from Tindale (1974).

The Whadjuk Noongar people in Western Australia

The Whadjuk Noongar people are the local dialect group of the Noongar, in Fremantle and Perth area (see figure 20), the size of the Whadjuk region is approximately 5,580 km, in figure 20 one can see the distribution of the different dialect groups of the area in and around Perth in the the South western part of Australia (SWALSC 2024b). The Whadjuk people have a deep spiritual connection to its land (booja) as it has been their ancestral home for at least 47 000 years. The Whadjuk are part of a larger group known by common language as Noongar. (City of Fremantle 2024a).

Described by South West Aboriginal Land & Sea Council (SWALSC), the Noongar people have their own language, lore and customs, which is characterized by their spirituality and connection to Country. Being Noongar means being part of a family and community, determining their relationship to the country, it empowers their identity as a Noongar person. The connection to the country also comes with a responsibility to care for land, such as protecting spiritual sites and the heritage of their family. Different Noongar groups have custodian status over certain parts of the country as it has been considered their traditional land and therefore others who do not hold these rights should seek permission to visit. Although this did not mean that other groups could not stay in these areas for some time when they were not used by the custodian (SWALSC 2024b). The Noongar refer to the Fremantle



coast and limestone hills as Booyeembara, and this area was and is traditionally regularly visited in summer for fishing (Hughes-Hallett, 2010).

Based on information provided by the City of Fremantle's Senior Aboriginal Engagement Officer Brendan Moore the (2021) during a culture walk in Fremantle, the arrival of the colonial settlers impacted the indigenous inhabitants of the Fremantle area and its surrounding drastically over the course of just a few years. Moore then proceeds to talk about the history of the Whadjuk people during the early years of colonization, which still impacts the indigenous community to this day in the form of generational emotional trauma. It is a history of horrific mistreatment and displacement from country, therefore it is of importance to recognize the history, for reconciliation and continued effort to deal with the impacts of inequality and injustice.

During our personal communication with Moore (2024) he explains how he is one of the descendant from the 9 survivors out of approximately 300 from the Whadjuk dialect group that survived after colonization of the area (National Native Tital Tribunal 2022 & Neville Green n.d), he then proceeds to explain how this has lead to a tremendous loss of knowledge which has created a huge gap. This also makes the knowledge that is preserved becoming much more precious and needs to be passed on to the next generation. As described by John Host and Chris Owen in the book: "It is still in my heart, this is my country";the single Noongar claim history (2009), awarded the Australian Human rights Commissions Non-Fictional Literature award, the Noongar people and culture has survived and are still practicing their traditions and living their lives. They make claims to

continue protecting their traditional land to be able to live their lives.

Modern history is a story of resistance and the struggle to achieve recognition, that lead to a historic judgment on the 19th of september 2006 in favor of Noongar Native Title over the Perth metropolitan area. The case is known as *Bennell v State of Western Australia*, ruled that Native Title continues to exist within the area in and around Perth, **the first to recognise a Native title (of land) over a capital city and surrounding** (SWALSC 2024b).

In figure 21. the native title claim area of the Whadjuk people can be seen, which is the area where Fremantle and our project area is located. This is an important note as it is not only by our moral judgment that traditional custodians should be recognized and included in the decisions made about land but it is a legal right.

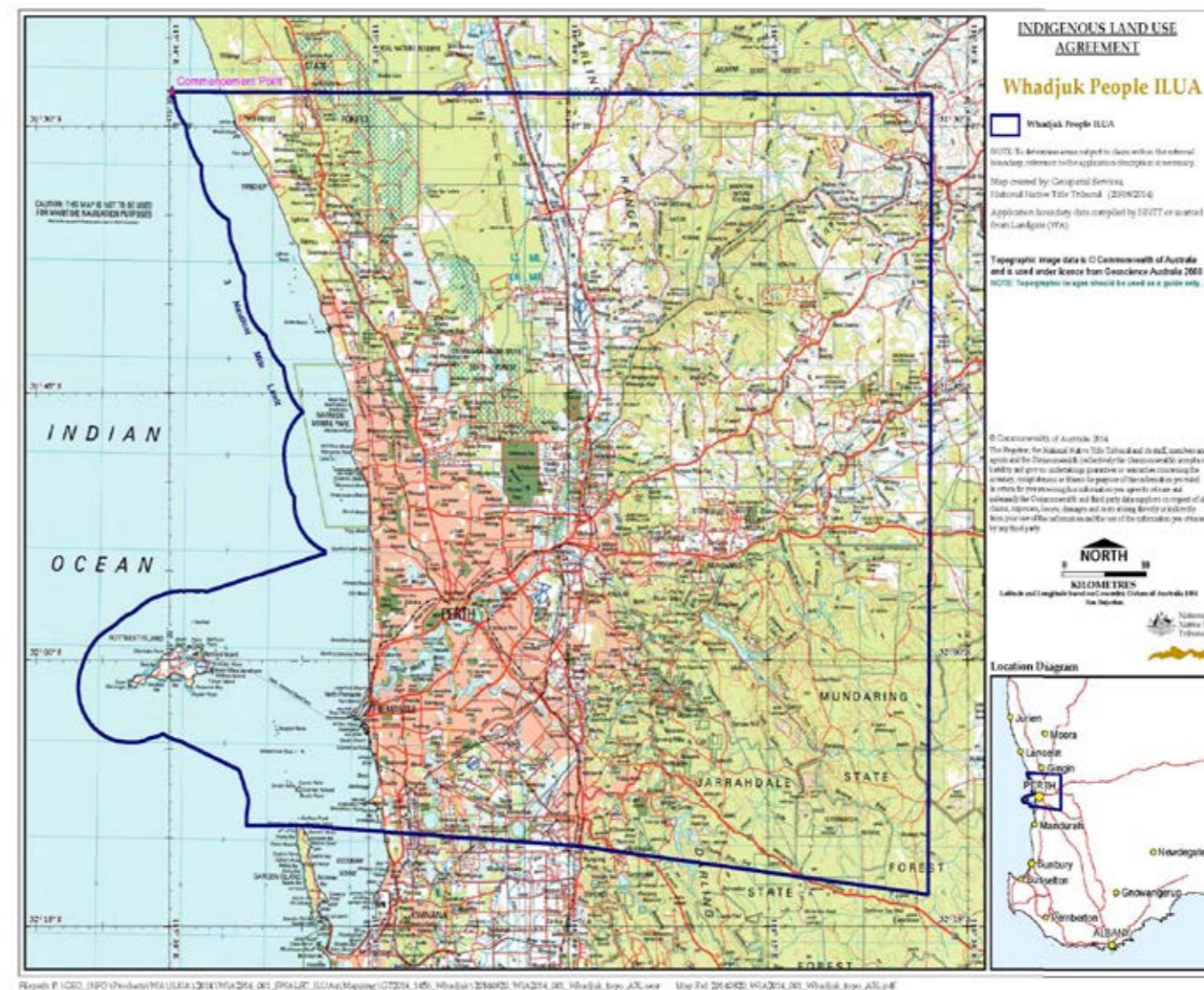


Figure 21, of Noongar native title agreement Groups for the Settlement, Whadjuk; Perth metropolitan area. Taken from Government of Wester Australia (2023c). Note the marked area that is included in the native title claim.

Map showing the Dreaming from the Noongar perspective. We want to note the Dreaming track that stretches in and around the Fremantle area, as well as the limestone marked at the mouth of the river. Along with the abundance of stories connected to the surrounding area of our project site, as they are of importance to try and understand connectiveness of place.

KOONDARMINY

DREAMING

Koondarminy explains how life came to be; it is the stories and beliefs behind creation.

The theme of Koondarminy describes how Walyalup Boodjar began and how it has changed through thousands of years and continues to change. Whilst this theme focuses on old stories passed down by the old people, it is important to note that Koondarminy is not static or linear. It is the past, but it is also the present and the future. It is constantly evolving to explain events and changes today, such as storms, happenings at the port and land clearing.

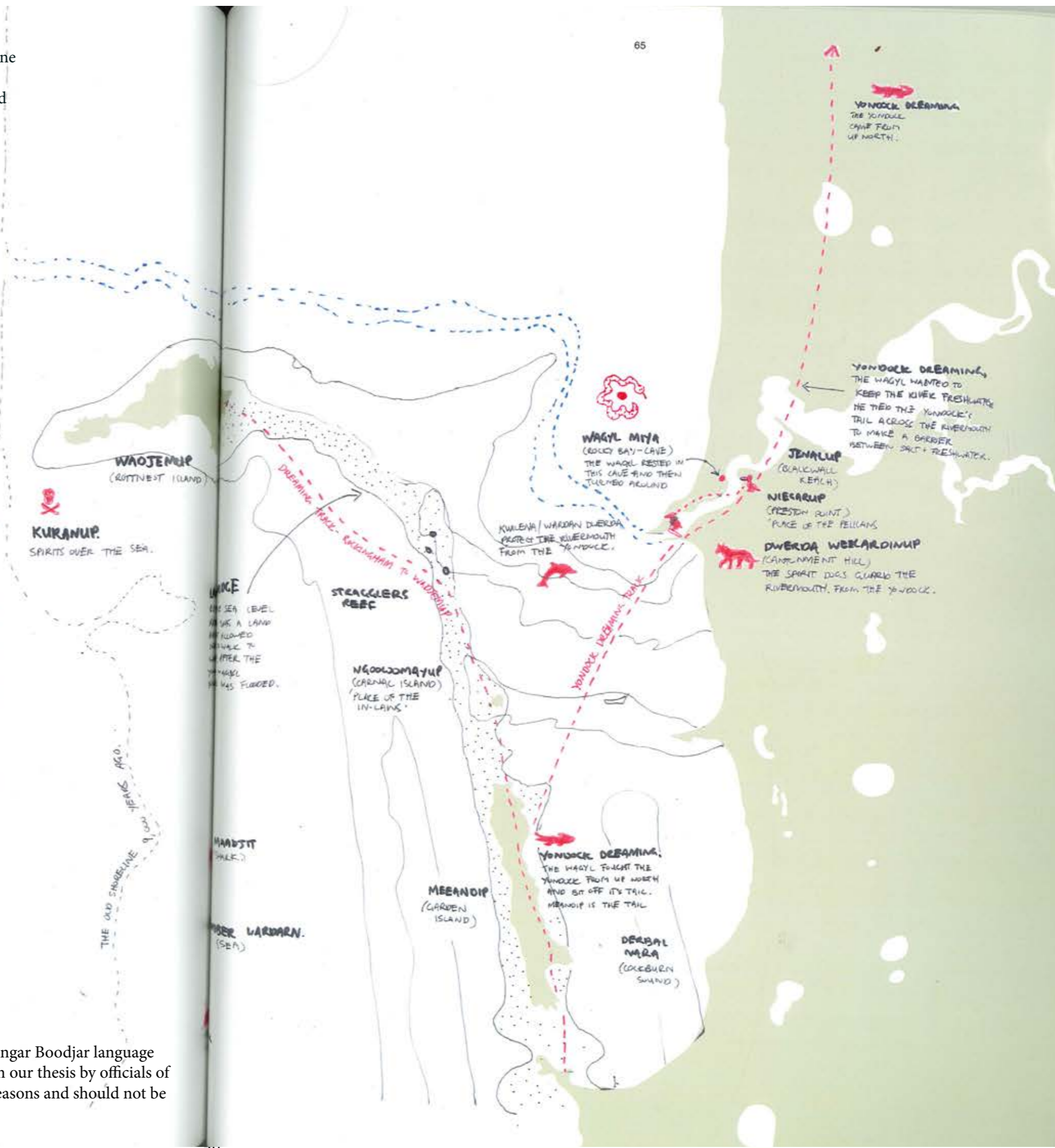


Figure 22. Maps from the book; Mapping Boodjar Walualup Fremantle (2022) by Noongar Boodjar language Cultural Aboriginal Corporation. DISCLAIMER: Map have been granted to be used in our thesis by officials of the Noongar Boodjar Language Cultural Aboriginal Corporation, soly for academic reasons and should not be copied or modified.

"We did so despite the disruption resulting from being forced off our land as a consequence of white settlement and Government policies."

- South West Aboriginal Land & Sea Council (2024d)

The six seasons

The six seasons (see figure 23) is a way of life which formed how the Noongar people moved over the land with the change of the seasons. The seasons are not determined by specific dates, but by changes in the environment, as Noongar people lived in deep connection to the environment and environmental seasonal changes. These seasonal changes take an important part in their reading of the landscape and their survival. (City of Fremantle; Moore, 2021). This demonstrates the deep connection the Noongar people have with their environment, reflected in their extensive traditional ecological knowledge. This knowledge has been crucial for comprehending ecological dynamics. Consequently, some of the native plants responsible for these seasonal changes have been incorporated into the proposal.

Birak (December - January)

In Australia, the dry season, often symbolized by the color red, represents fire, sun, and heat. Indigenous Australians historically utilized controlled burning during this time to promote seed germination, improve grazing areas, and enhance mobility across the landscape, creating mosaic patterns (ECU, 2024) - a technique that we would consider bringing in to the management of the site.

Bunuru (February - March)

In the hottest, driest season, the Whadjuk people of Walyalup (Fremantle) fish abundantly along the coast (Hughes-Hallett, D., 2010). Fishing, a traditional technique involving women and children driving fish into shallows with branches, remains culturally significant. This season also witnesses for example the blooming of white flowers like marri, jarrah, and ghost gums (ECU, 2024) - some of which are used in the result.

Djeran (April - May)

During Djeran the cooler weather begins, cool and rainy days meant it was time to repair the traditional Mia Mias (houses or shelters) to make sure they would withstand the rain and were facing the right direction in preparation for the winter months ahead. This is the season of the red flower as the *Corymbia ficifolia* gum, rusty seed cones of (*Allocasuarina fraseriana*) oaks and the petite flowers of the *Beaufortia aestiva* (summer flame) are in bloom. The common *Banksia* also starts to flower which provides important sustenance for many mammals and birds. Common food sources include freshwater fish, frogs and turtles as well as the *Zamia* seeds that were collected, treated and stored during the Bunuru season (ECU, 2024). - these important food sources for wildlife are some we take with us into our proposal.



Figure 23: Diagram over the Noongar Six seasons. Illustration by Cassandra W Kallifattides and Elvira Nordqvist.

'Makuru' (june -july)

During the coolest and wettest season, the Wadjuk traditionally migrated inland to the east to avoid cold winds and coastal flooding. Rain filled waterways, enabling movement and a shift in diet to grazing animals like yongar or kangaroo. These animals provided food, skins for cloaks, and materials for crafting. Flowers of the season include the blues and purples of *Dianella revoluta* and *Patersonia occidentalis*, along with the white blooms of *Agonis flexuosa* towards the season's end (ECU, 2024).

Djilba (August – September)

This season is the time of growth of wildflowers and plants, such as the yellow flowers for the acacias. Food is still mostly composed of land grazers such as young or kangaroo, waitij or emu and the koomal or possum. It is a transitional season with warmer rainy days, cooler clear days and the occasional sunny day. As the season progresses with warmth you can notice the flowering stalks of the balgas or grass trees, preparing for the coming Kambarang season (ECU, 2024).

Kambarang (October – November)

The last season of the cycle is Kambarang is the time of year when the warm weather returns. It is also the season of abundant flowering display, yellows of many acacias continue, bankias and delicate flowering plants such as kangaroo paw and orchids. One of the most striking flower displays is put up by the *Nuytsia floribunda* the Moojar also called the Australian Christmas Tree, with a bright orange/yellow tone, signaling the heat is on its way (ECU, 2024).

"Rivers are the highways and byways of our culture."

- Anonymous Aboriginal perception of water (Macintyre, K. Dobso, B. 1999)

Swan river - Derbal Yaragan and its foreshore

The large Swan river estuary or Derbarl Yerrigan flows through the metropolitan area of Perth and drains out the Avon and coastal plain catchments into the Indian ocean, in the city of Fremantle, where the Fremantle port and harbor is located (Seddon, 1970).

The Swan River coastal plains vary in visual character as the use of humans changes from vineyards, suburb networks and industrial areas. This is quite a contrast to the limestone cliffs to low clay banks that once painted most of its shores, this also marks a change in the vegetation or lack thereof, as human landscaping is prominent (Seddon, 1970). In a voice recorded personal communication with the landscape architect Francis Kotai at Ecoscape 2024-02-14, Kotai described the changes of the river. Today the river is not the same estuary as before colonial settlement as its naturally formed sandbanks in Fremantle have been disrupted, in conjunction with the development of the harbour. This has led to a change in salinity as saltwater from the



Figure 24: Frederick Rushbrook Clause, Setting Camp of the Naval Survey Expedition Clause's Lagoon, Perth, Western Australia, c 1832, watercolor over soft pencil on paper, 22.2 x 33.6 cm, Janet Holmes à Court Collection.

ocean can now flow into the river all year around, and has in turn affected the whole ecosystem adapted to these conditions along the river.

During an personal communication with the landscape architect Francis Kotai at Ecoscape 2024-02-14, he talked about the impacts of making changes along the foreshore of Swan river. If any construction were to be made from the foreshore into the river, both marine ecological changes and physical changes would occur. This would cause changes in the function and ecology of the river. Not only that, the river itself has a cultural significance to the Whadjuk people, both aspects would impact the decision-making of such additions and would require strong justification to be implemented. Therefore, we are not going to propose any changes, nor construct features that reaches out into the river, but we will propose changes to make the water accessible.

Swan River or Derbarl Yerrigan (Derbarl = estuary; Yerrigan = river) which is the Noongar people's name of the river, has significant spiritual and cultural value for the people. It was a provider of food such as fish, a place of worship (see figure 24-25). In aboriginal tradition the river was formed by a giant serpent, the great Waugul, that carved out the waterways as they slither their way out to the ocean at the mouth of Fremantle, residing in this area of east Fremantle. This connects the Noogar people to the land and they have a responsibility to protect and care for the land as it is part of themselves, their culture and spirit (Broomhall & Pickering Crawley, 2012), additionally see map (figure 22) of Dreaming - this is one aspect showing their deep connection to this land,

which is why this aspect has been implemented into our upcoming pre-colonial principles (see under result section).

The Noongar also have an ancient story of a fight between the Yondock crocodile, Kaarta Kooba (Kings park) coming down from the north trying to take over Noongar Country, in the fight The great Waugul bit the crocodile's tail off and placed it over the mouth of the river, in case the crocodile would return. A part of that tail of natural limestone rock structure was blown up in the creation of the Fremantle harbour (City of fremantle; Moore, 2021).

In the following map (figure 26), notice how rocks from the Mosman park area are used to create the mole for the Fremantle harbour and by blowing up the limestone rocks that protected the fresh water river to mix with the ocean water, now has changed the river indefinitely. This to us shows, how traditional significant sites in the past have not been protected and treated correctly as a significant and valuable place.

The conflict between urban development and cultural significance of the sites connected to water (see figure 26) is of great importance when working with Fremantle harbour, as the natural wetlands and dunes got turned into an industrialized hub to sustain and expand the colonial settler state (Hughes-Hallett, 2010). Among the Aboriginal people, including Noongar, it is also a widespread belief that if there are any polluted areas and misused water sources, will dry up the river or make it poisoned, as the water snake will abandon the

mistreated areas. These concerns generate a high degree of anxiety among indigenous people and the concerns that are expressed are often very much in-line with the green movement (Macintyre & Dobso, 1999).

All of this translates to a deep understanding of the estuary in our view that should be translated into the planning of the site and that the post-colonial history has erased a layer of history important to Noongar culture.

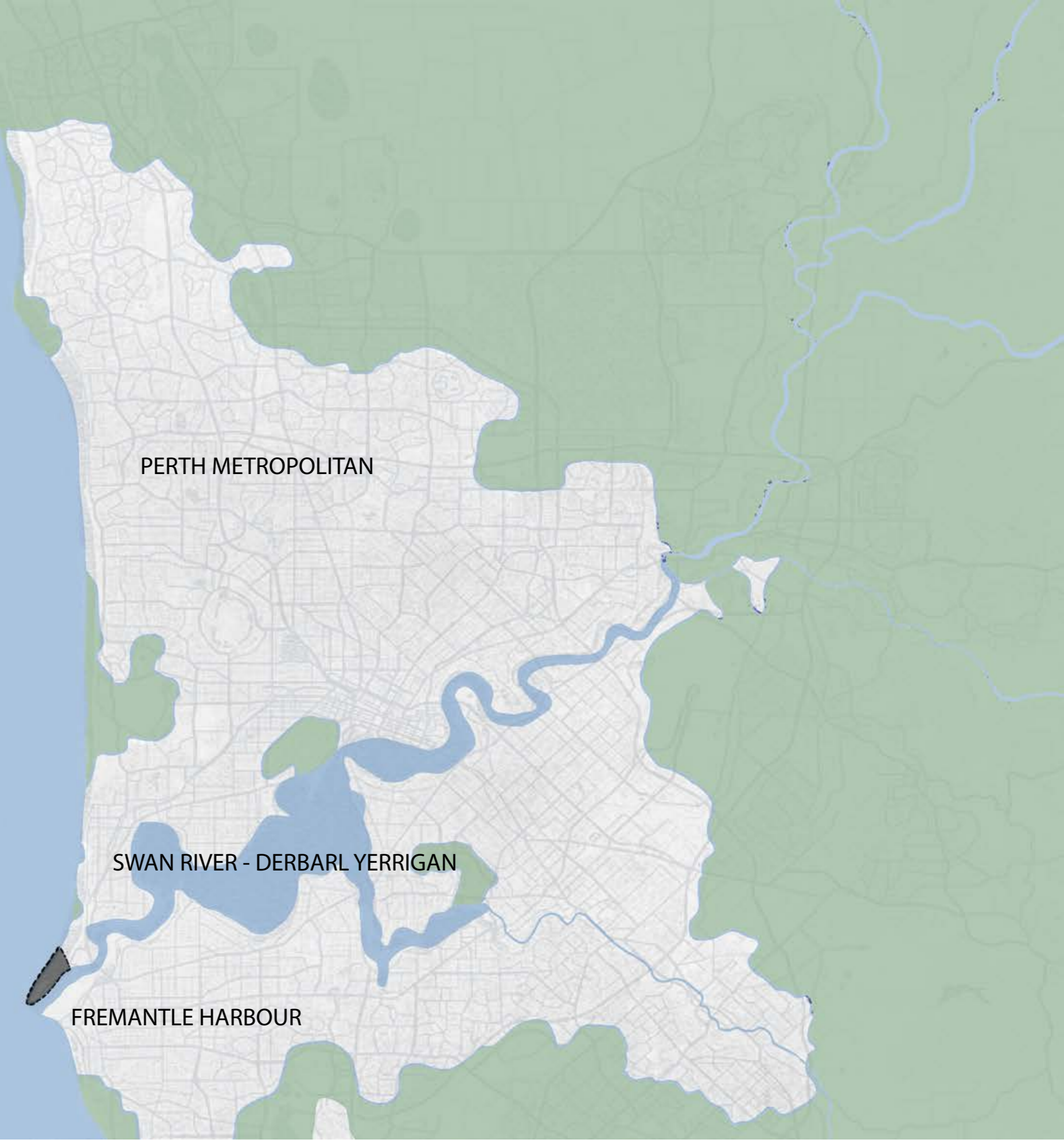


Figure 25. Showing the Swan river estuary or Derbarl Yerrigan, flowing through Perth metropolitan out to the Indian ocean or Watern. By: Cassandra Kallifatides based on information from @ Google 2024

Map showing the changes of the landscape from a Noongar perspective. We want to note the use of stones from a culturally significant site during the built of the harbour, as well as blast of the limestone embankment in the river mouth, just South of our project area. Along with many more changes to the landscape.

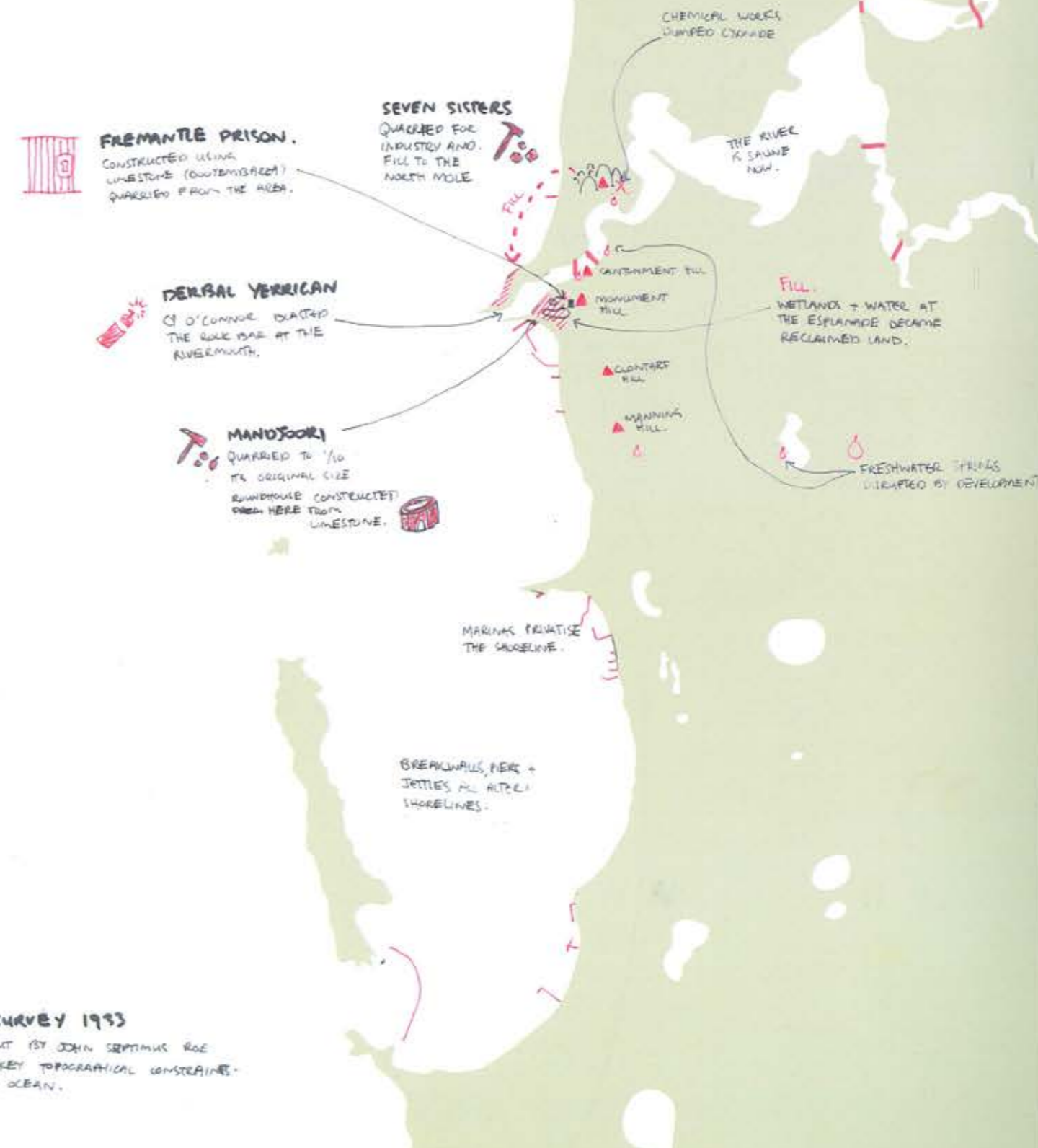
NGARDAK BAAMINY, NGARDAK YIRANGITI

'KNOCKING DOWN,
KNOCKING UP...'
CONTACT LANDSCAPE
CHANGE

The theme 'Ngardak baaminy, ngardak yirangiti' describes the radical physical and spatial changes on Walyalup Boodjar as a result of European settlement in 1829.

There are no Noongar words that describe colonial concepts such as urban development, dredging and land reclamation. 'Ngardak' is the Noongar word used to describe 'knocking together', the act of making objects, such as a tool. This in some way describes how Boodjar was, and is still, relentlessly manipulated by settlers. Hills are quarried, the rivermouth blasted, large buildings and roads constructed.

This theme does not focus on the detail of the urban environment and industrial change. Instead the Elders chose to discuss how ngardak has changed Boodjar itself and the Noongar relationships with it.



'Figure 26. Map.: from the book; Mapping Boodjar Walyalup Fremantle (2022) by Noongar boodjar language Cultural Aboriginal Corporation. DISCLAIMER: Map have been granted to be used in our thesis by officials of the Noongar Boodjar Language Cultural Aboriginal Corporation, solely for academic reasons and should not be copied or modified.

Indigenous design and art

connected to Country

Indigenous art and design (see figure 27-29) is an extension of culture and therefore it is part of themselves, and because everything is living, even man made objects, they have an intrinsic value. This view of objects as living is not isolated to indigenous cultures of Australia but is present in other indigenous cultures globally. This outlook also creates a space where art (see figure 27), architecture (see figure 28), engineering and design (see figure 29) is seen as inseparable from themselves and the connection manifests it the creation. To create something that is connected to and appreciates indigenous culture, one must acknowledge and try to understand the ingenuity and creativity of indigenous design of Australia (Page & Memmott, 2021).

The books *First knowledge; DESIGN Building on Country* (2021) by Page A. Memmott, P. and Gunyah Goondie + Wurley *The aboriginal architecture of australia* by (2022) Memmott, P., showcase an array of architectural elements that has been documented through indigenous cultures in Australia. They consist of several different techniques to provide shelter from the elements and to gather as a community (see figure 28). How to construct a community living space that is suitable for each specific need.

This is just a short introduction to indigenous art and design, but as this is an aspect of design that we can not incorporate as it is not our own culture although we do see the value and need for the the Noongar community to put their own representation and expressions of



Figure 27: Aboriginal elder painting. Mark Roy from Jabiru, Australia, CC BY 2.0 , via Wikimedia Commons. Arnhem Land artist Glen Namundja working on an artwork.

culture such as of art, design, architecture into the visual public space. Furthermore, we also recognize that art and cultural identity are intrinsically intertwined with Country (Page A. Memmott, P. 2021) and therefore indigenous cultural expression lay a ground work to understand Country, understanding native post-colonial vegetation and habitats, and create green scapes that are connected to indigenous way of life and connectivity.



Figure 28: Australian Child to his mother (December 1852, p.132, IX). Wesleyan Missionary Society, Public domain, via Wikimedia Commons



Figure 29: Aboriginal art on tree. Henry King (approx.1889-1894), Public domain, Wikimedia Commons.

Native habitat and vegetation of Western Australia

To be able to implement Nature based solutions in our context, we need to gain an understanding of the native species of the Western Australian region.

Land, indigenous values and life in Country are intrinsically interlinked, therefore, native flora and fauna (see figure 30) is a key part in creating spaces that are connected and value Country connection. Thus, we have to delve into Australian endemic vegetation. Australian vegetation is truly unique and has below family level a intriguingly endemic angiosperm flora, this diversity has been shaped by the continental drift and changes in climate from the Cretaceous geological period. Perth as many other parts of Australia has undergone extensive changes to its landscape, for example degradation of the sand dunes (see figure 33), with the arrival of colonial settlers. This has in turn also led to changes in which the native flora has a harder time competing against imported exotic species, agriculture and more (Seddon, 1970).

Although there are efforts made to expand the knowledge and use of native vegetation as it has many beneficial factors such as it provides an addicted habitat for native insects and animals, or that the species are naturally very drought tolerant and can re-establish after fire. This flora has a high degree of endemism, and the reason for that is because of the isolation of south-western Australia (for some million years). The most common species that make up the forests and

woodlands are eucalyptus, banksias, casuarinas and acacias, which are the most common ones in Western Australia (Seddon, 1972).

In the book Swan river landscape (1970) Seddon describes the discourse around the why of preservation of landscape, he suggests that if we are to truly argue for the beauty of the landscape, aesthetic analysis and use a "vocabulary and framework where discussion can take place" (Seddon, 1970 s.2). Although this is important we would strongly argue that we don't only need the vocabulary to understand the landscape we also need to understand our own predicament about it. Why we see something as valuable or not, this in the contexts that native vegetation and landscape has from early settlement been subject of stigma as it was not seen by many as attractive which played a part in not being prioritized during European development and change of the landscape (Hughes-Hallett, 2010).

In similar context, when Captain James Stirling explored the Upper Swan River in March 1827, he had little contact with Noongar people but was amazed at the 'park-like landscape', which was created by Noongar fire-stick farming (SWALSC, 2024d) this shows the duality of the western view of the South Western Australian landscape, mesmerizing but yet not enough as it is. With this said there has over the last years been a rise in knowledge of the benefits from native ecosystems, and so has also the acceptance or even demand of its use, in current projects you can see the incorporation of native flora as a central part in many projects. More examples are presented under the section *Case Studies*.

Figure 30. taken in bold park in april 2024, showing how insects and pollinators are feeding from the banksia blooms.



The fire adapted flora

The flora of Western Australia are fire-adapted (see figure 31-32), however, this doesn't mean that they are fire-proof. Fires can affect the flora in two different ways. One would be that all of the adult plants die, which in turn leads to a very effective germination on the nutrient rich ash bed. However, if the regenerating seedlings are burnt once again the year after, it would lead to the plants disappearing, as they cannot regenerate any further. Therefore will excessive burning lead to a drastic change of the characteristics of the plants. Some plants are better at recovering quickly after a fire, whilst other species are not as quick and will therefore be outcompeted. This is a disadvantage as there will be a loss of variety of the flora, which would make it vulnerable to fluctuations of the environment in the long run. Thus, controlled, regulated and seasonal burning keeps the landscape open and park-like, as well as regenerating herbage for the grazing kangaroo (Seddon, 1972).

Because of this, controlled burning has almost become a necessity as the plant communities in Western Australia have inhabited the periodic burning. As long as the fires are not uncontrolled and too closely spaced in time with each other as this will destroy the plant communities instead. Other disturbances to the plant communities would be the disturbance by humans. The Western Australia flora is extra sensitive to this because of the isolation, which makes it more vulnerable. As the native plants often grow in loose and sandy soils, they are less able to cope in high traffic areas, in comparison to the more robust vegetation in Europe and South America (Seddon, 1972).



Pictures 31 & 32, taken from Bold park (WA) in April 2024, of controlled burns made in the restoration area. to generate new growth and a healthy ecosystem. Picture below shows how the die back of the burnt *Macrozamia riedlei*, commonly known as a zamia, grows back after the burn. In the picture on the top you can see the burnt trunks and how the trees are still alive and will regrow also how the burning of low growing species such as grass has left the ground bare.



Picture 33. taken on South Cottesloe beach, showing the Coastal sand dunes.



Animal life and habitat loss on the site

Animal life (see figure 34) is strongly connected to aboriginal life and tradition as it is to the ecological systems. Animals were a source of life but also a big part of the spiritual stories of the people. Animals were cared for, hunted for skin and food as a part of their life. This was disrupted with the development of Fremantle and its port and as a result the way of life also was (Page & Memmott, 2021). It is important to recognize that the Fremantle redevelopment area is situated along the large Swan river estuary, which is an important habitat for a diverse group of animals, many who are dependent on the habitat for food, breeding and rest from long journeys. Such as many species of birds, fish, snakes and dolphins and many more (Ecoscape, 2017).

Therefore this aspect is an important factor to incorporate and keep in mind when developing a design proposal for the site. How can it be a habitat that supports a diverse wildlife as it is an extension of connection to land and traditional use of the site.



Picture 34. taken in Kings park in April 2024, showcasing different bird species living in the area and how they are dependent on different plants for survival.

Coastal wetlands

Wetlands (see figure 35) are areas that are permanently, seasonally or intermittently waterlogged or inundated with water. Urban development are one of the core land use activities that can impact the wetland that are vital habitat for visiting migratory birds. The wetland does not only provide habitat for migratory birds protected under international treaties but also animals such as fish, frogs and many plants. Wetlands help clean water and filter out pollutants and also reduce the impacts of flooding (Government of Western Australia, Department of Biodiversity, Conservation and Attractions 2024a).

The Swan coastal plains, as north Fremantle is a part of, has a high ecological value and therefore is a priority for conservation. Although, about 72 percent of wetlands have been destroyed to the degree that they do not hold purpose of conservation (Government of Western Australia, Department of Biodiversity, Conservation and Attractions 2024b). However, this does not diminish the need for regenerative practices in our view. Not to forget the cultural importance they hold within Noongar tradition and life as mentioned previously in the background (see section Swan river - Derbal Yerrigan and its foreshore).



Picture 35, taken in April 2024 on Harrison island (WA), showing an example of a local wetland area on the island with low growing species and dead trees, with an inflow of water from the Swan river.

History of Fremantle and its Harbour (Walyalup)

To understand our site, we need to look back onto the historical development of the harbour. The harbor is the biggest in Western Australia and has a significant function for the industrial development of the surrounding area, and has for over 120 years (see figure 36-37). Today the company Fremantle Ports is the strategic manager of the port in Fremantle and is a trading enterprise by the Western Australian government. It is governed by a board of directors appointed by the Minister of transportation; ports (Fremantle ports n.d b)

In the book *The chief C.Y Conner* by Truban (1978) describes the first years of the creation of the harbor, how in the late 1800 the idea of a new, for the time modern harbor, was an important part of making Fremantle the port of the colony, because with the natural harbor one was dependent on the tide. The main architect/engineer for the harbor project was C.Y O'Connor, that put forth the proposal in 1891 (see map 36). The proposal of the harbor included a long jetty in the north that would protect the inner harbor, with a depth up to 35m, from wind and sandbanks forming. The harbor was constructed with the limestones that could be found in the nearby area - as earlier mentioned was

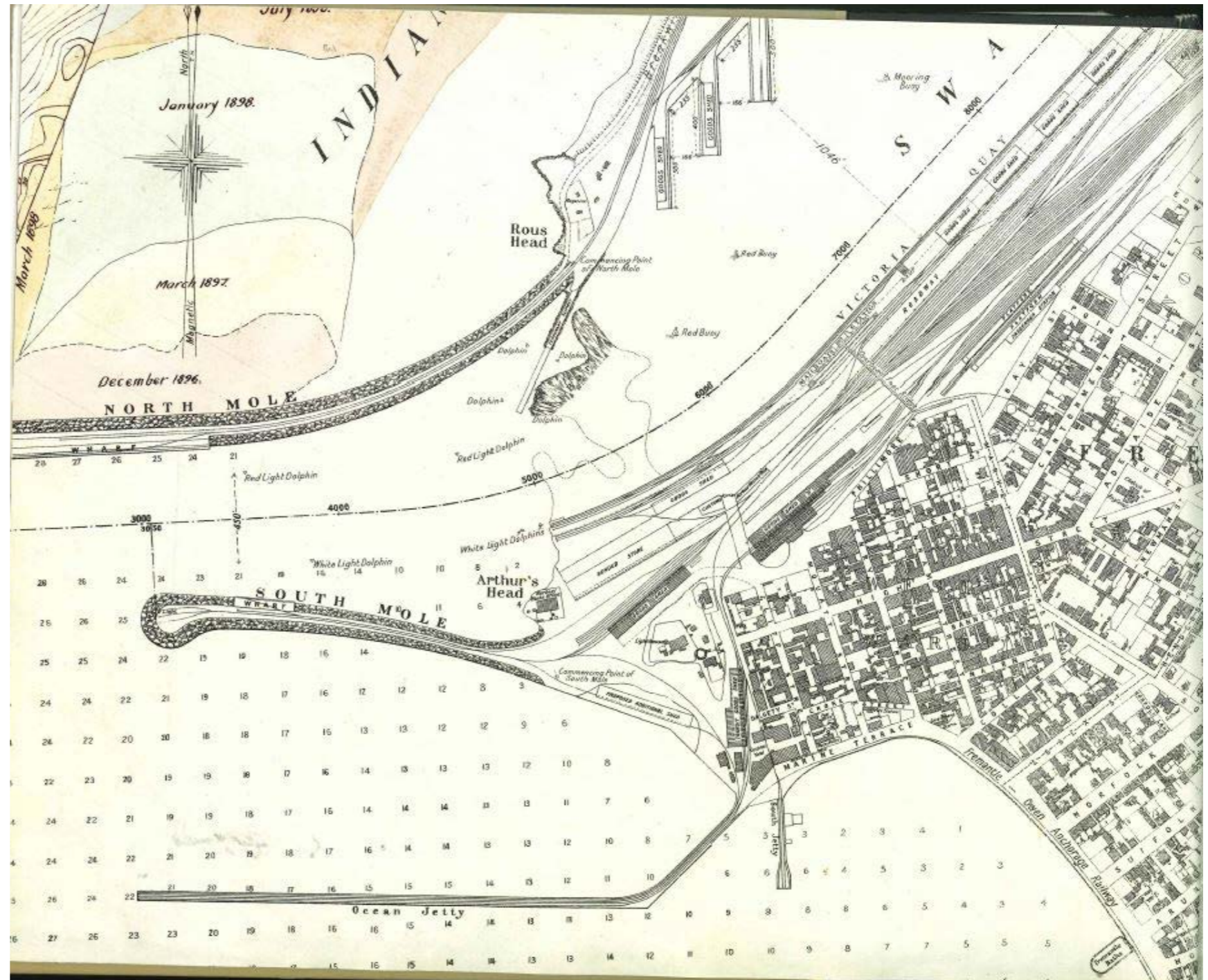


Figure 36. Map made by O'Connor 1898 over Fremantle Harbour. Source: Truban, M. (1978). Showing the early stages of the harbour construction where the moles acted as protection for the harbour and railway connecting the harbour to the inland. Also note the close proximity and relation to the Fremantle settlement.

taken from a culturally significant place, as well as granite rock from inland was also used for its durability against weathering (see map 37 for further development of the Fremantle Harbour).

Fremantle harbor has for many years sustained the economic growth of the settler state of Perth and is to this day a significant site for development (Western Australian Government, 2023.) However, as earlier mentioned the harbor is a site of a multi-layered cultural significance.

This creates a discourse of the site's identity as it is not singular or simple; its layers are complex and opens up for a deep discussion around a sense of place. The connection this site has for a diverse crowd of people, for the generations of Whadjuk who used the site as a seasonal fishing ground and for the generations of people working the boats as well as in the harbor.

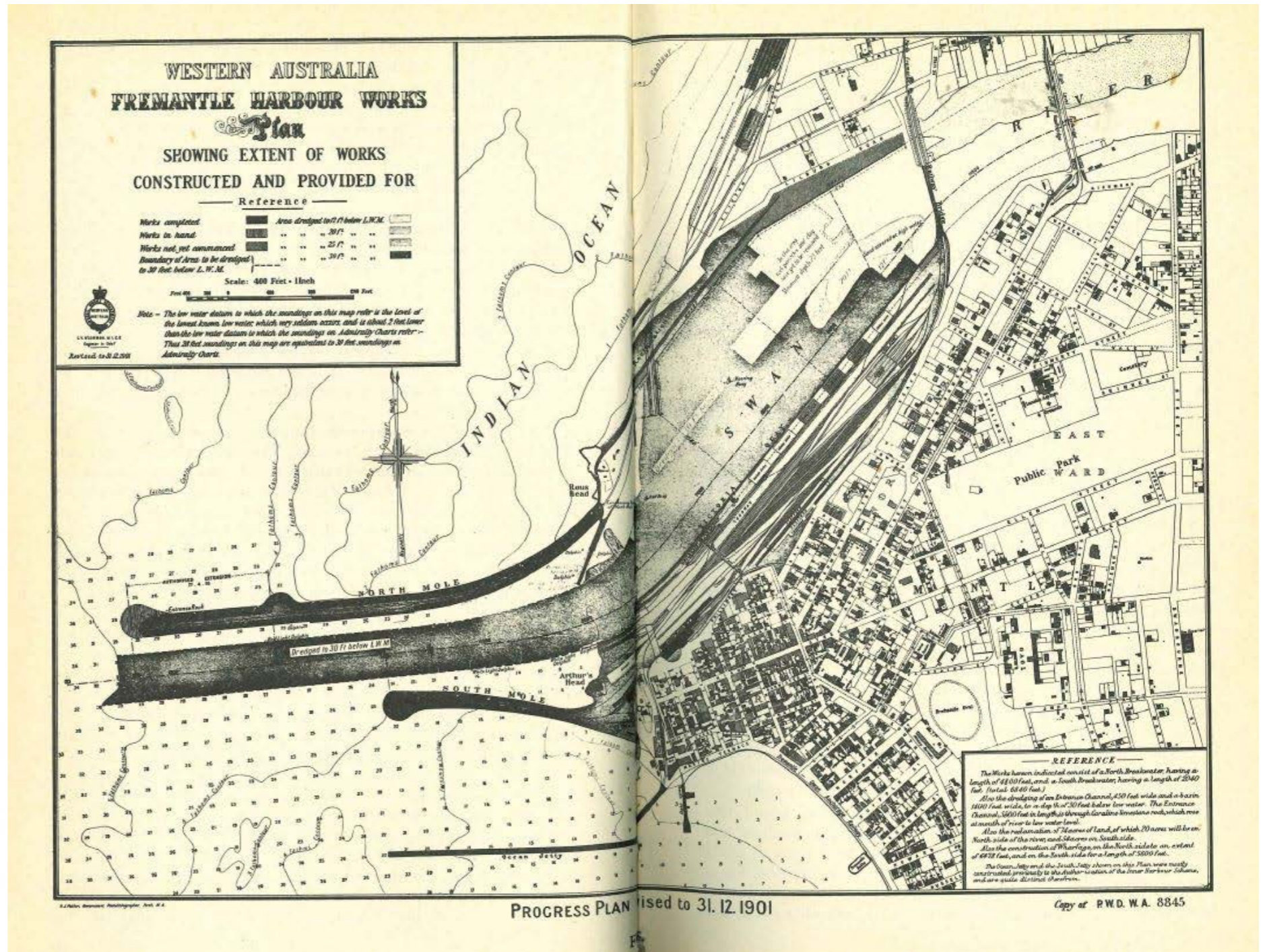


Figure 37. Map of Progress plan over Fremantle Harbour 1901. Truban, M. (1978). Note the removal of sand and limestone in the harbour to make way for large cargo ships to enter the port. This creation of the harbour and removal of limestone bank, can to this day be traced in the landscape of the harbour.

TIMELINE OF FREMANTLE

50 000 BCE -1829

A long-standing history of life in Country. The frequently area being a place to meet and trade, also for fishing in the summer months. Tools have been found in South Western Australia dating back to 35 000 years old. (SWALSC, 2024e)

December 1792

Expedition of the south western coast, led by the french, D'Entrecasteaux, including Riche from the ship Esperance. Riche sought to make contact with Noon gars, although he got lost during the night, and the people searching for him saw some Noon-gar people who they assumed were "a unique species of man who could live on salt water and on special types of nourishment not suited to others" (SWALSC, 2024e).

1829

Captain Charles Fremantle arrives at the mouth of the Swan River puts up a flag at Arthur Head, taking possession of the land. Captain James Stirling arrives with a further 400 settlers, a month later and the Swan River Colony is officially formed (SWALSC, 2024e).

1881

During a rapid construction period, on March 1st, the Fremantle-Guilford Railway line is completed (Truban, 1978)

1897

Victoria Quay and the Inner Harbour are completed, following the blasting of the limestone bar by CYO Connor. Subsequently, shipping companies relocated to the West End (Truban, 1978).



February 1658

The boat Waeckende Boey, with dutchman Volkersen, touched the coast at Rottnest Island, noting that many fires were burning, from Noongar camps, while sailig up and down the coast (SWALSC 2024e)

11 June 1829

Marks the anniversary of the dispossession of Noongar country from the Noongar people. The day sovereignty was "assumed" over Noon-gar country by what is now the State of Western Australia (SWALSC, 2024e).

1830s

Yagan was an influential Noongar figure during this time, he was born about 1795 the son of Midgegooroo, whose country was south-east of Perth in the Canning River region (SWALSC, 2024e)

1850-1868

The arrival of many convicts led the population to grow, along with the construction of many historic buildings including Fremantle Prison.

& IT'S HARBOUR

1900's was an era of immigration to Western Australia, arriving on the shores in Fremantle. There were 197 steamers entering the port carrying 17,000 people on board, in 1910.

1945
Fremantle became the largest allied base for submarines in the Southern Hemisphere, during WWII, around 170 foreign submarines making patrols from the port.

1987
Fremantle holds the Americas Cup yacht race, spurring the decision to revitalize the city heritage rather than demolish.

1992
The 1992 Mabo Decision reversed the notion that Australia was "terra nullius" when Europe-ans arrived (SWALSC, 2024e)

2003
On behalf of 218 Noongar families, the South West Aboriginal Land and Sea Council lodged the Single Noongar Claim (SWALSC, 2024e)

2020
A new future is explored for Fremantle waterfront Westport, 2024).



1929
Fremantle gains official city status with a population of 29000.

1960
Opening of the Fremantle Passenger Terminal post WWII immigration saw Fremantle as the entry port for Western Australia, with some 200 000 immigrants, every year.

1990
Loose cargo handling at the port ceases and is taken over by container technology and break-bulk cargo.

1993
The Native Title Act was passed. Many local governments starts commitment work with the local Noongar community. To ensure that culture was respected and significant sights where protected (SWALSC, 2024e)

2016
Noongar recognition act (SWALSC, 2024e)

Incorporate indigenous landscape values into design and planning

Indigenous place-making and design is and has been poorly understood by academics and practitioners in the field of urban and regional planning, little adoption of reconciliation policies from government bodies and other authorities has been effective in achieving change (Johnson, 2018). This is of great importance as decolonization and land are a connected opportunity for change, especially for the field concerned with the study of land and its transformation (Kaewen Dang, 2021). Landscape has been used as a disciplinary tool to control land, including art and architecture. Land as property under the colonial state is a power structure, especially in settler-colonial context. It is used as a form of capital, extracted from land with a loss for the indigenous community (Kaewen Dang, 2021).

In the book *Building on country* (2021) Alison Page and Paul Memmott calls for the need to understand the view of indigenous peoples of Australia, that objects are animate, they have spiritual value in itself as it is an extension of the people, furthermore how nature and land is intrinsically interlinked with their spirituality. This means that the way of operation through design is unquestionably defined by this understanding. They also describe the beauty of co-design from a Western and Indigenous Australian world view, how both views are important in their own, how it can be the strength of knowledge in learning and creating new places (Page A. Memmott, 2021).

The discourse about re-building land within landscape studies, calls for a critical reconciliation of underlying coloniality within the field and change towards an anti-colonial focus, as it has been used to seize and control indigenous land around the world, historically and present, as well as in Australia (Kaewen Dang, 2021). As Fremantle harbor is situated on indigenous lands of the Perth metropolitan, the Whadjuk, Noongar people, this argument and consideration becomes prevalent in the reconstruction of the site. In relation to this argument the Department of Planning, Lands and Heritage, put forth their commitment to value a ongoing dialog and collaboration, with appropriate representation of Aboriginal people in their planning efforts for the future of Fremantle to achieve a vision that represents non-Aboriginal and Aboriginal cultures (Government of Western Australia 2023b). This is an important and necessary commitment to achieve the intended outcome of factoring in local Aboriginal values in the planning process (Johnson, 2018).

In contrast it is important to understand that there are critics of the place-making and beautification of space processes in the settler colonial city context, as it can be seen as concealing much worse acts such as sanitization and exclusion of indigenous community (Robyn Moran et al. 2021; Gilchrist & Ravenscroft, 2013). In relation to this there also needs to be a discussion about the notion in place-making of revitalization, or renewal of a site, as it can be just one of such concealing contributors, as the act often treating place as a "terra nullius" meaning no man's land, often used to deny Indigenous peoples ownership and sovereignty of their traditional lands.

Treating land or space as empty and devoid of meaning, ripe for transformation or destruction, can intertwine the act of creating place with the enduring legacy and history of settler colonialism and gentrification (Robyn Moran et al. 2021; Clouthard, 2015; Haritaworn et al., 2018).

It is also important to question the fact that simply bringing together different stakeholders, does not diminish the fact of who is the keeper of the defining power. This simplification can lead to the unknowing or knowing effect of reinforcing social mix, which in turn praise minorities to assimilate into areas which they have been displaced. All the while it can fail to address how placemaking generate economic benefit for already wealthy people and how it relates to ongoing and historic economic marginalization, racialized capitalism, systemic racism and settler colonialism (Robyn Moran et al. 2021; Addie & Fraser, 2019; Ulmer, 2017).

Although we perceive that maybe there needs to be a reframing of the meaning of revitalization as a act of not unmaking but with a focus of unmasking or unveiling the context of the site. Not in the name of forgetting the past and concealing the truth but to embrace it for further understanding, and to understand how our field is contributing to perpetuate historic violence and place-making can inflict harm. To be able to walk in truth for the future. Although as put forth by others (Robyn et al. 2021) we have a complicated complicity because of our own identities, as we intend to work against act of gentrification we also have to wrestle with our own roles as the gentrifiers on stolen land.

During our personal communication with Senior Aboriginal Engagement Officer Brendan Moore (2024), we asked about our intention to incorporate indigenous value and understanding of site, and what we can learn from it?

His answer was; that it is crucial to start at the right end, to come for concile for the design process before one starts. It is a matter of respect to not compile a design, have a plan in place and then seek the approval and concile off the Aboriginal community after changes are much harder to make. This led us to speak of the importance of co-design processes and how it can contribute to a design that is connected and respectful to Country and people. One aspect that Moore brings up as something he always pushes for in a design process is Native species not only for it's sustainability but for their spiritual connection, such as native plants (for example the Eucalyptus tree), as well as vegetation that contribute with nourishment to native animals such as the black Cockatoo. The SWALSC has compiled a comprehensive report on how such projects can be conducted, which will be presented in the next section.

Implementation

It is important to understand that to be able to factoring aboriginal values in design one need to firstly create an understanding of how indigenous people perceive the environment (see figure 38), which can be as diverse as the people themselves, and secondly have involvement of aboriginal people in all stages of the planning process (Macintyre & Dobso, 1999). Each case is defined by the place and different groups have different views that play a part. The first aspect is something that we are taking on in this work, but as we are not attempting to create a real design proposal for the harbour but are merely trying to learn of how it could be done. We do not have the time or resources to attempt the second aspects of involvement in all stages of the design process, partly as it is not a real planning process. Although we do recognize that greater involvement would have contributed to a more nuanced result.

To understand the involvement process that would be needed for such projects we look to the principles provided by the South West Aboriginal Land & Sea Council in their report Noongar Consultation Protocol Guidelines Swan and Canning Rivers Iconic Trails Project (n.d). In the endeavor to try and have this be reflected in our work even if it is not a real life project. In the protocol serveals aspects are brought up as listed on the next page.

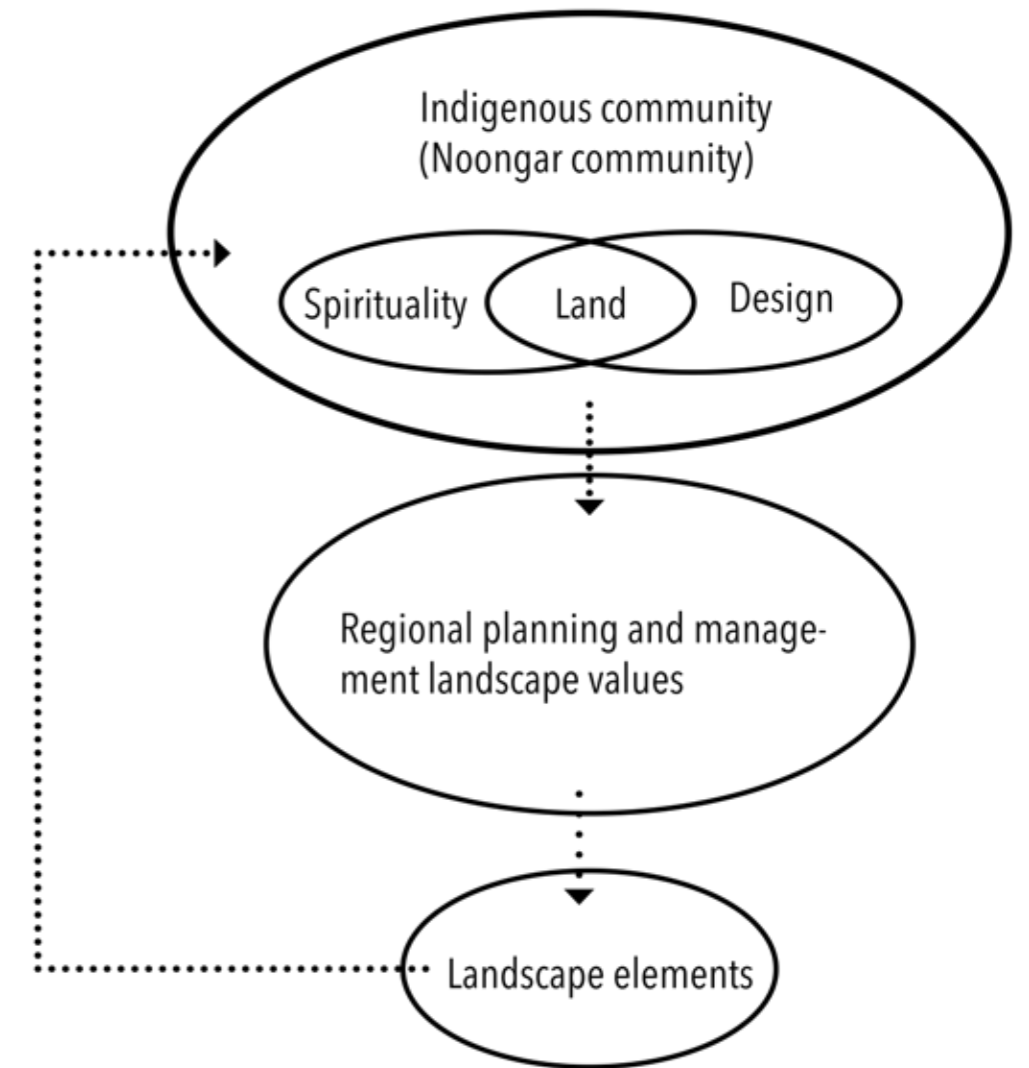


Figure 38: We have created this conceptual overview of how to incorporate indigenous communities into regional planning and landscape design, inspired by our research. Source: Low Choy, D., Wadsworth, J., & Burns, D. (2010).

“Free, prior and informed consent

Consultation should include the provision of sufficient information for people to make an informed decision about the activity with sufficient time to consider options and discuss with other members of the community. Remember Noongars have the right to say ‘no.’”

“Mutual respect

It is essential that the consultation process demonstrates respect for the views of both parties. Respect for consultation protocols and cultural values will build the respect of the Noongar community and establish a positive and long term relationship.”

“Nation building / relationship building – equal partnership between Noongar and non-Noongar communities

The purpose of consultation is to develop a relationship based on trust and understanding as well as mutual respect. Acknowledging the views and opinions of the Noongar community and actively adopting their ideas and suggestions, including demonstrating an understanding of Noongar values, will lead to a richer community with beneficial outcomes for all.”

“Acknowledgement of Noongar country

Acknowledgement of Traditional Owners of Noongar country is fundamental to building a positive relationship. Statements acknowledging prior possession and occupation of country for at least 45,000 years are essential elements of understanding Noongar values.”

“Acknowledgement of Noongar culture

Acknowledging that Noongar culture has a unique place in the community is an essential building block for a positive relationship. The Noongar community can bring a different perspective to projects that will enrich and diversify the overall outcome.”

“Acknowledgement of Noongar knowledge and expertise

Noongars have at least 45,000 years of built up knowledge and expertise in having a harmonious relationship with the environment and country. By way of example, the Noongar community can bring a special expertise to managing the environment that can add value to any scientific and environmental management process.”

“Understanding that Noongars live their culture

Noongar culture is not something that is ‘practiced’ when an opportunity presents itself. Culture is the lived and living experience of day to day life – an active relationship between people, families, family life, traditions and country. Noongar culture is constantly enriched through history and experience. It should be respected and acknowledged that Noongar culture has also been shaped by a unique history based on oppression, dispossession, disempowerment and racism.”

“Women’s / Men’s Business

Men and Women in the Noongar community have different cultural responsibilities. These different responsibilities have to be recognised and respected.”

Case studies

Each case study provides a different set of key elements that has inspired or influenced our conceptual design. Two of the case studies focus on indigenous design and involvement, two on native vegetation. Each case has a few key elements that we would like to take with us towards our own work.

Curtin University Yarning Circle, Perth, Australia

The Yarning circle project was created to redefine the Curtin University campus environs into a welcoming cultural entry, this was done by incorporation of a space for Yarning circle (see figure 41) discussion in alignment with the school's grand axis. A Yarning circle is a key element of indigenous culture and has been used to collaborate, discuss and have an inclusive dialog about decisions that may affect others (UDLA, 2024b).

The design provides the school with an important meeting spot that is a welcoming space to all, the space is used for expression of culture such as art, ceremony and is interlinked with learning. The project is also a symbolic link to an innovative learning space on Noongar bushland led by Noongar Elders and professors. The whole area is created using links to aboriginal culture and revealing the ancient songlines of the site. Bringing the songlines to life reveals new aspects of the site and connects the visitors to the place (UDLA, 2024b). The site has a mix of smaller more enclosed spaces where one can sit and almost hide from the open public space (figure 39.). It also has meandering pathways that invites you to slow down and look around on the array of native species, a drastic contrast to the open grass field you usually find in parks in the area.

Key elements:

- Integrating the indigenous concept of Yarning circle into design through co-design
- Creating a welcoming environment for all
- Places for gatherings and community (see figure 39)
- Using songlines as an integrated part of the design
- Native vegetation (see figure 40)
- Co-design and collaborative creating



Figure 39. Small room embraced by native vegetation and sitting blocks. A place for community.



Figure 40. Walkways through native vegetation.



Figure 41. The yarning circle, a space for gatherings and community.

Bilya Marlee School of Indigenous Studies, UWA, Perth.

This design is located in Perth University campus is a interesting example of co-design with indigenous peoples and values. It was made in collaboration with Indigenous Studies at UWA. Aiming to celebrate heritage of the place and to include Indigenous living knowledge through the process and into the final design. It utilizes place naming, Bilya Marlee meaning, river of the swan (UDLA, 2024a).

An important aspect was to protect the existing marri trees (*Corymbia calophylla*) (see figure 42), some of the examples are 100 years old and predate the campus. The trees are considered family with spiritual and physical links to the past. The trees also provide important canopy cover for shade and effectively creates a green outdoor space. The Marri garden named Borne Wirn (spirit of the trees) (see figure 43-44) has a variety of species selection that celebrates the endemic species with a big influence from the Noongar six seasons with a variety of life textures and colors. It includes more than 50 endemic species, and some have medicinal and edible qualities. The buildings themselves are integrated into the landscape by bolstering the connection to the river and creating green pathways through the campus (UDLA, 2024a). Also, here there is a circular larger meeting space, that is in close connection to the vegetation. Along with simple wooden seating placed along the pathways but emerged in the vegetation (see figure 43-44).

Key design elements:

- Collaborative design
- Protection of existing trees with spiritual connection
- Medicinal and edible plants
- Place naming with indigenous names and meaning



Figure 42. of the saved Marri trees in the circular meeting space just outside of the building.



Figure 43. Simple bench made from wood, with interesting carvings creating flexible seating. Placed under the trees but close to the path so that one can look upon passing pedestrians.



Figure 43. of a bench placed almost inside of the vegetation, surrounding you with species of Banksia and more.

Prawn Bay

Prawn Bay is an ecological restoration project (see figure 44-47) with the aim to prevent erosion, enhance local habitat and biodiversity, as well as creating a design that aligns with the natural hydrology of the river. The site is located in Mooro territory of the Whadjuk Nyoongar people, and was originally a bay until the year 1960. The reason for the loss was because of harbour dredging that filled the bay with excess material. This loss caused drastic changes in the hydrology of the river as well as habitat loss and changes in the ecosystem (City of Fremantle, 2024d). Therefore, a big part of the project consisted of planting 30 000 native plants to improve water quality through purification and as we have noted similar challenges with our heavily industrialized area, not far away from this site, as well as similar goals when it comes to the restoration of the original landscape, we have chosen to do inventory and an analysis over this project to see what we can bring into our project.

Key elements

- Accessible to walk and cycle through
- Meandering pathways, allowing for exploration
- Water inflow
- Mainly native species
- Erosion control

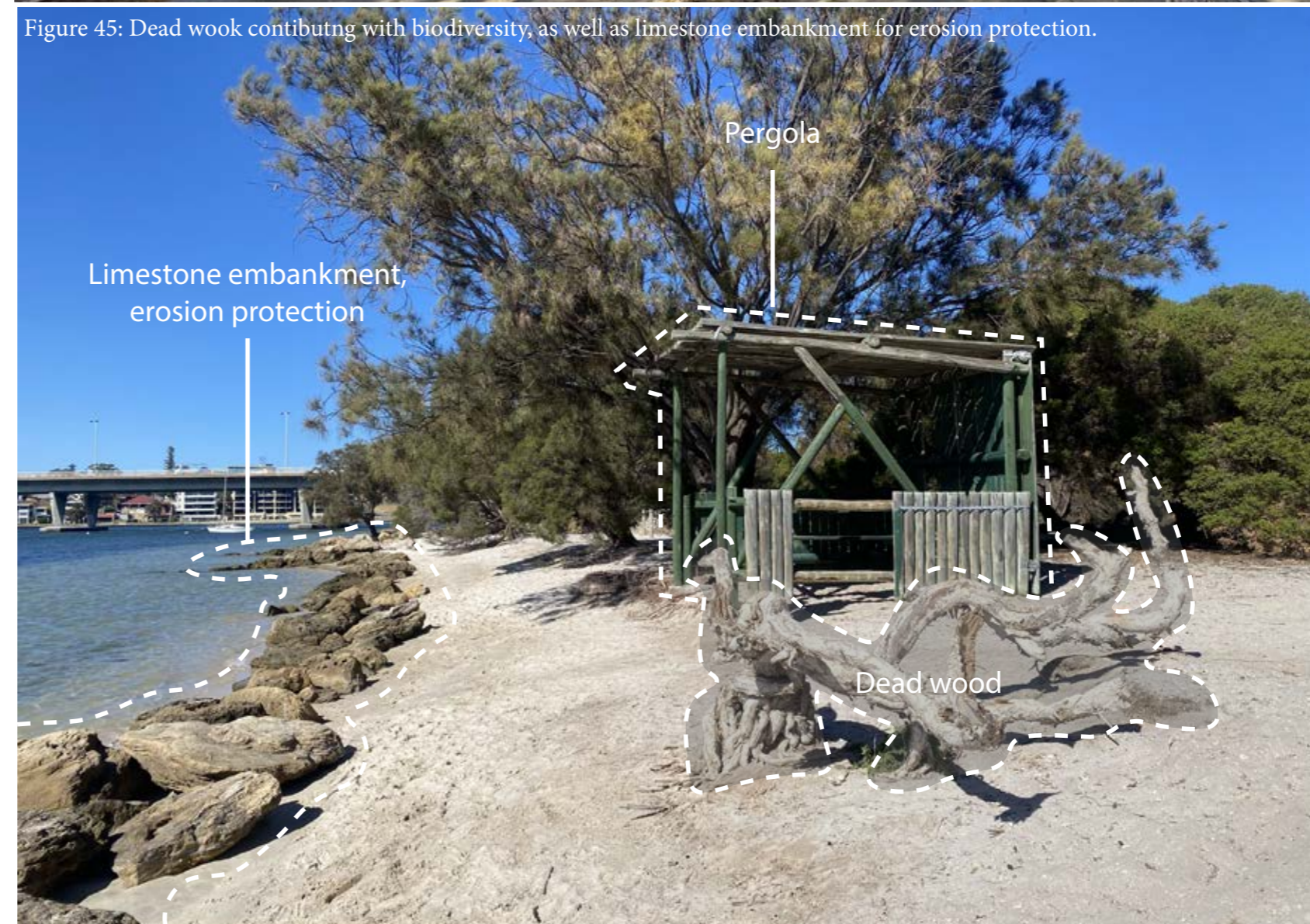
Figure 44: Tree creating protection and spatiality, as well as limestone blocks can be used for sitting down.



Natural embrace, moderately enclosed and provides shade offered by old tree

Unprogrammed seating composed of limestone blocks

Figure 45: Dead wood contributing with biodiversity, as well as limestone embankment for erosion protection.



Limestone embankment, erosion protection

Pergola

Dead wood

Figure 46. Showing the protection for the nature, as well as the bridge leading the visitor over the wetland area.

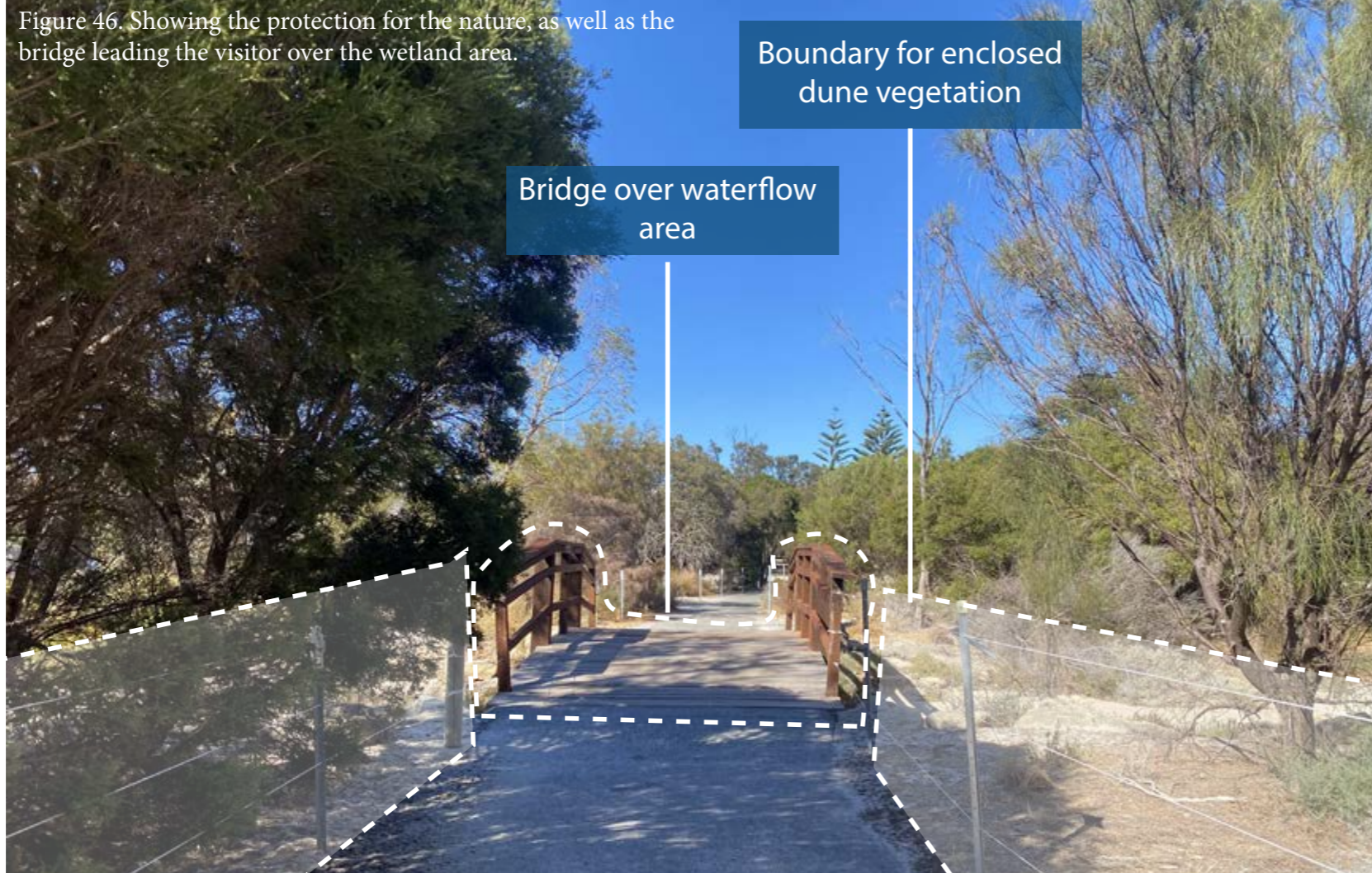


Figure 47: Showing wetland area where the water is led in from the river.



During our site visit, we wanted to analyze the site as this is an example of another project where they have attempted to restore native vegetation with wetland and sand dunes. On our site visit, we could note that the incorporated wetland is supposed to take care of water overflow (see figure 47), whilst the bridges are supposed to make the visitor being able to use the walkways whilst the wetland is filled with water. They have also used fences to prevent the visitor to interact with/walk (cause any disturbance) on the native vegetation (see figure 46). Other protection solutions are limestone embankment for erosion protection, as well as lined up rocks around vegetation to prevent erosion and water to get to the vegetation in the wetland area (figure 47). We could also notice that the limestone blocks and the trees and bushes at the site created spatiality and protection, as well as places to sit (see figure 44). What we take from this is that the native vegetation and materials can provide functionality as well as being climate resilient, as well as there's a need for protection for the sand dunes and the native vegetation, especially for the establishment time.

Shifting Sands

The project Shifting Sands (2020) by Maria Ignatieva at the University of Western Australia:

In this project only native species of Western Australia are used, where one of the sections of the project consists of Sandy limestone (figure 48) and Coastal dune vegetation (figure 49), both of which are vegetation types that would be suitable for our site. This project is reflective of incorporating native vegetation in the urban context, all the while reusing materials for the built up of the plant beds. We visited this case study in February 2024. The positives with this type of design element is that it uses recycled material and that it can also be placed upon places that do not have enough soil to generate healthy vegetation communities, while at the same time creating places to sit and meet.

Key elements

- Recycled material
- Vegetation suitable for different soil types
- Native vegetation
- Creating space for seating
- Erosion control

Figure 48. Photographs on the vegetation in Sandy limestone soil.
Source: Ignatieva, M. (2020).



Native species that have been used and are doing well in **Sandy limestone** soil are:

- Tree: *Banksia attenuata*
- *Melaleuca incana nana*
- *Banksia blechnifolia*
- *Pimelea ferruginea* 'Magenta Mist'
- *Kennedia prostrata*
- *Kunzea baxteri* dwarf 'Mandy's Surprise' PBR
- *Banksia menziesii* dwarf
- *Patersonia occidentalis*
- *Ptilotus manglesii* 'Rosie'
- *Macropidia fuliginosa* 'Black Velvet PBR'
- *Acacia saligna* prostrate 'Green Mulch'

Figure 49. Photographs on the vegetation in Coastal sand dunes soil.
Source: Ignatieva, M. (2020).



Species used for the **Coastal sand dunes** soil are:

-
- Tree: *Melaleuca lanceolata*
- *Scaevola* spp.
- *Leucophyta brownii*
- *Carpobrotus virescens*
- *Spinifex longifolius*
- *Westringia demperi*
- *Adenanthos cunea*
- *Dianella revoluta*
- *Eremophila glabra* compact
- *Callitris pressii*
- *Calothamnus quadrifidus* 'Pencil PBR'

Site analysis

The site analysis is divided into four sections. First we present the future challenges and needs of Fremantle Harbour, thereafter we share our analysis from site visit of the project area as well some regenerative strategies suitable for the sites erosion risk, lastly we describe the site conditions, all of which is then combined into a SWOT analysis.

Future challenges and future needs of Fremantle Harbour

To be able to create something for the future development of the Fremantle redevelopment area, we need to frame the future challenges and needs of the sites specifically. According to the Government of Western Australia (2023a) in their publication *Future of Fremantle Emerging Vision and Future Scenarios*, some of their future visions of Fremantle that they mention for the project in the Fremantle Harbour is to:

- build on Fremantle's uniqueness
 - Water based recreation
 - Accessible beaches/waterfronts
- Reintroduce natural landscape/green open space
 - Cultural interpretation
 - Diverse, walkable and connected
 - Aboriginal economic development

These are some points that will be taken into consideration as today's needs for all residents, including aboriginal people, as an important part of cultural and historical significance of the site. Although simply focusing on their history without addressing their present-day needs would lead to a loss of relevance and purpose. We do want to consider that because of the current social divide, it is of great importance to consider the threats of gentrification and keep in mind that if this area is to contribute to the indigenous community, it needs to be accessible to them. Or else the design efforts will only be an extension of cultural appropriation and further colonization and not a road to healing,

reconciliation and truth. This is an aspect of the planning process that needs to be of absolute importance and based on previous explanations (see under Incorporating indigenous landscape values into design and planning), it can only be achieved with genuine engagement of the local indigenous community and power over the planning process.

Further, the Government of Western Australia (2023a) proceeded to say in their publication that the aboriginal culture shall be celebrated in the development of Fremantle. They say that, "the elders want the aboriginal heritage protected and significant cultural connections to the land and waterways maintained. Given this long-standing and special connection with the area, it is important to the Elders that Aboriginal people derive direct socio-economic benefit from the site". This is important because of their strong connection to the land, and the spirituality between the land, the people, the sea and the river. Walyalup (Fremantle) was for a long time an important meeting and trading spot for the Noongar people.

According to The Department of Planning, land and Heritage, Government of Western Australia (2023a), the Elders and the Walyalup community has a strong connection to Fremantle harbor, as a spiritual site, and should therefore be engaged in the project long term. It is their will that the land and waterways are therefore protected, this could be done through "Celebrating culture and embed design for country principles" such as "exchange stories, truth telling, place names, landscaping and public art". They also suggest to invest in industries that would be connected to Aboriginal

cultural knowledge, such as environmental restoration or fish industry, along with securing the economical benefit of the community.

Another aspect of the cultural heritage is the harbor itself and what it has brought to the people and the identity connected to it, to "keep the gritty", which are aspects that make it its own. They also mention native fauna as a main priority. This is connected to the cultural heritage as fauna and culture are intertwined through our dependency of land (Government of Western Australia, 2023a).

By restoring natural environments, other positive outcomes will follow. Improvement will occur in health and wellbeing, as well as healing of the environment when it comes to contamination, water quality and erosion. Climate change resilience, such as flooding, will be reached by making the design flexible and adaptable (Government of Western Australia, 2023a).

The Government of Western Australia (2023a) has suggested three scenarios, one of them is called Scenario 2 –Coastal City, (figure 50) a scenario built on a sustainable urban center, with blue and green industries, as well as a coastal lifestyle. As this scenario is building on the strategy of building high density taller buildings to free up space for green structures, this is the one scenario this study is going to be based on, as our study has a focus on making the Harbour a more green area with connection to the land and water. This scenario has a goal that is closer to our vision and goal with our proposal.

0 125 250 375 m



FUTURE DEVELOPMENT SCENARIO - Scenario 2 Coastal city

LEGEND

-  Green network
-  Residential



Figure 50. Map showing parts of the proposal for the Scenario 2 - Coastal city within our project area, suggested by the Government of Western Australia, (2023a). The green networks are the areas that are freed up to re-design of cultural and ecological significance. Source: Google Earth, redone by Elvira Nordqvist.

“...With connection to the water at the front and centre, open space is seamlessly integrated creating opportunities for restorative landscapes and cultural stories, and investment in the blue economy and nature-based lifestyle experiences.” - Government of Western Australia, 2023

Although this is a plan that will ensure a green and public place, it does not ensure no negative effects. We recognize that the possible effects of housing development plans and how that might contradict our reterritorialization agenda for the site, as it might lead to the affluent groups of society moving in. Therefore the whole development projects needs to be in line with these goals for it to truly be effective.

As a summary, the driving force of the change of the Fremantle natural harbor was the need and want of the people of Fremantle colonial settlers to have a harbor that could sufficiently provide economic value to its inhabitants, by providing adequate infrastructure for trade (Truban, M. 1978). The impact is that the once natural environment of Fremantle has remade into an industrialized hub, the loss of habitat for animals but also the loss of important economical and spiritual important land for the aboriginal people. The current driving force for change we hope for, will lead to a resurgence of greenery and use of the public space as it will redevelop into a part of the coastal city scape, that is inviting to all its residents.

Site visit - Fremantle (Walyalup)

Harbour

From analyzing characteristics of the project area, four different types of character areas (see figure 55) - beach (orange), beach promenade (green), mole walkway (blue) and industrial area (red) could be identified. It became clear and very noticeable that the beach landscape gradually transformed into more and more man-made construction, into a completely heavily industrialized area with only hard surface with hardly no thriving vegetation in sight, except from some introduced palm trees (*Phoenix dactylifera*) from post-colonial time (see figure 53). The connection between the beach and the harbour was partly created by some cargo container seatings (see figure 52) in the “Beach promenade” area (see figure 55). These enables the visitor to sit down with sun and rain protection. An element that keeps the cargo container feature in the landscape but with functionality.

An interesting aspect was the protected bird reserve that was enclosed and preserved in the area. Here one could see signs with warnings of not walking into their protected habitat and hatching area. Thus, in the outskirts of this industrialized area the birds have been given a piece of land that is protected from human disturbances, completely separated from the rest of the surroundings, making the visitor unable to take part of the only nature available on the site.

Further into the Fremantle Harbour, onto the “Mole walkway” (See figure 55), it could be observed that the scent of industry started to become noticeable. The further one cycled into the harbor, the more prominent the odors of exhaust fumes and fish became. However,

from the roads in the harbor, there was always a valuable view over the lake and the ocean. On the other hand, the view could be blocked sometimes by the cargo containers that were piled upon each other, as well as the large granite blocks in the embankment of the most recently developed part of Fremantle Harbour, throughout the mole walkway. These elements became clear barriers in the landscape, areas that the visitor can't access through. At the end of the mole, a red lighthouse can be seen from a distance (see figure 51).

The industrial area (see map 55), apart from all the piled cargo containers, the industrial area acquires a strong industrial character from the giant cranes (see figure 54 and 7) that are stacked along the waterfront on the southern side of the port, facing the lake - Derbal Yaragan. These cranes' distinctive size makes them become landmarks for the Fremantle Harbour, landmarks that can be seen from a far away distance and work as



Figure 51: The red lighthouse at the finish of the mole that can be seen from a distance.

orientational objects. Thus, these cranes could mark the location of the Fremantle Harbour from far away, as well as provide a unique setting as they stand out in their environment.

In summary, it could be noted that the site held some valuable components, but that was inaccessible for the visitor to take part of, for example the enclosed native vegetation/protected bird habitat, a lot of valuable lookout points, no access to the water and so on. The question is, would it be possible to instead bring in the green spaces into the site and expand the connectivity of important habitats, whilst making the visitor get a connection to nature and be able to take part of it without any disturbances? If this problem could be solved, there would be no need to fully separate nature with the urban setting. Further, to be able to make the water and views accessible for the visitor, a stronger water connection has to be made, as well as eliminate big barriers (unless practical complications arise) that are blocking eye sight, such as big granite blocks and tall dense constructions.

Green space is a basis for good health in the urban city as it provided the visitor with fresh air, lowers the mean temperature and it is scientifically proven to reduce stress and anxiety (Queensland Government DESI, 2023). As described by Barber, A., Haase, D. & Wolff, M. (2021), mobility in the urban context is not only expressed by the physical barrier which can be quantified and understood by analyzing the landscape but is also the perceivable accessibility. How institutions perpetrate and the perception of accessibility is also an important aspect to truly understand how green spaces are accessed. In the article, they also conclude that inner

city urban scapes that have low barriers also have the best accessibility to green spaces, which can not be said about the area today. Several big roads and the train track stretching through the city in the North makes the space hard to access by foot or bike, this would also need to be addressed. This discourse shows how important it is to not only make the space accessible physically but also the perception of it. The space needs to be including of wide variety of culture, including Noongar culture for it to truly be accessible for them. As an example, Fremantle has a variety of cultures represented in the visual space of the city, and therefore it also is interpreted as a space more inclusive than many other places in the city.



Figure 52: Cargo container seatings in the "beach promenade".



Figure 53: Phoenix dactylifera that could be seen at some spots on the site.



Figure 54. The cranes seen from afar at the Fremantle Harbour, seen from Cottesloe beach (approx. 8,5 km away).

Figure 55. Site visit map showing the characteristics of the site. Source: Google earth, edit by Elvira Nordqvist.

0 125 250 375 m



1. Uninterrupted sandy beach from Hillarys down to Port beach (approx. 25 km) with the cranes at Fremantle Harbour in the horizon - The cranes that are a landmark for Fremantle Harbour, can be seen from far away and can work as orientational features in the landscape.
2. Beach promenade from Port beach into Fremantle Harbour (approx. 100 meters) with a few occasional benches, cycle racks and bins. Limestone embankment.
3. Protected bird reserve - enclosed bushland for birds nesting.
4. Gas station and cargo containers, granite embankment - blocking site and creates barrier walls in the landscape.
5. An approx. 950 m long mole leading up to a lookout point with potential for 360 degree views. However, large granite blocks could block the view on the embankment side. The whole mole consisted of granite and asphalt.
6. The view that is offered from the other side of the lake. On this side there are a lot of restaurants, cafes, and entertainment venues. From this site one can see the boats, ferries and the cranes from the Fremantle Harbour.
7. Industrialized area and fishing industry.
8. View from the train track on the other side of the river where the cranes can be seen over the water.

Orange - Beach

Green - Beach promenade

Blue - Harbor walkway

Red - Industrial area

Site conditions

Biophysical attributes

North Fremantle is situated in an area with very dry summer and wet winters. Although because of climate change, Perth is facing extreme heat and changes to the seasonal rhythms (The Guardian (2024), this is also an important factor to understand for the design, as it might be needed to implement strategies so that the vegetation can survive extremes, such as heat, heavy rainfall and winds.

The spearwood dunes (figure 56, 59-60) were formed around 40 000 years ago during the so-called Pleistocene glacial and interglacial period. It is made by sand that comes from the ocean, consisting of yellow brown sands of varying thickness. As these dunes are young, it still contains iron salts and some calcium carbonate. The coastal limestone is the rock unit that is formed when these minerals precipitate out of water containing dissolved calcium. The majority of the limestone is cemented dune sand with fragments of among other things calcareous shells (Seddon, 1972).

Around the Fremantle area, these sand dunes have been degraded. The cause of this has been both the dramatic change caused by the post-glacial rising sea levels during 17, 000 years, which have flooded and drowned an old dune between Perth and Rottnest, as well as human impact, especially the development of residential areas (Seddon, 1972).

Although it is clear from site visit that much of the site is ultimately forever transformed, with granite rock mole shaping the landscape structure. The soil layer is mostly covered by asphalt and concrete. Therefore it is clear that for any regenerative practices to be able to be done, one must first examine the soil conditions of the site today. There will be a need to add soil that builds up these spearwood sand dunes, which is a material that is going to be taken from other parts of the landscape, which would have to be investigated to make sure that this is not an aspect that will contribute with a bad impact on the site that the material is taken from.

Climate character: Mediterranean, which is characterized by mild wet winters and hot dry summers.
Maximum mean temp: 18.4C (July) - 30.7C (Feb)
Minimum mean temperature: 9.6 C (July) - 18.7C (Feb)
The annual rainfall: 718mm
(Ecoscape, 2017)

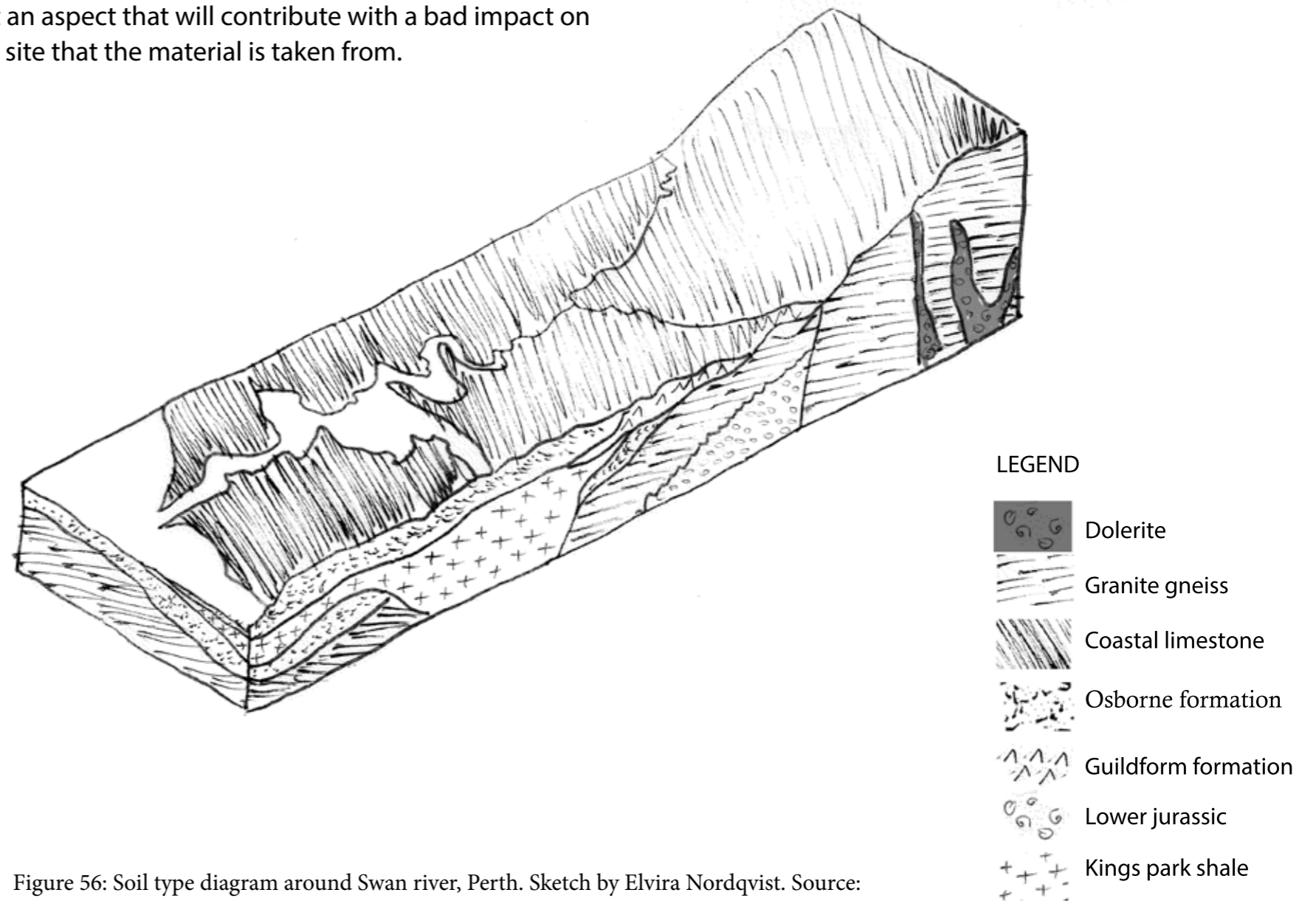


Figure 56: Soil type diagram around Swan river, Perth. Sketch by Elvira Nordqvist. Source: Seddon, G. (1972). Sense of place.

Biology of the site

As previously described, Australia generally boasts a remarkably rich biodiversity, measured up to nearly 3000-4000 species. As a result of colonization and its consequences such as fragmentation and the introduction of new species, close to 20 mammal, 20 bird and 70 flowering plant species have become extinct. Additionally, 50 terrestrial mammals and over 1000 flowering plants have become endangered, vulnerable or listed (Britannica, n.d). When it comes to Fremantle Harbour, as expected through our site visit, the Fairy Tern is listed as a vulnerable species in Western Australia. One of their biggest threats is made up of human disturbances such as trampling and loud noises, as well as predators such as foxes, dogs and cats (City of Cockburn, n.d). This is the reason for the protected Fairy tern sanctuary (see figure 57), as the population of the specie grew from 90 adults pairs in 2013 to 220 adult pairs in 2018 (Fremantle ports, n.d.a). Their habitat consists of coastal beaches, sheltered inlets, harbours, estuaries, lagoons and wetlands (Birdlife Australia, n.d).



Figure 57. Showing the Great Crested tern from site visit.



Figure 58. Showing the Great Crested tern nesting site from site visit.

Other species that is considered threatened in the Fremantle area are other Terns like the Greater Crested Tern (figure 57-58), as well as some other species like; Carnaby's black cockatoo, common sandpiper and the tree red flowering gum (INaturalist, n.d.).

Neither of these species' habitats are found on our site, as for example, the globally endangered black cockatoo typically resides in woodlands and scrubs, often wandering to coastal areas where there's especially pine plantations and banksia woodland. They also get their food from the nectar of the flowers from banksia, eucalyptus, grevillea and many others (Government of Wester Australia, n.d.e). For their breeding they need tall eucalypts trees with large hollows (Birdlife Australia, 2024). Another example, the common sandpiper utilizes in coastal wetlands and some inland wetlands (Australian Government, DCEEW, n.d). In summary, it could be established that more vegetation providing food for these endangered species, as well as fitting biotopes would be beneficial to include at the site.

The sand dunes formation

Much of the coast today is eroding and gets cut back, but there is still some seasonal variation. There are existing sand dunes with a more recent origin along the coast, which are varying in form and size, but not adequately dated. The three most common ones are the parallel dunes, parabolic dunes and blow-out. These dunes are not actively formed today. Some possible contributors to the formation of these dunes could have been caused by greater sand supply, stronger winds or by firing of the coastal shrub by Aboriginal hunters. The parallel dunes are being formed from Swanbourne to City beach. The parallel dune system is formed all along the coast parallel with the beach. There are many blow-outs in these parallel sand dunes, where the gap acts like a wind tunnel. From Fremantle down to Rockingham on

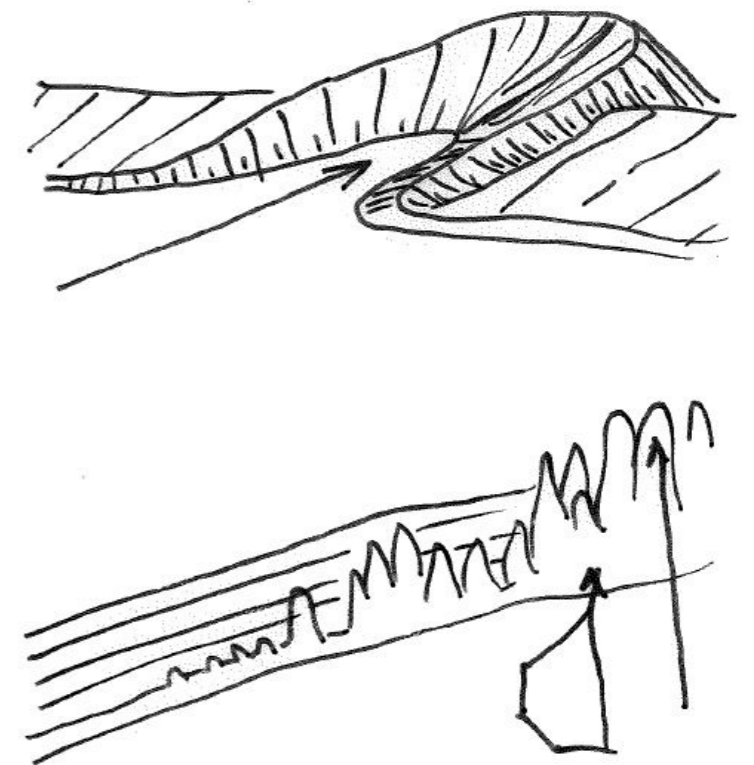


Figure 59: Sand dune formation. Sketch by Elvira Nordqvist. Source: Seddon, G. (1972). Sense of place.

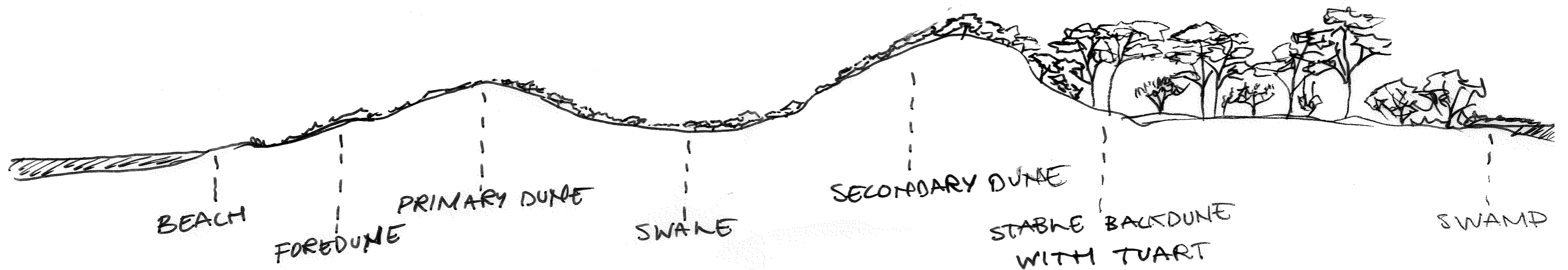


Figure 60: The character of the coastal sand dunes. Sketch by Elvira Nordqvist. Source: Seddon, G. (1972). Sense of place.

the other hand the dunes are low and irregular because of the sheltering effect by the islands and offshore reefs. However, the sand dunes have been cut up ever since World War II, for the reason of building houses. This has also increased degradation of the sand dunes which causes a threat towards the natural sand dune ecology. On these dunes, native dune flora can thrive, as well as trees that contribute with natural shade for the beach promenades and car parks (Seddon, 1972). In the personal communication with Francis Kotai at Ecoscape 2024-02-14 he talked about the importance of keeping the natural landscape as for example the sand dunes, that naturally support trees that provide important shade for other vegetation, animals and humans. Keeping the natural landscape will therefore contribute with these

attractive abilities, especially in Western Australia where it is a challenge to get the trees into the urban landscape.

Erosion risk and rising sea levels




The waterfront at the Fremantle harbor is at risk of erosion and increasing sea levels, as is a viable threat to the condition of the site (Australian Government DCEEW, 2009). This needs to be addressed in the design as vegetation systems can provide a buffer zone for the changes in sea levels and mitigate the effects of water erosion from the shoreline but also form rainfall (Queensland Government, 2023), and therefore protect the urban networks to an extent.

Changing vegetation line

As can be seen in the map below based on information from the vegetation line for the site (figure 61) has changes over the year, as the harbor was built the vegetation line from the north (green) was demolished to build the harbor. One can also notice how the shoreline has slightly expanded from 1902 to 2016, this is because of the building of the mole and harbor sand sediments to a higher degree in the north part and therefore expanding the shoreline on this side. Observing these effects are important to understand how a potential shoreline will look like for the future and how the coastal vegetation will have to adapt, by human help or by self regeneration.

0 125 250 375 m



-  2016 vegetation line
-  1945 vegetation line
-  Approx. 1901 shoreline



Map 61: Shoreline history at the Fremantle Harbour, source: City of Fremantle (2024g). Map from: Google earth, edit by Elvira Nordqvist.

Summary of site analysis - SWOT analysis

A SWOT analysis was done on the site to conclude the Strengths, Weaknesses, Opportunities and Threats, in order to compile the important aspects to keep in mind when going forward with our design proposal.

<p>Strengths</p> <ul style="list-style-type: none"> - Architecturally distinct and identity framing elements ex. red cranes - Access to waterfront - Central located in connections to Fremantle city and perth metropolitan - Represents economic growth and job opportunities 	<p>Weaknesses</p> <ul style="list-style-type: none"> - Concrete industrialized “dead” zones ecologically - Identity of site from an indigenous perspective not visible - Hard or unable to access the site - Toxins release over many years of industrial use. - Poor or no soil layer for vegetation
<p>Opportunities</p> <ul style="list-style-type: none"> - Create a green oasis central accessible to Fremantle and Peth metropolitan residents. - Recreate ecological values in waterscape - Reconnect to indigenous culture of the site in an attempt of reconciliation and decolonization of regional planning processes - Small efforts of ecological value will make a large impact as the site is heavily industrialized. 	<p>Threats</p> <ul style="list-style-type: none"> - Valuable land for developers could lead to high density housing and lack of green spaces - Gentrification - Access to space limited - Loss of Port identity - Loss of deeper culture stretching beyond the port history. - Heighten sea levels and increased floods - Erosion risk

Results

The results will be presented in three parts; the conceptual ideas that led to the framework of the conceptual design, thereafter the sketching process and lastly the visual compiled design ideas or conceptual proposal.

Conceptual ideas

Our conceptual design is based on the multilayered history of Fremantle harbor, the site has deeper history than can be seen today. The harbor and its port has brought prosperity and development to the settler state but with the loss of connection and destruction of the ecosystems and its services that is of great significance to every citizen of Perth, but maybe especially the Whadjuk Noongar people. What once was will not be again, but to create a new site with the goal of re-connection and understanding is a step in the right direction, even if no perfect solution might exist. We are not intending to provide that solution merely to generate ideas based on our research that could inspire change in what the area can become.

The concept of the design is to bring the pre-colonial landscape back up to the surface and make it a visual layer incorporated in the industrialized landscape (figure 62). To create an example that could be used as an inspiration for real life projects, we have used the scenario Coastal City that the government of Western Australia has presented as earlier mentioned, but with some rearrangements to fit our purpose of the design better., which we will present later on.

- Just like a crack in the asphalt, life gets the chance to come back to the site.

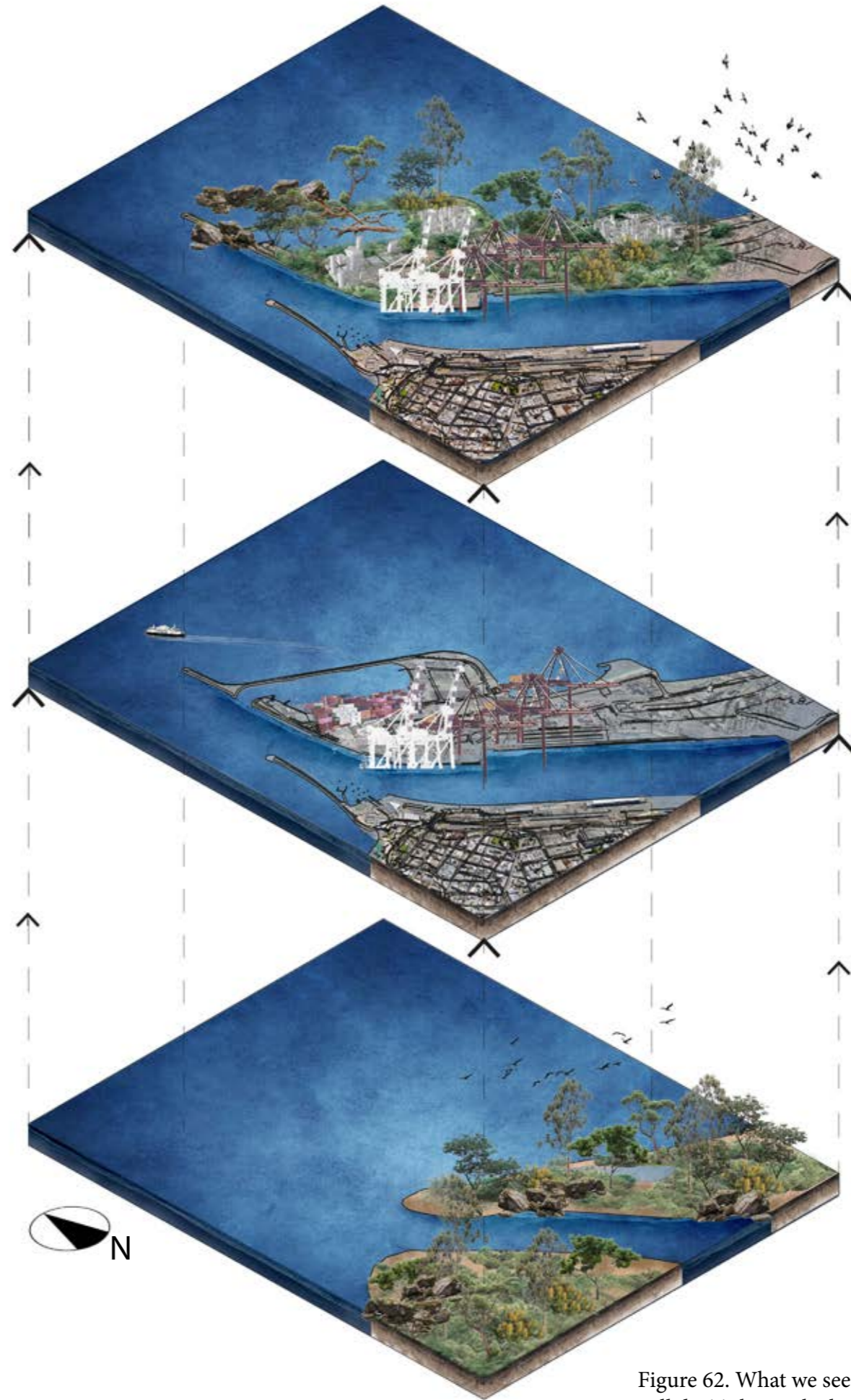


Figure 62. What we see the conceptual design proposal will do. To bring the landscape pre colonization back up to the surface and make it a visual layer incorporated in the industrialized landscape.

Landscape values of the historical layers

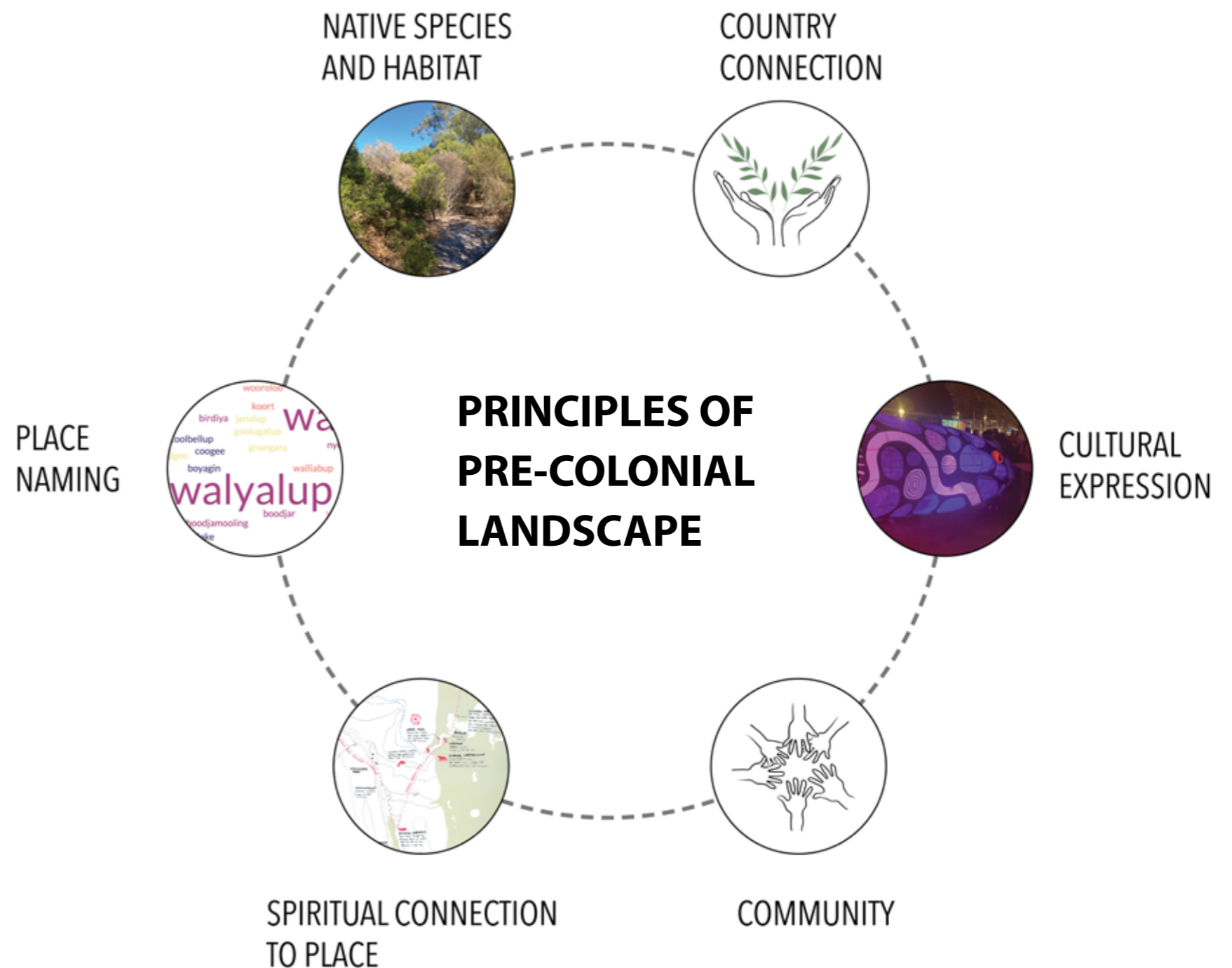
To bring the pre-colonial layer into light we have identified six landscape values that would have to be considered in the incorporation into the industrial landscape. Therefore, recognizing the importance of preserving existing site values, we identified five landscape values within the post-colonial layer for preservation and development. Although we have intentionally not attempted to re-create or implement elements of **Cultural expression**, such as art and design, or **Spiritual connection** as we do not believe that is our culture to express. With that said, we do believe that it is an important aspect of design that should be implemented with indigenous peoples of the site, in this case the Noongar, in a co-design effort.

Principles that we have addressed is **Native species and habitat**, this is done through regenerative design practices that brings back the native vegetation of the site, a so-called nature based solution. This also includes plants that have a cultural connection of food and way of life, such as grass plants that were used to weave or plants that have gum that can be made into flowers.

Community is also an important principle that we have included for several aspects, it is inspired by the importance we see community engagement and involvement has to create a space that is reflective to all its citizens, but also how community and family is the backbone of indigenous communities and their view of and way of life. Therefore, it is important to create places where community can take space in the urban context, to showcase it and prioritize it.

Place naming is also an aspect that we see great value in as it is part of the multi-layeredness of the site, the place has different meanings and names in different languages and cultures and therefore it is an important part of implementation, even if we have only attempted this in a

conceptual way. All of these principles can be described as feeding into the last principles of **Country connection** and is the main pillar, which will be described further under interpretation and testing of principles.



On the other side of the coin are the principles that consider the industrialized memory and how to redesign a harbour in the urban context. The design does not attempt to forget the industrialized history but to

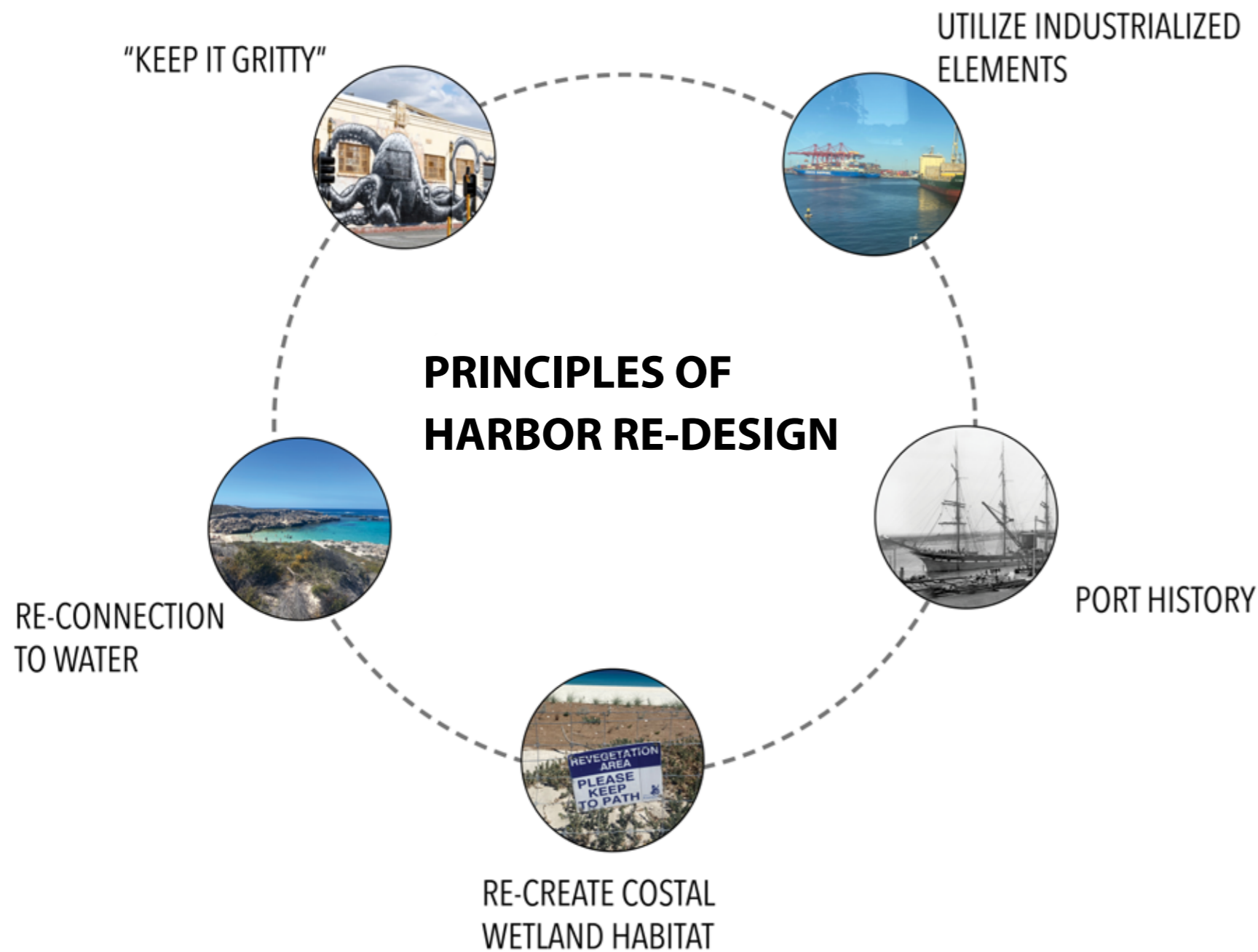
embrace the multilayeredness of the site and to uplift the cultural significance of both the industrialization and the post colonized landscape. We see that with this complexity and combining process that a new

interesting contrast can occur. We do not find this as a negative effect, but one that deepens the connection to the site's identity.

The principles for this layer are **"Keep it Gritty"** to remember that the industrialized, maybe perceived as hardness of site, has an identity. It is part of the next principle that we have concluded to **Utilize industrialized elements** in the design to achieve the first principle.

Elements such as the red and white cranes can be seen from far away and therefore part of the orientation towards the port and Fremantle in the whole area. Other elements such as ships and intermodal containers, also affect the spaces visual character. All of this is part of the next pillar **Port History**, which in part can be represented by incorporating the current port elements, but we also believe that it is important to tell the stories of the changes the port has undergone and how it has translated into expansion of the settler state.

Other aspects that are more connected to the site today but what a harbor can be transformed into, is **Re-connection to water**, today one has to go elsewhere to access the waterfront. Partly because of unclean water, but also because of physical barriers such as the granite mole. This can be implemented through making the waterfront accessible. The next aspect: **Re-create Coastal wetland habitat** is in part connected to the other principles of the post colonial landscape, but it is also an important aspect of harbor re-design.



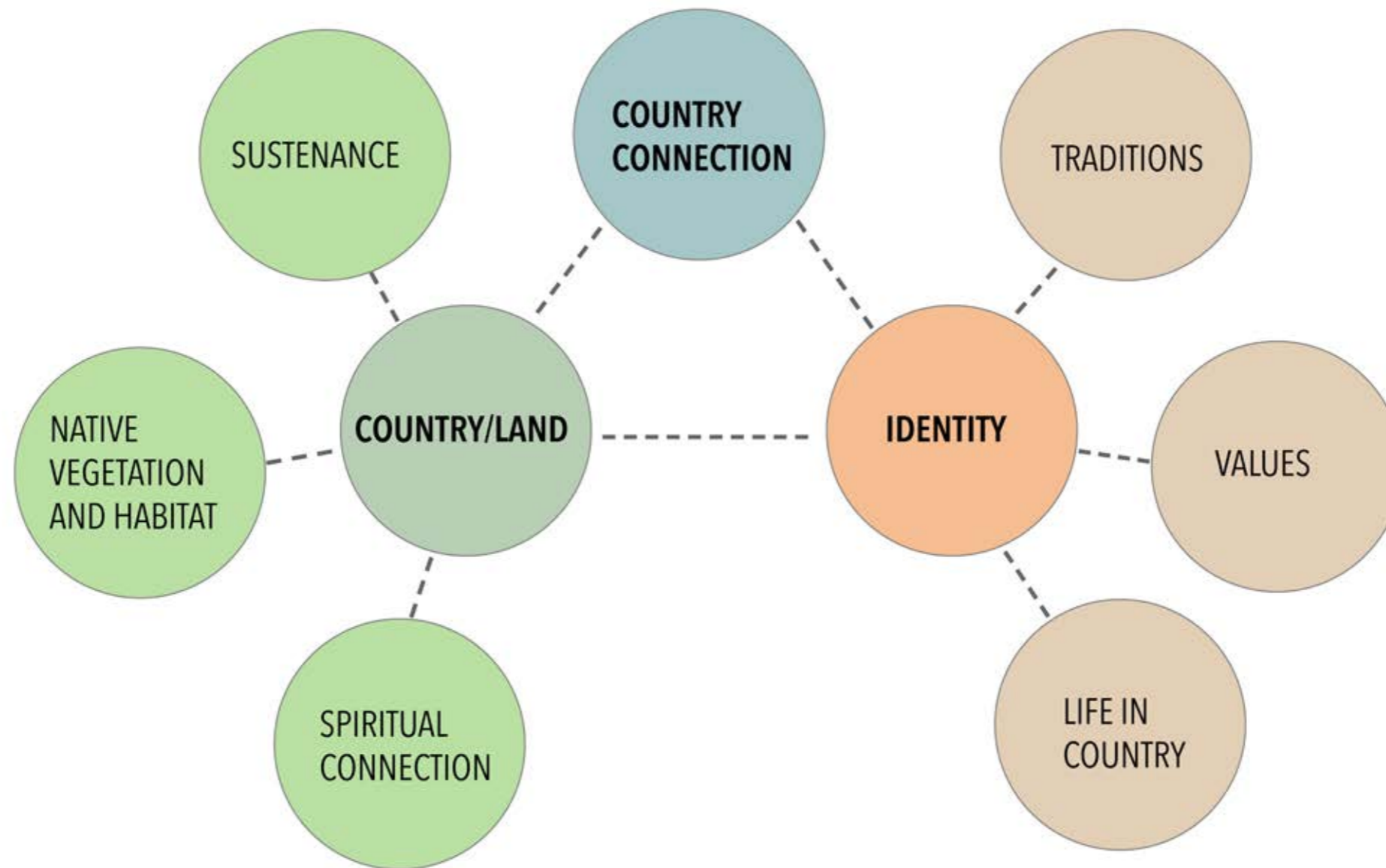


Figure 63. Our design has a heavy focus on Native species and habitat and to further understand why we created this mind map based on our background research, to show the interconnection of land, native ecology and indigenous identity. Also how this feeds into the identity of the site. It is the identity of the people and their connection to land that creates the understanding of the site, which is as complex and diverse as the people who care for it.

“when people know there is another story here as well... there is no reason those two stories can't come together and that they can't be part of all of our knowledge.”

- Farley Garlett (Whadjuk Noongar Elder Karrda Pty Ltd), Source: Noongar boodjar language Cultural Aboriginal Corporation (2022) Mapping Boodjar Walualup Fremantle.

Sketching process - Interpretation and testing of concept

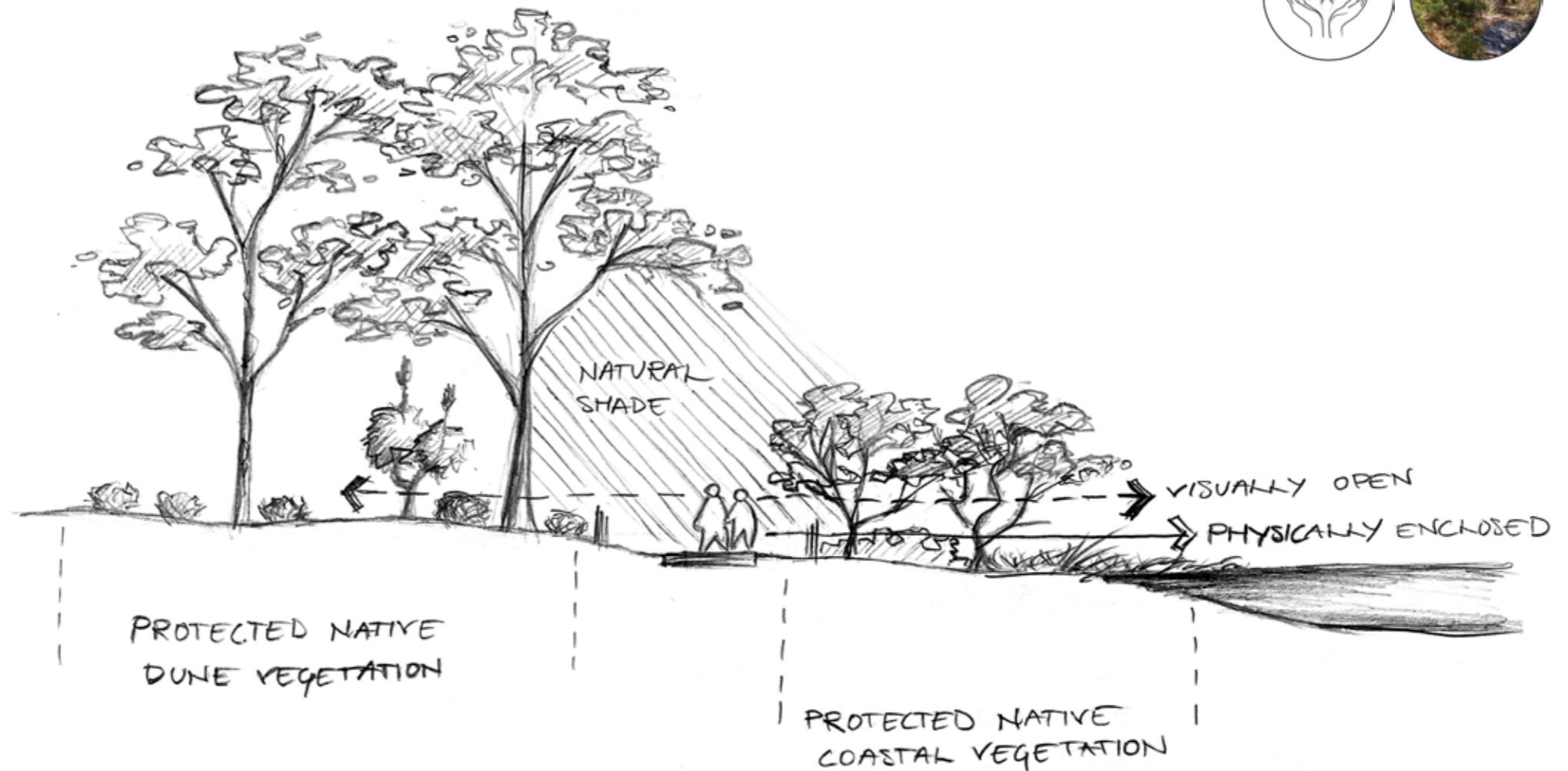
Our principles have led us to get a further exploration of the connection between humans and their environment. Our findings have led us to the understanding that the conditions of the landscape and environment shape their lives, as mentioned in the background, they engage with the environment and were able to sustain themselves from what it could provide, shelter from the sun or wind or food to eat. By living with what the environment could offer and not against it, not more than what it could provide also sustained the ecological systems, native habitats thus also a high biodiversity.

Therefore, there was this type of harmony with the environment that made the humans, vegetation, animals live in a sort of symbiosis. We are nature and it is us. This is the principal value we strive to bring up to the surface to create a restored environment that can thrive, while the human can take part of the landscape and live with nature, instead of disturbing it. These design principles lead us to the design choices such as, letting the vegetation create space, being the room-defining compositions, and features such as social gatherings, shade and even protection. The designs should follow the principle of letting the visitor take part of its environment, by implementing solutions that subordinate human construction to the vegetation and animal life. It is designed so it lets the visitor come close to the environment but without disrupting it to the extent that challenges its existence. Simultaneously, it enables interaction with nature and serves as a conducive environment for learning. For this reason, we decided not to make designs that would disrupt the water landscape, for example, architectural features that lead out in the water, as we established in the background that this could disrupt the marine ecosystem.

With this established we can start to test our ideas and analyse what they do and do not achieve for our intended principles.

Spearwood dunes:

Principles in mind:



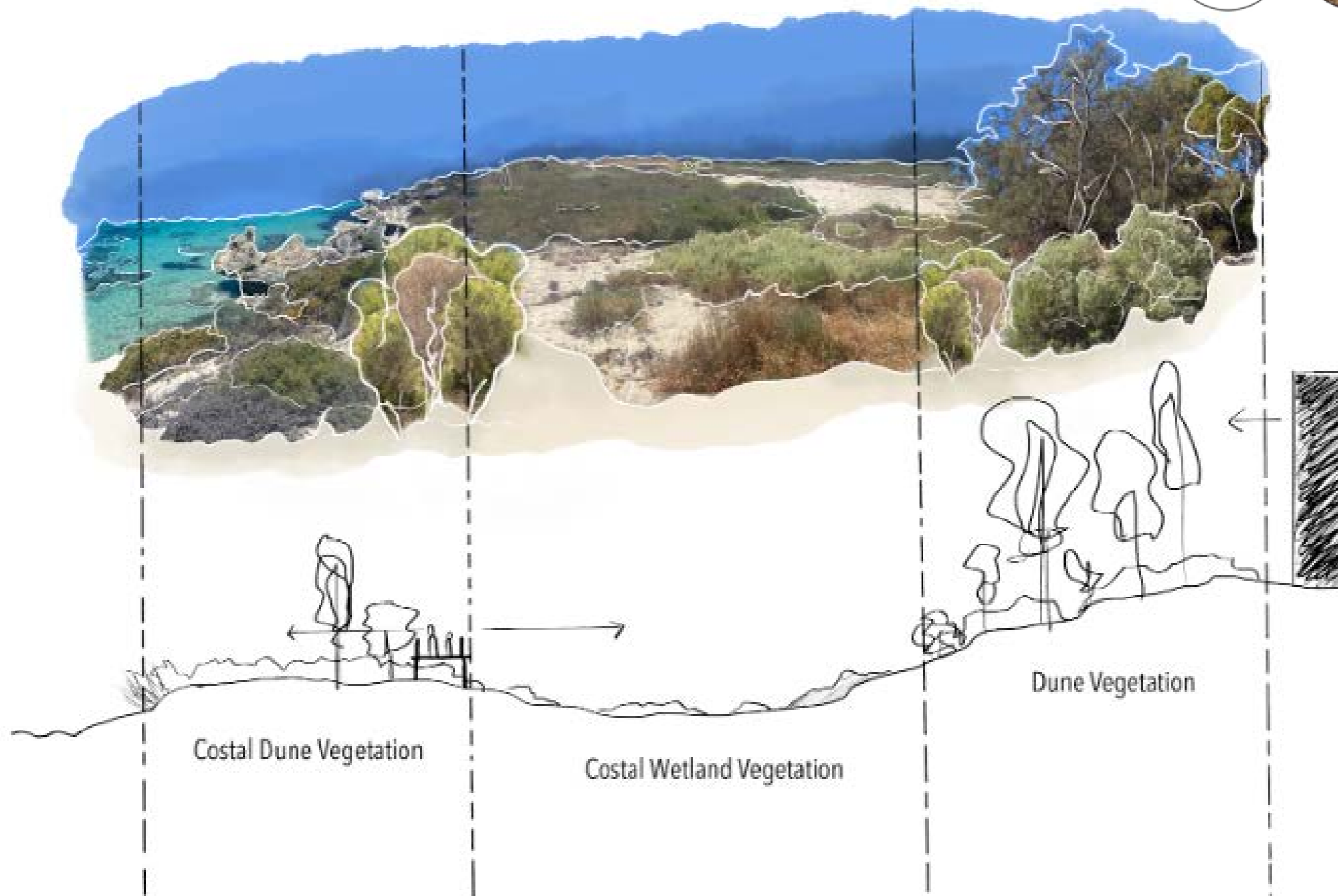
- Inspiration from the native spearwood sand dunes where shrubs and trees naturally grow and thrive. The trees contribute with natural shade along the beach walk, whilst the coastal vegetation enhances the scenery with its natural green presence in front of the ocean view.

Key features:

- Natural shade.
- Native vegetation that provides recreational and biological values.
- Flourishing greenery and diverse landscape.
- Diverse visual sights and physical enclosure.

Landscape features of waterfront:

Principles in mind:

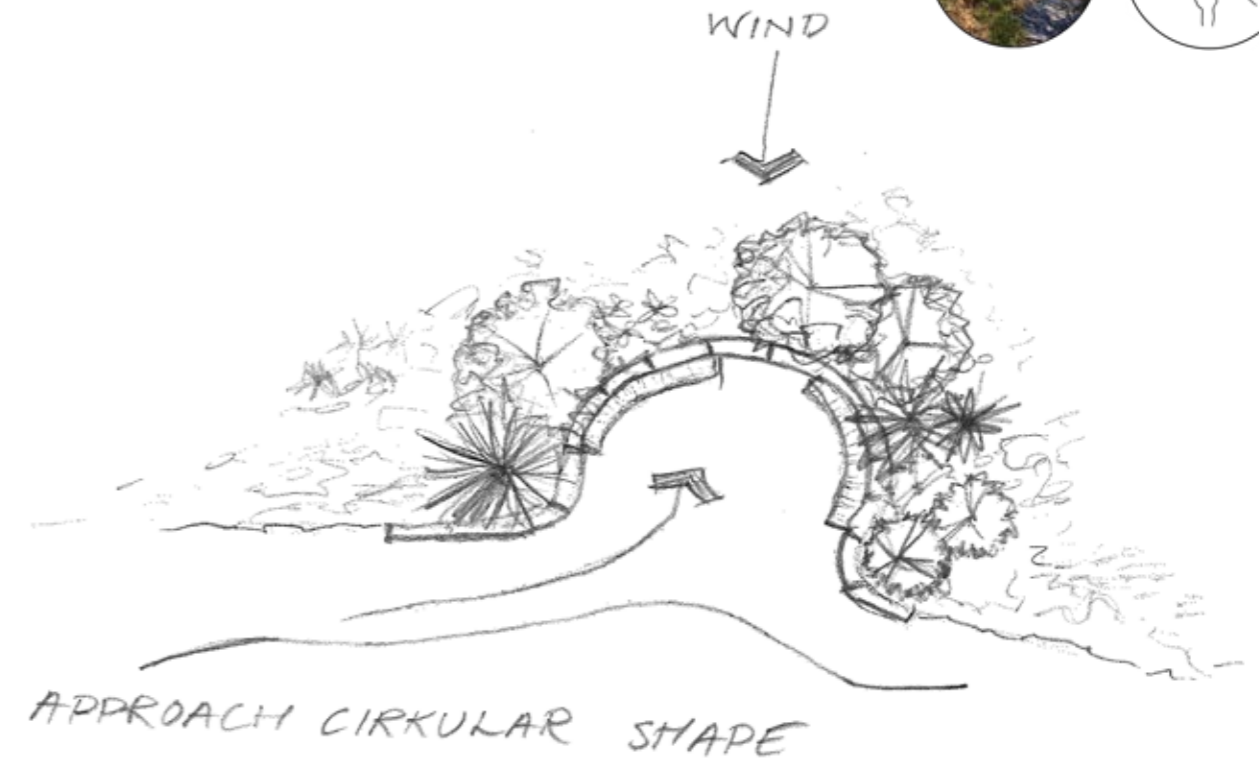


- A visual representation of the different habitats within the coastal parks. Moving from the Rocky limestone Coastal dunes of the beach with low plants to mid height scrubs, wind and salt tolerant plants, to the lower ground wetlands that can overflow seasonally with low ground cover plants, transitioning over to the dunes with a more taller trees providing shade with a more dense canopy cover.

Community:



Principles in mind:

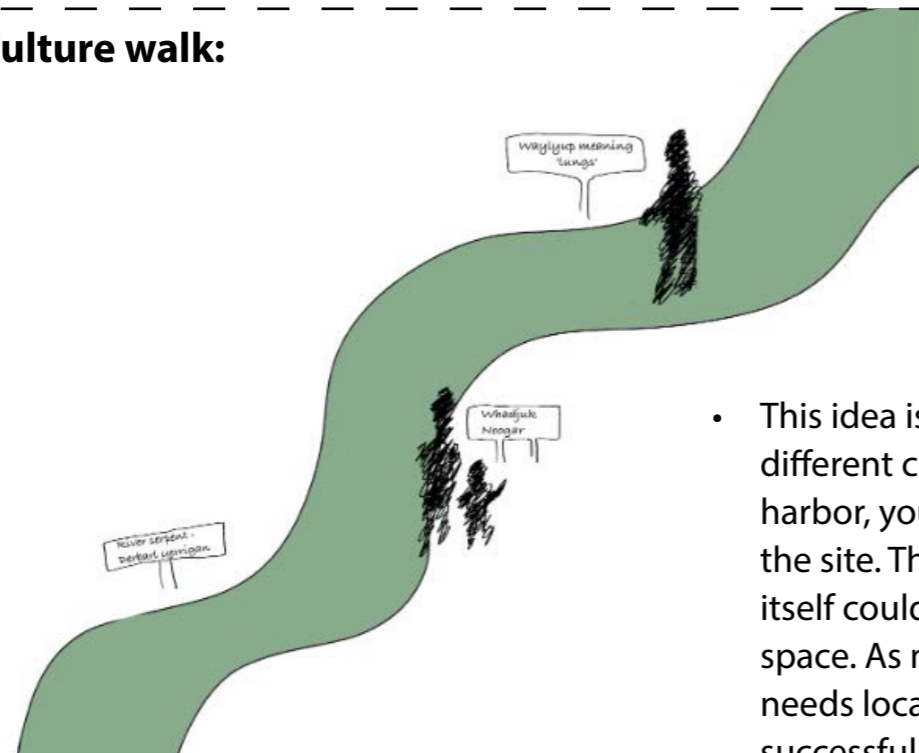


- The circular shape in an enclosure suggests a place of arrival, a place for activities and gatherings, or as simple as just stopping and to be in.
- With limestone walls framing in the circular shape, enclosed by native vegetation provides natural protection from behind, offering both shade and acting as windbreakers.

Key features:

- Privacy.
- Social space - A place for gathering, meetings and conversations.
- Protection from sun and wind.
- Seating areas in both sun and shade.

Culture walk:



Principles in mind:



- This idea is based on the notion that along the riverwalk one can implement different cultural adventuring into an experience. As you are visiting the new harbor, you get to learn about its aboriginal history and ancient stories from the site. This makes learning more engaging and interactive. The pathway itself could be an opportunity to let indigenous art take form and take up space. As mentioned in the background this is an aspect of design that needs local and indigenous experts in a co-design effort for it to truly be successful.

Key features:

- Name framing by using aboriginal names/words.
- Engagemanging visitor in aboriginal history and storytelling.

Boardwalk:



- A boardwalk enables the visitor of the space to travel through protected areas that are sensitive to disturbances such as foot traffic or dogs that might disturb animal life. All while the visitor is able to get close to nature and become a part of it.
- A meandering boardwalk following the topography in the sand dune landscape (as mentioned in the methodology section) makes the visitor to slow down by bending spaces and changes in the topography. The diverse dynamic of the sand dune vegetation in the dune landscape that the boardwalk moves through creates an alteration of concealment and revelation - which creates a curiosity to explore what's to come around the next corner.
- If a construction is to be implemented it should follow the movement of the landscape and its topography with the principle of letting the landscape form the constructions.

Principles in mind:

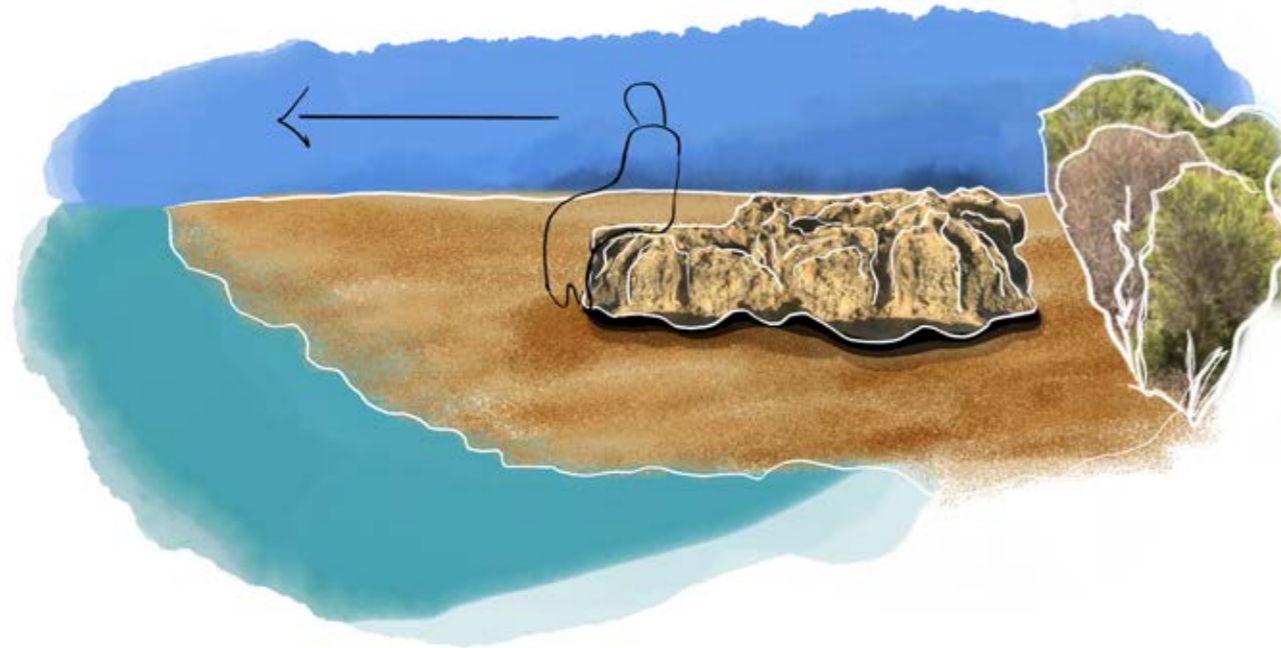


Key features:

- Educational and recreational value.
- Enables close encounter with nature.
- Natural shade from trees.
- Not just a transport route but also a experience.
- Valuable view over nature and ocean/river.

Flexible seating with limestone features:

Principles in mind:



Key features:

- Flexible seating area and varied heights and viewpoints.
- Use for play and meeting space.
- Interesting texture provide a relaxing visual stimulus.

Simple meeting space under the bush/tree canopy:

Principles in mind:



Key features:

- Space to sit down on the sand and touch the ground
- To connect with your environment but also people.
- Small nicks where one can have Protection in the back.
- Soft leaves are left on ground to sit on but also to bring back nutrients to the soil and biological life such as insects and microbes.
- Sound of the leaves in the wind provides sensory stimulation.

Conceptual proposal - Compiled design ideas

As mentioned earlier we have created a conceptual design for the redesign of the Fremantle Harbour, envisioning what it could look like by incorporating the principles that we have tested through sketching.

The native vegetation

The conceptual proposal is based on restoring native vegetation through not only incorporating native species, but also to recreate the topography of the sand dunes with spearwood sand (see section A-A), that with time will regenerate and support the growth of the dune vegetation. This type of landscape creates a vegetation system that also can provide a buffer zone for the changes in sea levels and mitigate the effects of water erosion from the shoreline.

The native species included should be the species that is common for the Cottesloe area (see figure 64 for example). Later on we will give some examples on specific species that are included in the different vegetation layers. Some of the species, as earlier mentioned, have cultural meaning and ecological benefits, for example edible berries. The biodiversity of indigenous species inherently manifests discernible seasonal variations, characterized by distinct flowering periods with diverse scents and hues. Additionally, various berries and fruits flourish at different intervals throughout the year, contributing to the dynamic landscape.

The biotopes

Three historically significant biotopes, of great significance to the Noongar people, have been purposefully integrated: Wetland, coastal dunes, and sand dunes (see figure 71 for map). **The wetland** serves as vital buffer zones against rising sea levels, capable of accommodating floodwaters and excess water overflow, thus safeguarding surrounding areas and supporting biodiversity that requires wetland - which in turn will provide invaluable habitat for some of the endangered species in the area. **The coastal dunes** also creates a buffer zone to the beach that extends down to the ocean, creating accessibility to the water, as well as the dynamic of the coastal dune system which provides an advantage for the native vegetation to thrive and proliferate. **The sand dune** system itself contributes significantly to this dynamic, being intricately linked to the coastal dune system. As previously noted, the presence of mature trees and natural bushland in these regions offers not only shade and gathering spaces with protection from the tree canopy, but also confers substantial ecological benefits.



Figure 64: Photograph of native tree, Eucalyptus.

Creating multi-layeredness

The objective was to preserve the crane structures while allowing the industrial harbor landscape features to remain intact, while simultaneously facilitating the growth of the native green network amidst the industrial landscape. Thus, to lift up the pre-colonial layer to the surface and therefore create the multi-layeredness - which will be done by lifting it up vertically, whilst preserving the post-colonial land mass structure horizontally (see figure 65-66). The post-colonial features, such as the cranes, cargo container-seatings, the lighthouse and the palm trees (figure 65-70), will therefore be preserved, as these features will connect the Fremantle Harbour to the rest of Fremantle - to still "keep it gritty". This multilayered proposal creates a big contrast between the heavily industrial, strict port features, with adding the wild, unorganized greenery/bushland. The purpose of this is to show that two stories can come together and be told at the same time, and that this site can become a place for learning and human-connection.

**Uplift the pre-colonial
landscape vertically**



**Preserved post-colonial land
structure horizontally**



Figure 65: Diagram showing the interlink between the pre- and post-colonial land mass structures.

Preserved post-colonial elements:



Figure 67: The cranes.



Figure 68: The cargo container seatings.



Figure 66: The Fremantle Harbour land mass structure.



Figure 69: Palm tree - Phoenix dactylifera.



Figure 70: The lighthouse.

Figure 71: Master plan for the conceptual proposal.



0 100 200 300 400 500 (m)

MASTER PLAN, 1:100/A3

Section (figure 72). Showing how we propose an extension of the coastal areas to make room for more coastal dune vegetation and habitat that can mitigate the effect of climate change such as flooding but also to provide more important habitat for wildlife and space for inhabitants to connect to their environment and have easy access to the ocean. This will result in taller buildings, as some of the housings are taken from the sides of the site to make room for bigger green areas. Taller buildings might be a disadvantage for example for sun exposure, as well as it doesn't go together with the rest of the architecture of Fremantle. However, as we want to make this proposal out of a real project, we have to keep the amount of housing that is planned to get built in the development area.

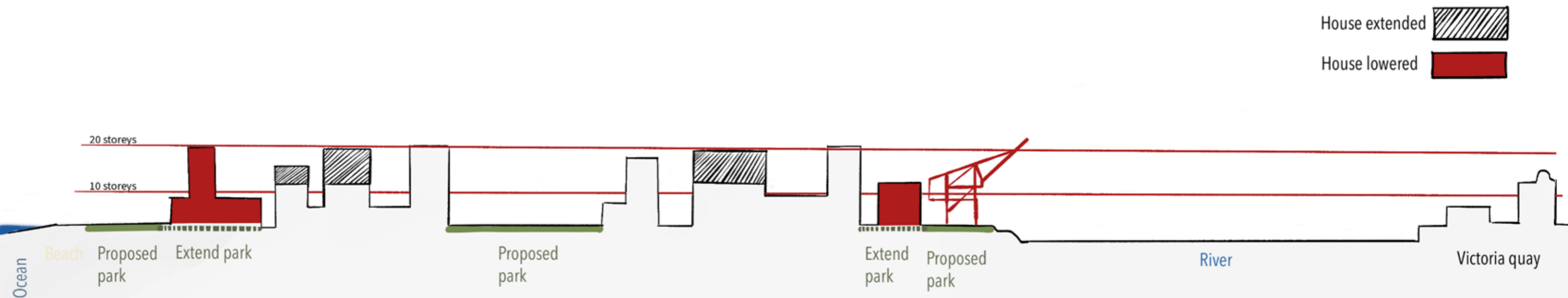
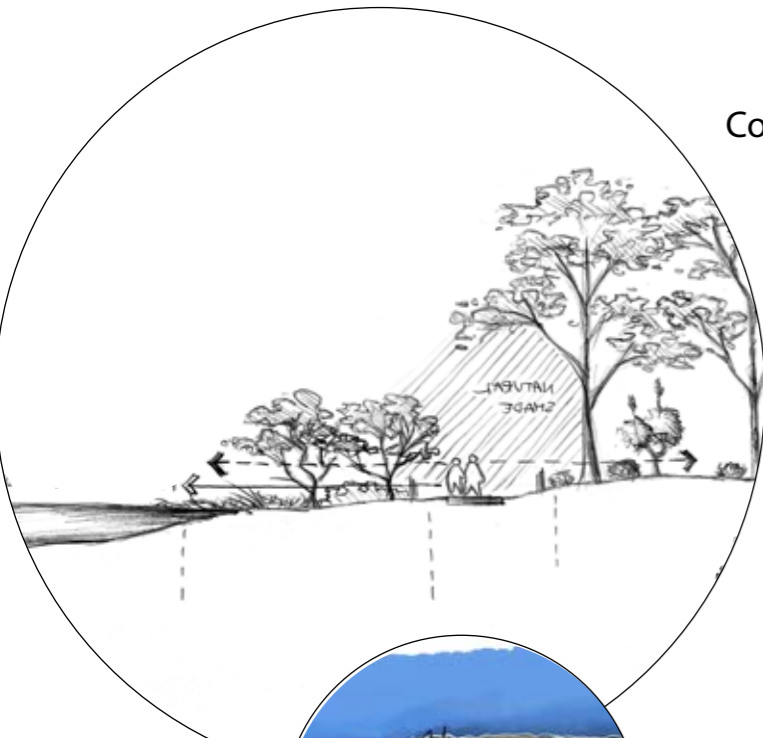


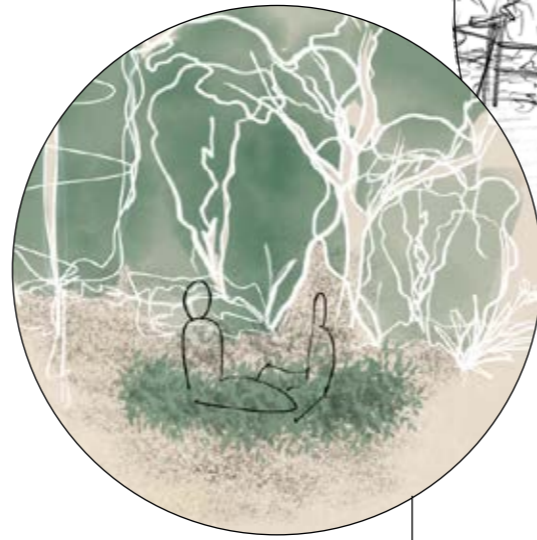
Figure 72: Section of the north fremantle harbour, initial information based on information from Scenario 2 - Coastal city, by the Government of Western Australia, (2023a), proposed changes by Cassandra Kallifatides & Elvira Nordqvist

Section A-A shows an example on how the dynamic of the incorporated sand dune landscape, the harbour and the new residential buildings should be distributed, where we would like to see less density as proposed in the scenario by the government of Western Australia. There is no such density in the rest of Fremantle and with our aim to lift up this historical layer, we don't want a high risk of the area to become gentrified, as well as letting the coastal dune system to take over the site - as explained on next page. In this section we have given suggestions of how our principles could be incorporated into the site.

Coastal sand dunes



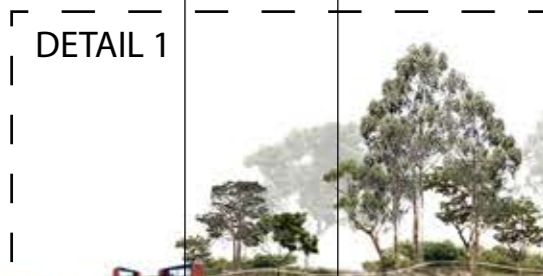
Boardwalk



Community



Limestone seating



0 50 100 (m)

SECTION A-A, 1:25/A3



SECTION DETAIL 1: Showing the dynamic between the dune landscape, port-elements (cargo container seatings and palm trees) and incorporated principles (board walk in dune landscape).

SECTION DETAIL 2: The preserved cranes contrasts against the vegetation with its hard material and strong red color. The native planted trees brings down the large scale from the cranes and buildings. Limestone rocks placed down the shoreline works as erosion protection, as well as contributes with places to sit and observe the view over the water.

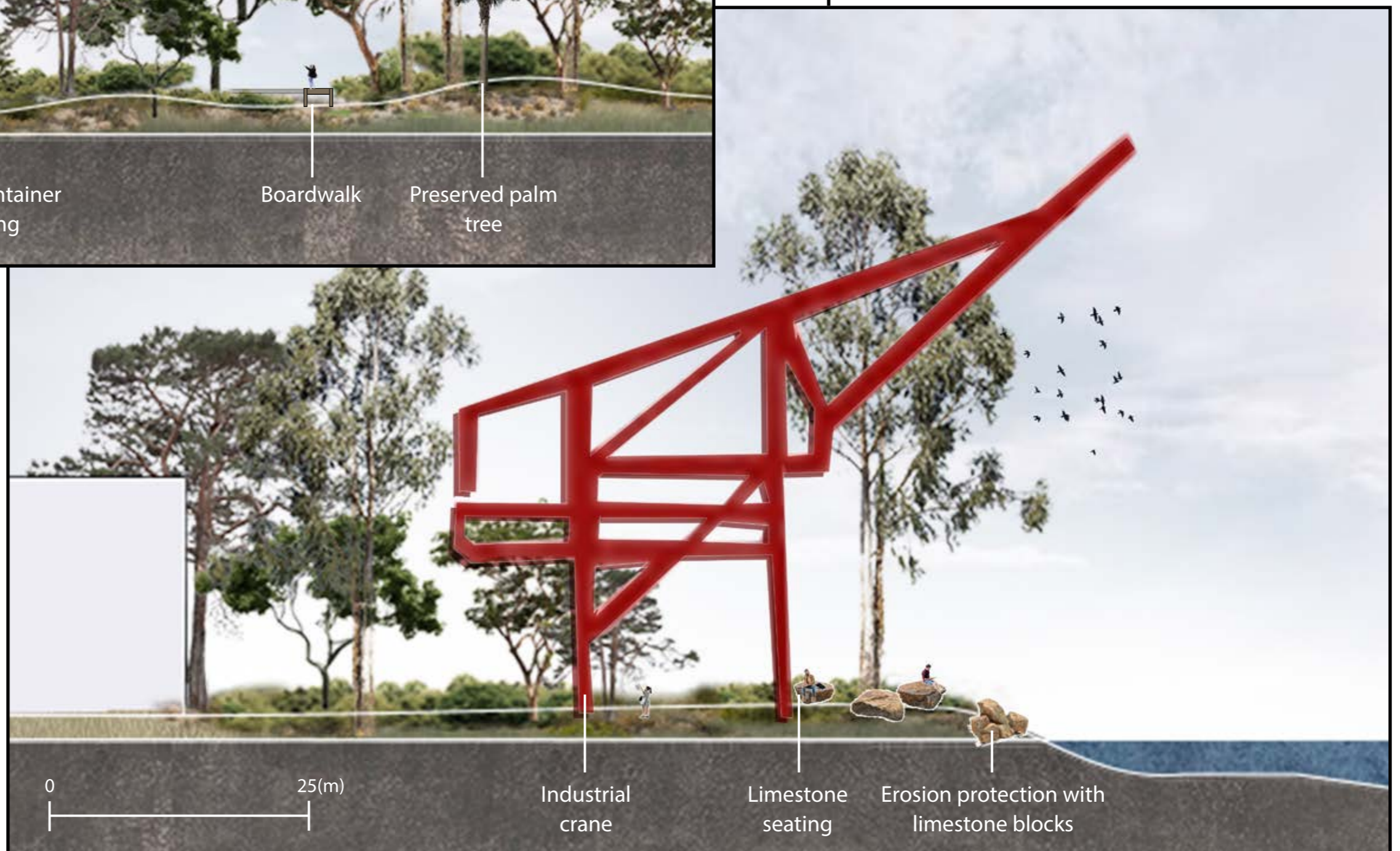


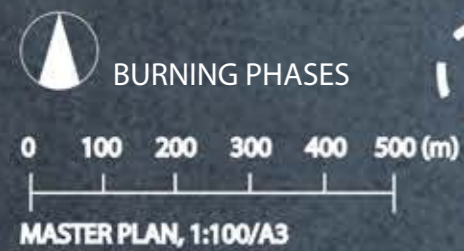


Figure 73: Burning phase plan.

LEGEND

-  Phase 1
-  Phase 2
-  Phase 3
-  Phase 4

Seasonal occasional burning is also something that could possibly be incorporated into the maintenance plan for the site. For the reason to educate the inhabitants of the importance that burnings has had in Noongar tradition to manage the land, but also to regenerate the flora and the ecological benefits that it can bring. In this map (figure 73) we suggest dividing the site into zones that are burnt, from phase 1 - 4 (where phase 1 is the first area to be burnt), so that the site can regenerate but also so that this disturbance can occur. Although, it is important to remember that this burning practice should be done with local knowledge from the Noongar people, which would for instance enable a more exact division of the burning areas, making it more accurate to the site's specific needs.



Concepts for the vegetation

Plants of the coastal dune are drought, salt and wind resistant and that is reflected in their character. Numerous with light reflective colors and hairy to the touch. Although there are no absence of seasonal colors as each plant has blooms and seeds that reflect the seasons changing. Many of the plants has traditional use and meaning to the Noongar people and the following information about traditional use of the plants is taken from the two books in the same series *Noongar Bush Tucker; Bush food plants and fungi of the south-west of Western Australia* and *Noongar Bush Medicine; Medicinal plants of the south-west of Western Australia* by Vivienne Hansen and John Horsfall (Hansen & Horsfall, 2019; Hansen & Horsfall, 2021).

The plants where chosen based on that native vegetation is an important aspect of planning for the Noongar community and the specific species that would work on the site is based on information from Apace WA (2024), a local nursery recommended for their knowledge on native vegetation for *Cottesloe complex* along with our own research from site visits and background research.

We have created these diagrams to showcase how vibrant, seasonally dynamic and the abundance of native species there are available to recreate Coastal Dune vegetation and to pinpoint its relevance to the Noongar culture. This to encourage learning of native vegetation in the urban space and make it available to the visitor, not only based on how they look but how humans can use it. This is only a small compilation of the available plants and knowledge of them, and should only act as an inspiration and not a golden print.

Low layer vegetation

The low growing vegetation invites you to look closer and admire the presence of small things as well as create a layered vegetation complex that covers the dune.

Dianella revoluta or Mangard, is a perennial herb that has long shiny grass like leaves growing in clumps. It produces small bell-shaped blue flowers from June to August that then becomes edible nutty sweet fruit. The roots were also used to treat colds and the leaves for headaches.

Burchardia congesta or Kara, also called milkmaids, is an herbaceous perennial that can grow up to 600mm and flowers with 2-7 small white blooms. The tubes of the plant can be eaten and roasted.

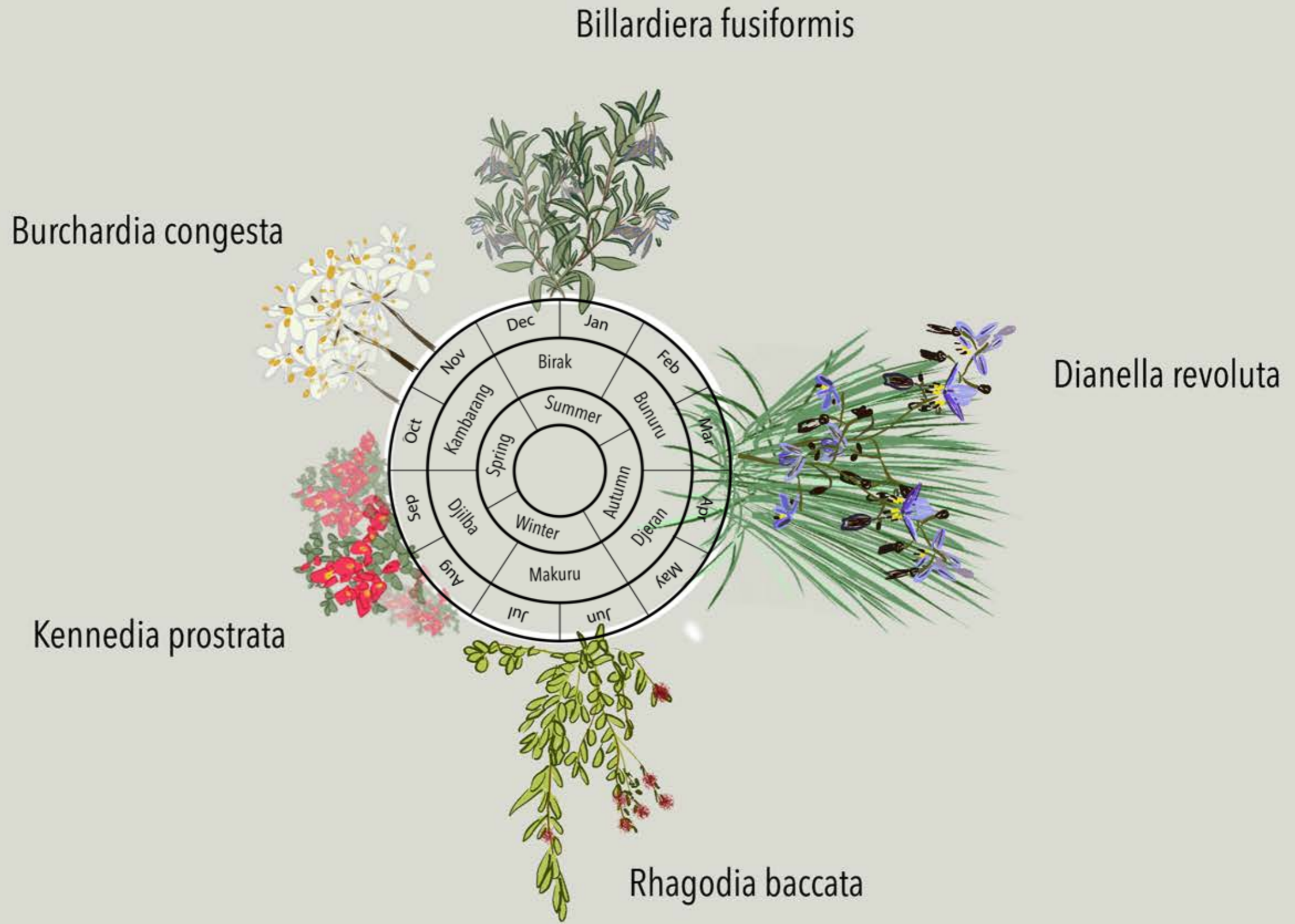
Rhagodia baccata, also called Berry Saltbush, is a spreading low growing saltbush that can reach 2m in

height. It flowers in fall with cream colored flowers and then produces red edible berries. The leaves of the plant can also be boiled and eaten and the raw leaves have a salty taste.

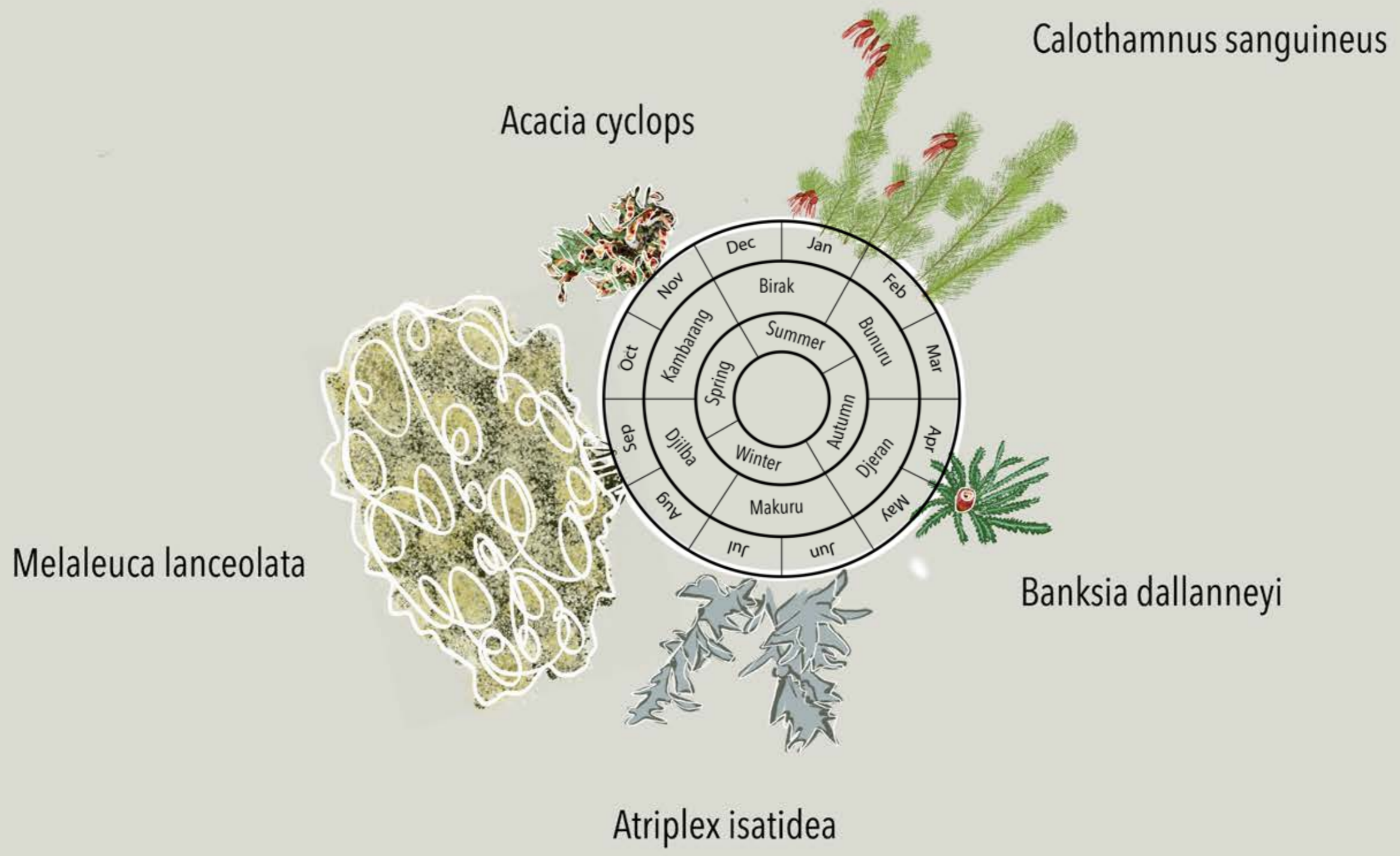
Billardiera fusiformis or Gumug is a small shrub/ twiner that can grow up trees, it forms small flashy blue flowers that then turn into long sweet soft berries, growing up to 20 cm. The berries can also be made into jam.

Kennedia prostrata or Wollung, also called running postman is a low growing ground cover plant that grows up to 2,5 meters in diameter. It has the ability to die back under tough conditions and then reshoot when conditions change. It has pea-like red flowers that appear from Djeran to late Kambarang. The nectar was used to soothe sore throats, the leaves could be made into tea like drinks and the stems could be made into twine to tie things together.

Low layer



Mid-layer



Mid layer vegetation

From bushes to low growing trees the mid layer of the coastal dune creates an important wind barrier with its variation in growth thickness and foliage, as well as providing shade.

Acacia cyclops or Wilyawa bush with its distinctive red and black seeds is a dieback-resistant species tolerant of sea spray. The seeds were traditionally ground into flour or as a coffee substitute. The sticky juices from the stem could also be used as insect repellent or to treat eczema.

Banksia dallanneyi or Bullgalla, is a spreading plant that can grow up to 3 meters, its long and segmented leaves give a desiring character. It blooms from Makuru to early Kambarang with orange brown round flowers. Used as many banksia to make juices for sweet treat of sore

throat.

Atriplex isatidea, light green silver foliage plant soft to the touch. Very drought and salt tolerant that also brings a contrast olive color of many other plants. With the plants holding to salt it is a particularly good flavor for lamb.

Melaleuca systema also called Coastal honey myrtle, is a shrub from half a meter to 2 meters high. With a cream color flower from August to December. The leaves were used to relieve congestion and the leaves and stems crushed and heated to reveal aches on the body.

Calothamnus sanguineus or Kwowdjard, is a shrub that grows up to 2m in height and that attracts bees and insects with its blood red flowers from March to November. The nectar was drunk directly from the flower or mixed into sweet drinks, even left to ferment in the sun into a drink called gep.

High layer vegetation

Another suitable Banksia is *Banksia sessilis* or Pudgart/Budjan, used for similar things as other Banksia but grows a bit taller to five meters. It has oval small green leaves with spiky edges and blooms from Djeran to Kamaranga with small yellow flowers.

***Agonis flexuosa* or Wanil/Wonnow/Wonong/Wannang**, is a smaller robust tree that can grow up to 10 m tall. It has a see-through structure with long hanging leaves much like a willow. It is a very common tree in the area. They bloom with fall white flowers from August to December. The leaves of the tree was/is used as an antiseptic and for a stuffy nose, in Noongar tradition.

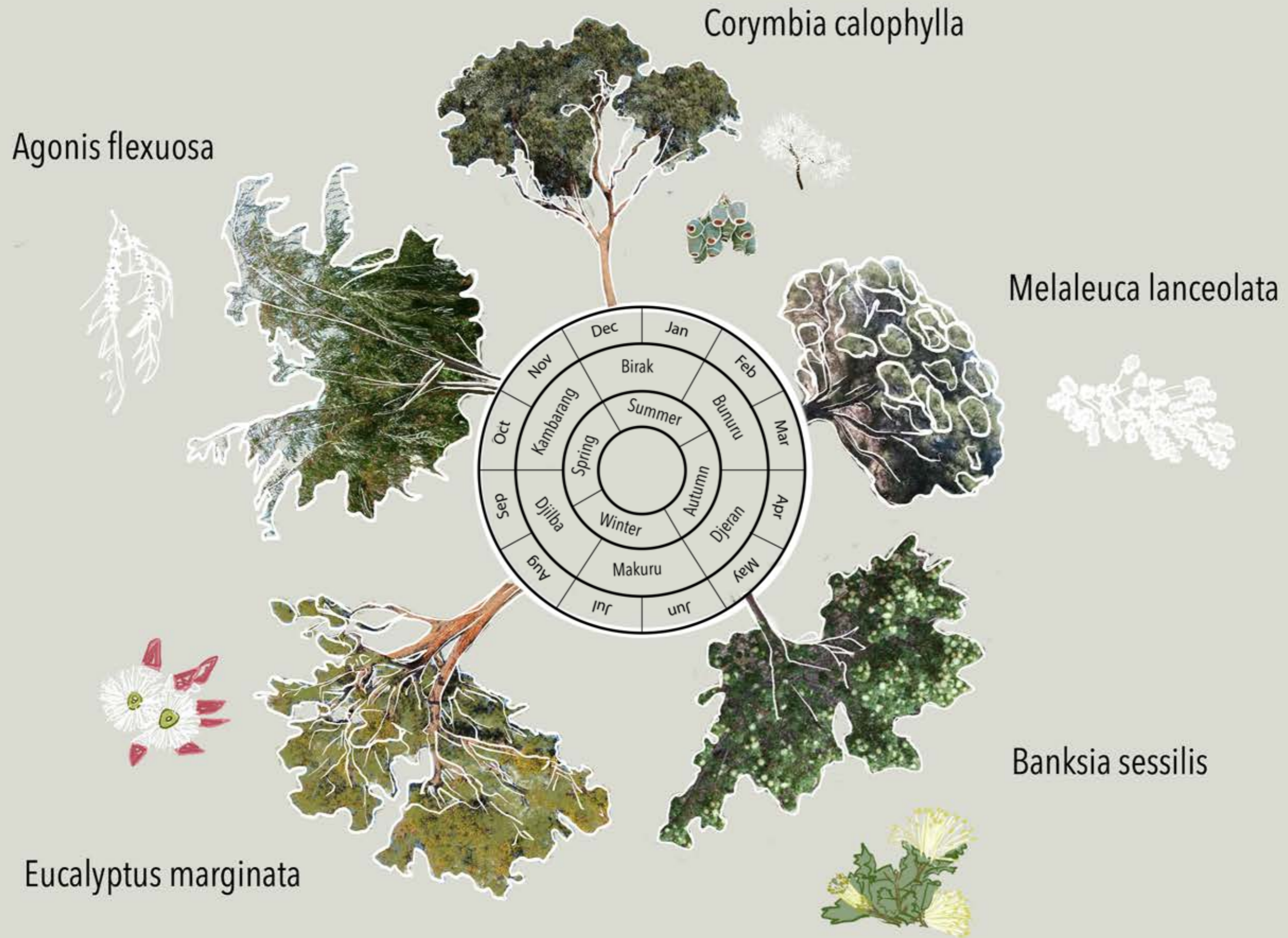
***Melaleuca lanceolata* or Moonah**, called the Rottneest island teatree native to Rottneest is a common tree along today's coastal shorelines and has similar uses in Noongar traditions to other Malaleucas. Nectar was consumed directly from the flowers or mixed with water to make a drink called Mangite or Mungitch, or fermented it was made into a drink called gep. Inhaling the crushed and burned leaves was used for headaches

and influenza or applied to the body for aches, or in smoking ceremonies. The bark was also used as clean surfaces to keep food and water, or for temporary shelters.

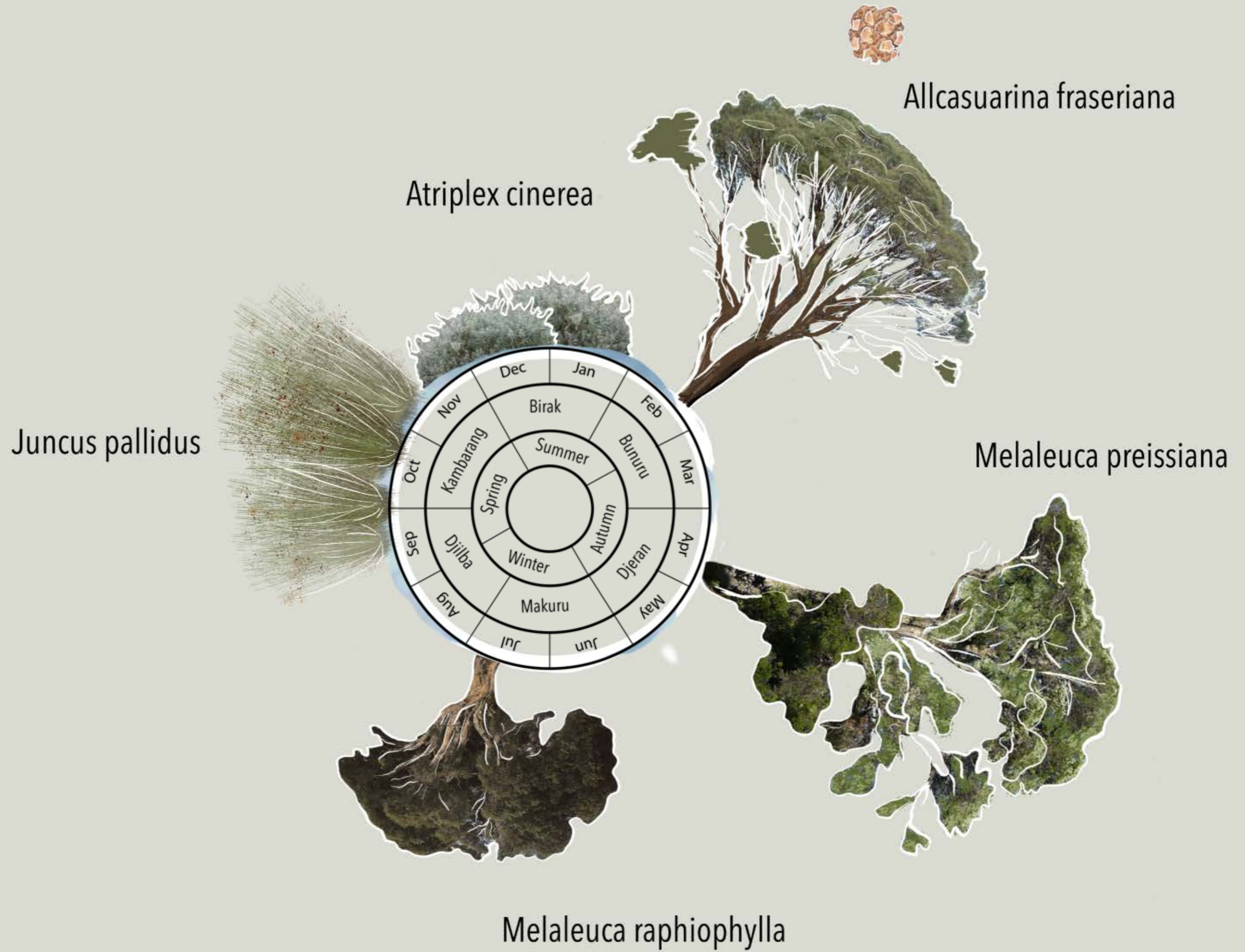
***Corymbia calophylla* or Marri**, is a larger eucalyptus tree that can grow up to 40 m in height and have ovate leaves with pointed tips and rough bark. It has pink flowers from Birak to Djeran that then turn into brown gumnuts. The resin of the tree was used for a variety of medicinal uses with considered good inflammatory properties and the seeds as well. The leaves were used in different smoking treatments and ceremonial purposes, believed also to be a good insect repellent. The flowers can also be made into a fresh drink called neip.

***Eucalyptus marginata* or Jarrah**, the gum was used as a mild anesthetic, drunk for an upset stomach and sometimes to fill dental cavities. The Jarrah timber is renowned for its toughness and durability, it was used for all types of construction and Noongar people used the bark for roofing and the leaves were used for bedding. The oil from the leaves was also used for an array of medical purposes as it is antibacterial and antifungal.

High-layer



Wetland



Wetland vegetation

Allcasuarina fraseriana or Condil/Kulli/Gulli/Kwell, also called the Sheoak is a quite large tree that grows up to 15m high but is often smaller close to the coast. It has long slender green cladodes and flowers with small red flowers appearing in Djeran to early Kambarang, and afterwards small cones apperse. It is common tree used in close to waterways and seline areas, often i urban context. The trees have a deep spiritual meaning to the Noongar people as it was believed that the sound of breeze blowing through the foliage was their ancestors talking to them as they sat under the tree. Babies were placed under the trees to put them to sleep as it was believed it was the spirit of the old ones whispering them to sleep. The needle-like leaves are soft and were used for beds together with kangaroo skins. Also the young cones were eaten.

Atriplex cinerea also called common saltbush used in the wetland area to create a natural buffer for the seasonal floodings of the wetlands. The leaves can be boiled and eaten as vegetables, while also providing a unique contrasting light gray color in the landscape.

Melaleuca raphiophylla or Yowarl Bibool Boorn, Yeymbac, Yiembak and Yawl form inland coastal dunes & erosion control in creeks and wetlands. Had similar uses as other Melaleuca.

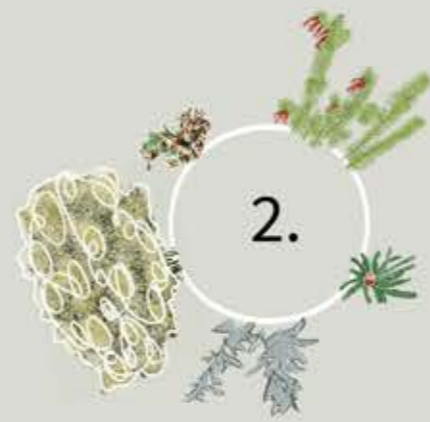
Melaleuca preissiana, commonly known as stout paperbark, modong or moonah. Had similar uses as other Melaleuca.

Juncus pallidus or Tangil also known as pale rush or giant rush. Water loving rhizomatous, perennial. That can grow up to 2m in height. The leaves were dried and used to weave mats and baskets. The stalks of the plants can be used as a stick to carry fish.

Coastal dune vegetation

Wetland vegetation

Dune vegetation



Layers of the
vegetation complex



IN SUMMARY

In summary, the results shows that a re-design consisting of these historical layers can highlight the profound insights gained from delving into the historical layers of Fremantle Harbour. This informed our design to become a multi-layered site with pre-colonial and post-colonial layers. These layers made the proposal into a site that takes in more than one perspective of connection to place and uplifts its complexity. By creating this historical landscape and learning from the Noongar's ecological knowledge, it would most likely lead to a stronger human-environment connection, which in turn sustains a more resilient landscape - more about this in the discussion.

Discussion

Discussion of results

The results of our design process is a conceptual design proposal that is not only based on the site as it is seen today - post-industrialization and as a port, but it intends to uplift the land pre-colonization and traditional lands of the indigenous people, the Noongar people. With the goal to synergize the current with the past, elements from both layers are included in the design, providing ecological and social benefits. Such a design fosters a meaningful connection between visitors and the land, while also providing a foundation for acknowledging and embracing the site's complex history, multi-layered stories and identity.

Some key elements that are used to synergize the layers of the site include native vegetation with a deeper meaning to the Noongar community and industrial elements, such as the cranes and cargo containers, that carry the stories of the expansion of the settler state. During the process of creating the redesign it became clear that this synergized design creates a strong contrast in the landscape, between its strict industrial port elements and the dynamic wild landscape adorned with native flora. If this is carried out with care and understanding for the past it creates a new layer where the site's story is revealed and lets us read the landscape. What became evident with bringing in these green structures inspired by the historical landscape into this industrial space, is that it can generate spatial qualities, experience values, and practical benefits such as sun and wind protection from the tree canopy.- creating an environment for people to take part of and connect with.

The creation of these unprogrammed spatialities with native species can in turn be said to provide

multifunctionality as it provides resilient spaces, as well as a dynamic landscape containing a diversity of sensory values. The results are multifunctional and unprogrammed designs that can provide spaces, which can foster community - spaces for people to gather and meet - which is a great lesson gained from the indigenous peoples as they created their lives around what the environment had to offer. The usage of native species also came to show that they possess significant qualities, including providing seasonal changes that benefit wildlife, as well as offering cultural and recreational values.

As mentioned in the background, the strong connection the indigenous people had with their environment provided high ecological and cultural benefits. It provided food for humans and for wildlife as an example. It was land that reflected the view of its inhabitants and the connection they had to their lands, to their Country. Therefore it is a great source of inspiration to create spaces that have the intention to re-connect people and land. Whilst the design is not the same as the land that predates the colonial settlement, it does try to provide a glimpse of what it could look and feel like in the urban context. By doing this, we have a hope that local residents and visitors can have easy access to urban nature based areas as a form of emerging themselves with their environment. Positive outcomes from this are as mentioned in the background, improvement in people's health and wellbeing, thriving animal life, as well as healing of the environment, for example purification of water. By creating this connection to our environment it will hopefully also lead to a better understanding and will to care for it.

Furthermore, we seem to have forgotten that we are part of nature and by misusing and dominating it we have lost a part of ourselves. Thus, the biggest lesson

that is learned about indigenous value system and viewpoint, including the people of the Noongar, is that for thousands of years they lived in harmony with nature, not purely by interacting with it, but by caring for it in ways that benefit both, from a holistic point of view. Thus, the purpose of the design proposal is to generate a site that is not only beneficial for humans but also to the interrelationships with our environment. This human-nature relationship is reflecting the care of our environment that also creates resilient urban spaces towards climate change and biodiversity loss.

What we have not done but would have

wanted to

Principles of the design that we would have wanted to incorporate more are the spiritual meaning of the site and cultural expression such as art and design. Because this is not a part of our own culture and we do not keep a true understanding of these aspects, we have intentionally not attempted to incorporate them in our design. Although we would have wanted to achieve this, we only see it to be accomplished in a rightful manner with a co-design process, involving Noongar Elders and experts in its creation, where we would have acted as channels of their intention or medium for creation.

Other aspects of importance that the results of our design does not address are as mentioned in the background research: how to incorporate targeted industries that would economically benefit the indigenous community such as marine research, hospitality or skill training/job opportunities. Nor do we address the agency for support for Aboriginal-owned enterprises. Although we are putting forward a plan for Fremantle Harbour that if implemented would require the engagement of the indigenous community in the area of environmental restoration and management.

What do we take with us going forward?

The lessons learnt that we will take with us are many. Firstly, is the realization that many of our learnt concepts and theories from our 5 years of education are not enough when we want to research issues of social construct and cultural representation in the urban space. It has required us to dig deeper and ask us the question, what is "good" design and who is it for?

It has led to the realization that if we take part in any design process we need to consider the traditional custodians value systems and traditions, as well as connection to that land. Not as an act of political show but for it to be truly sustainable; social, economically and ecological. Sustainability is not achieved if minority groups in society is not represented in the urban space, and this extends to many more variables but ethnicity and indigenous people, but to all of the discrimination grounds such as social economical class, gender, age, religion, disability or sexual identity (Diskrimineringsombudsmannen, 2024). In the Swedish context this would extend to the Sami people and how their voice, opinion and knowledge of the natural systems can be integrated into the urban space.

Moreover, to be able to synergize the different layers of culture and history we must try and understand the culture itself, this is done through respectful interaction and consulting under mutual respect. When creating a new urban space in this way it is not to delete the current layer of history, the port in our case. By incorporating these indigenous values into design, the intention is to emphasize the significance of their land and history, even within urban spaces. As earlier mentioned, this approach also teaches us more sustainable methods of planning. By visually showing it, it becomes more a part of people's perception, which we believe hold tremendous power. This is also a cornerstone of the Case studies

that has incorporated the local Noongar perception in their design process, which in turn has inspired our design choices. For example vibrant and diverse native vegetation plantings, use of materials such as limestone and connection to the stories of the place.

One significant realization when addressing the various historical layers of the site is that land used purely as a commodity, representing a singular perspective, is also interconnected with habitat destruction, thus contributing to climate change. Consequently, there is a pressing need to reassess our own value systems and priorities to implement actions that foster genuine change in our practices. Without this shift, we risk not being able to work towards real sustainable solutions. Although it is impossible to please everyone's needs, it remains crucial to consistently endeavor to contextualize the site from a comprehensive standpoint, a principle that has guided our approach throughout this endeavor and is evident in the results.

Discussion of method

The methodology of Research by design does provide us with the tool set to have a flexible and creative approach of dealing with the wicked problems of our site and the cultural discourse. It has made us able to go back and forth with our design process and not be limited by one idea or solution. The design is simply an ever growing concept that builds as our research of the topic becomes more defined. Therefore, we do believe that design with a holistic approach has been of great use as we try to navigate the research topics of culture significance, history and the representation of people, connected to dealing with the degradation of land, as well as how it affects our planet and people. These are issues that one

needs to have a creative approach to try and deal with as the solutions are as diverse as the problem.

One aspect that our methodology does include but not to the extent that we would have wanted is co-design. We were not able to incorporate a co-design process to the extent that we would have wanted as we don't have the time nor the resources as merely foreign students. Although we have conducted an interview with a local representative of the Noongar community that has been reflected in our result.

The methodology also resulted in different principles that came out of our research, which then could inspire our sketching phase and guidance for our design. For further research we would suggest looking into how the design principles that we have identified could have taken on new interesting design solutions. Along with having the design principles discussed and developed further through interaction and consultation with the Noongar community. We would also suggest investigating how the principles can be compared to different site scenarios and contexts. What can be the similarities or differences between other indigenous groups, historical contexts and site-specific values?

Conclusion

In conclusion, our results show that a re-design consisting of these historical layers can highlight the profound insights gained from delving into the historical layers of Fremantle Harbour. This approach has transformed the site into a dynamic space that celebrates diverse perspectives and enhances its complexity. By integrating this historical narrative and leveraging the ecological wisdom of the Noongar people, we aim to cultivate a stronger bond between humans and their environment, fostering biodiversity and resilience in the landscape. The human-environment relationship is partly created by allowing visitors to engage with "nature" without disrupting it, within a landscape enriched by native vegetation that enhances spatiality, experiential values, and visual qualities - native vegetation that provides biodiversity and resilient urban spaces.

What we have learned from creating this design is how historical layers and the indigenous knowledge of a site, in this case the Noongar community, and the indigenous landscape can contextualize it in a way that tells the truth. Truth of what has been and what could be for the future. What we mean by this is that if we are to understand the context, we need to try and see it not only from our own, it needs to be widened. This is the job of the designer, not only to do what seems to be the best solution from their glasses, but to put ourselves in someone else's shoes and see the space as an observer, our job is to listen and learn.

This is the greatest lesson from this work going forward. Along with the power that co-design can hold and what it can achieve, if the process is based on mutual respect and understanding. There is more for us to learn but this work has propelled us in a direction of learning that is invaluable. What we take from this is that we are never finished with our learning, and that there's always more to learn.

Dictionary of terms

Note to readers that different language groups, variant spelling occurs for similar words, cultures or names. Some words do not have one agreed upon term and therefore may have different meanings to different people. Therefore, we have tried to clarify how we have defined keywords based on our background research that we use in this work.

Words in english	Meaning
Indigenous	Relating to or being a people who are the original, earliest known inhabitants of a region, or are their descendants.
Native	A person born in a specified place or associated with a place by birth, whether subsequently resident there or not.
Aboriginal	Aboriginal refers to the original peoples of mainland Australia.
Torres islander	Torres Strait Islander refers to the original peoples of the 274 islands located north of Australia, in the Torres Strait.
Country	When written with a capital C, it relates to the Indigenous world view. How Country is a way to see the world, in relation to themselves. How everything is connected and humans are not separate from their environment. It is also the place of origin from a cultural, spiritual and literal way (Page & Memmott 2021).
Elders	The custodians of Aboriginal knowledge. Chosen by their own communities and highly respected keepers of the knowledge. That they pass on to younger Aboriginal people.
Native Title	Form of land title which recognizes Aboriginal people as rightful owners of their land.
First nation peoples	Referring to people and groups who identify as being Aboriginal and/or Torres Strait Islander. Peoples, written as plural to acknowledge the diversity in between and of First nations peoples.

Words in aboriginal language	Meaning
Noongar (alternative spellings include Nyungar, Nyoongar, Nyoongah, Nyungah, Nyugah, Yunga)	person of the south-west of Western Australia,' or the name for the 'original inhabitants of the south-west of Western Australia'
Whadujk or Wajuk	Noongar dialectical group
Walyaalup	remantle area is called Walyalup—meaning the place of the Walyo or Woylie, a small brush-tailed bettong or kangaroo rat.
Boodja/Booja	Country
Boodjaree	Country (Of Origin/Belonging to)
Booka/Bwoka	Coats (Made from Kangaroo Skin)
Boordiya/Boodier	Noongar leader
Darbal	Estuary
Derbarl Yerrigan	Swan river
Yerrigan	River

Based upon information from South West Aboriginal Land & Sea Council (SWALSC) (2024f).



Sources

Physical prints

Apace WA (2024) *APACE Revegetation Catalogue Cottesloe Vegetation Complex*.

<https://apacewa.org.au/wp-content/uploads/2016/09/Cottesloe-yellow-12-pages.pdf>

Arthur, B. Morphy, F. (2019) *Atlas of Indigenous Australia. Macquarie Dictionary Publishers*, an imprint of Pan Macmillan Australia Pty Ltd 1 Market Street, Sydney, New South Wales, Australia 2000.

Barber, A., Haase, D. & Wolff, M. (2021). *Permeability of the city – Physical barriers of and in urban green spaces in the city of Halle, Germany*. *Ecological Indicators*,. <https://doi.org/10.1016/j.ecolind.2021.107555>

Broomhall, S. & Pickering Crawley, G. (2012) *Rivers of Emotion; An emotional history of Derbarl Yerrigan and Djarlgarro Beelier / the Swan and Canning Rivers*. National trust

Ecoscope (2017). *North Fremantle foreshore vegetation management*. Australia) Pty Ltd. 9 Stirling Highway • PO Box 50 NORTH FREMANTLE WA 6159. <https://www.fremantle.wa.gov.au/sites/default/files/North%20Fremantle%20Foreshore%20Vegetation%20Management%20-%20North%20Fremantle%20Swan%20River.pdf>

G.J. Ashworth & J.E. Tunbridge (2000) *The Tourist-Historic City: Retrospect and Prospect of Managing the Heritage City*. Routledge; 1st edition. ISBN-10 978008043675

Government of Western Australia. (2023a). *Future of Fremantle - Emerging Vision and Future Scenarios*. Hatch RobertsDay Pty Ltd, Department of Planning, Lands and Heritage. <https://www.wa.gov.au/organisation/departments-of-planning-lands-and-heritage/future-of-fremantle>

Hansen, V Horsfall, J. (2019) *Noogar Bush Tucker; Bush food plants and fungi of the south-west of Western Australia*. UWA Publishing, Crawley, Western Australia, 6009.

Hansen, V Horsfall, J. (2021) *Noongar Bush Medicine; Medicinal plants of South-West of Western Australia*. UWA Publishing, Crawley, Western Australia, 6009.

Ignatieva, M. (2020). *Shifting sands - A mobile interactive biophilic landscape*. The University of Western Australia. School of design.

Ignatieva, M. et al. (2023). *From One to Many Natures: Integrating Divergent Urban Nature Visions to Support Nature-Based Solutions in Australia and Europe*. *Sustainability* 2023, 15, 4640. <https://doi.org/10.3390/su15054640>

Inglis, J. T., (1993). *Traditional Ecological Knowledge : Concepts and Cases, International Development Research Centre*, ProQuest Ebook Central, <https://ebookcentral.proquest.com/lib/slub-ebooks/detail.action?docID=259237>.

Johnson, L. (2018) *Incorporating Indigenous Australian Knowledge and Perspectives into planning Practice; Past present and future*. Deakin University Proceedings of the 12th Australasian Urban History Planning History Conference 2014

Low Choy, D., Wadsworth, J., & Burns, D. (2010). *Seeing the landscape through new eyes: identifying and incorporating indigenous landscape values into regional planning processes*. *Australian Planner*, 47(3), 178–190.

Macintyre, K. Dobso, B. (1999) *Factoring Aboriginal Environmental Values in Major Planning Projects Australian Environmental Law News - Issue No. 2*. <https://classic.austlii.edu.au/au/journals/AUEnvLawNews/1999/27.html>

Mittermeier, R. et al. (2005) *Hotspots Revisited: Earth's Biologically Richest and Most Endangered Terrestrial Ecoregions* Conservation International ISBN-13 978-9686397772

Nasar, J L (1998) *The Evaluative Image of the City*, Sage, London.

Naturvårdsverket. (2022). *Nature-based solutions*. Swedish environmental protection agency.

Noongar Boodjar Language Cultural Aboriginal Corporation (2022) *Mapping Boodjar Walualup Fremantle*. 1/24 Burton Street, Canning, WA 6107, Australia.

Pirselimoğlu Batman, Z & Ender Altay, E. (2023) *SCIENTIFIC APPROACHES IN LANDSCAPE ARCHITECTURE*. copyright © 2023 by Livre de Lyon. 37 rue marietton, 69009, Lyon France.

Page, A. Memmott, P. (2021) *First knowledge; DESIGN Building on Country*. Thames & Hudson Australia Pty Ltd 11 Central Boulevard, Victoria 3207.

Robinson, N. (2016) *The planting design handbook. Third edition*. Routledge, 2 Park Square, Milton Park, Abingdon, Oxon OX14

Truban, M. (1978) *The chief C.Y Conner*. Published by University of Western Australia Press, Nedlands, WA. ISBN 13: 9780855641238

Tindale, Norman, B., (1974) *Tribal Boundaries in Aboriginal Australia*. Canberra: Australian National University Press.
Figure 24: Frederick Rushbrook Clause, Setting Camp of the Naval Survey Expedition Clause's Lagoon, Perth, Western Australia, c 1832, watercolor over soft pencil on paper, 22.2 x 33.6 cm, Janet Holmes à Court Collection.

Websites and Online articles

Addie, J. D., & Fraser, J. C. (2019). *After gentrification: Social mix, settler colonialism, and cruel optimism in the transformation of neighborhood space*. *Antipode*, 51(5), 1369–1394. [DOI: 10.1111/anti.12572] [2024-03-05]

Australian Bureau of Statistics. (2023). *Estimates of Aboriginal and Torres Strait Islander Australians*. Retrieved from: [https://www.abs.gov.au/statistics/people/aboriginal-and-torres-strait-islander-peoples/estimates-aboriginal-and-torres-strait-islander-australians/latest-release] [2024-04-11]

Australian Government Department of Climate Change, Energy, the Environment and Water (DCEEW). (n.d.) *Actitis hypoleucos — Common Sandpiper*. Retrieved from: [http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=59309] [2024-02-12]

Australian Government Department of Climate Change, Energy, the Environment and Water (DCEEW). (2009). *Climate change risks to Australia's coasts: a first pass national assessment*. Retrieved from: [https://www.dceew.gov.au/climate-change/policy/adaptation/publications/climate-change-risks-australias-coasts] [2024-04-15]

Barayamal First nation Entrepreneurship (2023) *Ten Aboriginal Quotes and Sayings on Spirituality, Nature and Humanity*. Retrieved from: [https://barayamal.com.au/ten-aboriginal-quotes-and-sayings-on-spirituality-nature-and-humanity/] [2024-02-24]

Birdlife Australia. (n.d.) *Birds in backyards*. Retrieved from: [https://www.birdsinbackyards.net/species/Sternula-nereis] [2024-04-03]

Birdlife Australia. (2024). *Carnaby's Black-Cockatoo*. Retrieved from: [https://birdlife.org.au/bird-profiles/carnabys-black-cockatoo/] [2024-03-18]

Britannica. (n.d.) *Australia, Animal life*. Retrieved from: [https://www.britannica.com/place/Australia/Animal-life] [2024-04-02]

City of Cockburn. (n.d.) *Protected Fairy Tern Nesting Site*. Retrieved from: [https://www.cockburn.wa.gov.au/Protected-Fairy-Tern-Nesting-Site] [2024-04-03]

City of Fremantle, (2024a) *Aboriginal history*. Retrieved from: [https://www.fremantle.wa.gov.au/council/about-city-fremantle/aboriginal-history] [2024-03-15]
- (2024b) Truth Telling Program. Retrieved from: [https://www.fremantle.wa.gov.au/truth-telling-program] [2024-04-04]

City of Fremantle, (2024c) *Prawn Bay Ecological Restoration*. Project. Retrieved from: [https://mysay.fremantle.wa.gov.au/prawn-bay-ecological-restoration-project/widgets/428331/faqs#108698] [2024-03-15]
- (2024d) *North Fremantle Foreshore Management Plan 2013*. Retrieved from: [https://www.fremantle.wa.gov.au/sites/default/files/North%20Fremantle%20Foreshore%20Management%20Plan%202013.pdf] [2024-03-15]
- (2024e) *Fremantle fast facts*. Retrieved from: [https://www.fremantle.wa.gov.au/council/about-city-fremantle/fremantle-fast-facts] [2024-02-02]

City of Fremantle Ports
- (n.d.a) *Fairy terns*. Retrieved from: [https://www.fremantleports.com.au/environment-safety/supporting-wildlife-research/fairy-terns] [2024-02-10]
- (n.d.b) *Corporate - Board of directors*. Retrieved from: [https://www.fremantleports.com.au/corporate] [2024-02-21]

Clouthard, G. (2015). *Urbs nullius: Gentrification and decolonization*. Retrieved from: [http://ecosocialistsvancouver.org/glen-coulthard-%E2%80%93-urbs-nullius-gentrification-and-decolonization] [2024-03-07]

Diskrimineringsombudsmannen (2024). *Diskrimineringsgrunder*. Retrieved from: <https://www.do.se/diskriminering/diskrimineringsgrunder> [2024-04-25]

ECU. (2024). *Noongar Six Seasons*. Retrieved from: [https://www.ecu.edu.au/centres/kurongkurl-katitjin/cultural-leadership/nyoongar-six-seasons] [2024-03-16]

FN-förbundet UNA SWEDEN. (2022). *Gruvdrift i Gállok trots FN-kritik*. Retrieved from: [https://fn.se/aktuellt/ovriga-nyheter/gruvdrift-i-gallok-trots-fn-kritik/] [2024-03-15]

Gilchrist, P., & Ravenscroft, N. (2013). *Space hijacking and the anarchopolitics of leisure*. *Leisure Studies*, 32(1), 49–68. [DOI: 10.1080/02614367.2012.680069] [2024-03-18]

Government of New South Wales. (2023). *Harbour Park winning design*. Retrieved from: [https://www.barangaroo.com/editorials/harbour-park-winning-design] [2024-04-04]

Government of Western Australia
- (2023b) *Our Aboriginal engagement approach*. Retrieved from: [https://www.wa.gov.au/government/document-collections/our-aboriginal-engagement-approach] [2024-03-08]

- (n.d.e) *Carnaby's Cockatoo*. Retrieved from: [https://museum.wa.gov.au/explore/online-exhibitions/cockatoo-care/carnabys-cockatoo] [2024-03-09]

- (2023c) *Maps of Noongar Native Title Agreement Groups for the Settlement*

Retrieved from: [https://www.wa.gov.au/government/publications/maps-of-noongar-native-title-agreement-groups-the-settlement] [2024-05-07]

Government of Western Australia, Department of Biodiversity, Conservation and Attractions

- (2024a) *Wetlands*. Retrieved from: [https://www.dbca.wa.gov.au/management/wetlands] [2024-04-03]

- (2024b) *Wetland mapping*. Retrieved from: [https://www.dbca.wa.gov.au/management/wetlands/wetland-mapping] [2024-03-24]

- (2024c) *FIRE INFORMATION NOTE Banksia woodlands of the Swan Coastal Plain*. Retrieved from: [https://www.dbca.wa.gov.au/sites/default/files/2022-10/Fire%20Information%20Note%20-%20Banksia%20Woodlands%20of%20the%20Swan%20Coastal%20Plain.pdf] [2024-04-03]

Haritaworn, J., Moussa, G., Ware, S. M., & Rodriguez, G. R. (2018). *Queering urban justice: Queer of colour formations in Toronto*. University of Toronto Press. [2024-03-21]

Hughes-Hallett, D. (2010). *Indigenous history of the Swan and Canning rivers. Student work Placement: Curtin University*. Retrieved from: [https://www.noongarculture.org.au/wp-content/uploads/2013/07/indigenous-history-of-the-swan-and-canning-rivers.pdf] [2024-02-03]

INaturalist. (n.d.) *East Fremantle, WA, AU*. Retrieved from: [https://www.inaturalist.org/places/east-fremantle#] [2024-04-13]

Kaewen Dang, T., (2021) *Decolonizing landscape*, *Landscape Research*, 46:7, 1004-1016, DOI: 10.1080/01426397.2021.1935820

Minority Rights Group. (2017). *Aboriginal people in Australia*. Retrieved from: [https://minorityrights.org/communities/aboriginal-peoples/] [2024-04-04]

Muswellbrook Shire Council. (2020). *Colonisation 1788 - 1890*. Retrieved from: [http://www.workingwithindigenoustralians.info/content/History_3_Colonisation.html] [2024-04-06]

National Museum Australia. (2023). *Founding of Perth*. Retrieved from: [https://www.nma.gov.au/defining-moments/resources/founding-of-perth] [2024-04-03]

National Park Service (2023) *Indigenous Knowledge and Traditional Ecological Knowledge*. Retrieved from: [https://www.nps.gov/subjects/tek/description.htm] [2024-03-11]

National Native Title Tribunal. (2022). *Extract from Schedule of Native Title Applications*. Retrieved from: [http://www.nntt.gov.au/searchRegApps/NativeTitleClaims/NTDA%20Extracts/WC2011_009/SNTAExtract_WC2011_009.pdf] [2024-04-26]

Neville Green. (n.d). *Chapter 8 'Survival against all odds': The Indigenous population of metropolitan Perth, 1829–2001*. Retrieved from: [https://aiatsis.gov.au/sites/default/files/research_pub/euih_ch8_survivalagainstallodds_2.pdf] [2024-04-03]

Queensland Government. (2023). *Preventing and managing erosion*. Retrieved from: [https://www.qld.gov.au/environment/land/management/soil/erosion/management][2024-03-03]

Queensland Government Department of Environment, Science and Innovation (DESI). (2023). *Why are green spaces good for us?*. Retrieved from: [https://www.desi.qld.gov.au/our-department/news-media/down-to-earth/why-are-green-spaces-good-for-us] [2024-03-12]

South West Aboriginal Land & Sea Council (SWALSC)
- (2024a) *Country connection*. Retrieved from: [https://www.noongarculture.org.au/connection-to-country/] [2024-03-08]
- (2024b) *About the Whadjuk Region*. Retrieved from: [https://www.noongarculture.org.au/whadjuk/] [2024-03-03]
- (2024c) *Connection to Country*. Retrieved from: [https://www.noongarculture.org.au/wp-content/uploads/2020/01/2019-12077-Booklet-Connection-to-Country-Noongar-Explained.pdf] [2024-03-03]
- (2024d) *Whadjuk*. Retrieved from: [https://www.noongarculture.org.au/guildford/#year1827-29] [2024-02-23]
- (2024e) *An introduction to Noongar History and Culture*. [2024-02-22]
- (2024f) *Noongar Word List*
https://www.noongarculture.org.au/glossary/noongar-word-list/ Retrieved: [2024-05-25]

South Western Aboriginal Land & Sea Council (SWALSC). (n.d). PDF; *Noongar Consultation Protocol Guidelines Swan and Canning Rivers Iconic Trails Project. 1490 Albany Highway Cannington WA 6107*. Retrieved from: [https://www.noongarculture.org.au/wp-content/uploads/2018/12/Noongar-Consultation-Protocol-Guidelines-South-West-Aboriginal-....pdf] [2024-03-27]

The Guardian. (2024). *WA heatwave: Perth breaks records with seven February days above 40C*. Retrieved from: [https://www.theguardian.com/australia-news/2024/feb/19/perth-weather-heatwave-temperatures-forecast-bom-radar] [2024-04-14]

The World Bank (2023) *Urban Development*. Retrieved from: [https://www.worldbank.org/en/topic/urbandevelopment/overview] [2024-04-21]

UDLA.
- (2024a). *Bilya Marlee School of Indigenous Studies, UWA*. Retrieved from: [https://www.udla.com.au/projects/bilya-marlee-uwa] [2024-03-27]
- (2024b) *Curtin University Yarning Circle*. Retrieved from: https://www.udla.com.au/projects/curtin-university-yarning-circle [2024-04-04]

Ulmer, J. B. (2017). *Posthumanism as research methodology: Inquiry in the Anthropocene*. *International Journal of Qualitative Studies in Education*, 30(9), 832–848. [DOI: 10.1080/09518398.2017.1336806] [2024-03-25]

WA Westport. (2024). *The new port in Kwinana; Planning for the next century of trade growth in WA*. https://westport.wa.gov.au/ [19-02-2024]

Western Australian Government. (2023). *Future of Fremantle Place and Economic Directions*. Hatch RobertsDay Pty Ltd. [2024-02-22]

Video recording

City of fremantle. Moore, B. (2021) *Walyalup Aboriginal cultural center - Cultural walk*. https://www.youtube.com/watch?v=YEOC7nPZV2g

Personal communications

Kotai, F. (2024) *Principal Landscape Architect, Ecoscape Australia, Fremantle*. Meeting organized by; Kallifatides, C. & Nordqvist, E. Not published. Recording.

Moore, B. (2024) *Senior Aboriginal Engagement Officer for City of Fremantle and chair person for South Western Aboriginal Land and Sea Council*. Meeting organized by; Kallifatides, C. & Nordqvist, E. Not published. Note-taking.

Figures

3-4, 25. Copyright @Google 2024, remake by Cassandra Kallifatides. Maps of Western Australia and Perth, WA.

5. Wikimedia, 2015. High street, in the city of Fremantle, showing the characteristic post-colonial architecture. https://commons.wikimedia.org/wiki/File:High_Street,_Fremantle,_Western_Australia.jpg

7. Wikimedia, 2018. The cranes at the Fremantle Harbour. https://commons.wikimedia.org/wiki/File:North_quay_cranes_March_2017.jpg

9 WA Westport (2024) *The new port in Kwinana; Planning for the next century of trade growth in WA*. https://westport.wa.gov.au/ [19-02-2024]

10. Google earth @ 2024

13. W.A. Cawthorne (dod 1925), Public domain, via Wikimedia Commons
Aboriginal family traveling through Country. https://commons.wikimedia.org/wiki/File:%22Aboriginal_Family_Travelling%22_by_W.A._Cawthorne.jpg

14-15. Maps from the book Atlas of Indigenous Australia (2005) by Arthur, B., and Frances, M.

16, 22 and 26. Maps from the book; Mapping Boodjar Walualup Fremantle (2022) by Noongar Boodjar language Cultural Aboriginal Corporation.

17. Mittermeier, R. et al. (2005) Hotspots Revisited: Earth's Biologically Richest and Most Endangered Terrestrial Ecoregions Conservation International ISBN-13 978-9686397772. Redone by Cassandra Kallifatides.

18-19. Lehmann, S. (2010). Diagram 'Ego-Eco'- Humankind is part of the ecosystem, not apart from or above it. This diagram depicts this simple fact clearly. https://www.researchgate.net/figure/Diagram-Ego-Eco-Humankind-is-part-of-the-ecosystem-not-apart-from-or-above-it-This_fig1_330697869

20. Tindale, Norman B (1974) Tribal Boundaries in Aboriginal Australia. Canberra: Australian National University Press.

21, Map of Noongar native title agreement Groups for the Settlement, Whadjuk; Perth metropolitan area. Taken from Government of Western Australia (2023c).

24: Frederick Rushbrook Clause, Setting Camp of the Naval Survey Expedition Clause's Lagoon, Perth, Western Australia, c 1832, watercolor over soft pencil on paper, 22.2 x 33.6 cm, Janet Holmes à Court Collection. <https://commons.wikimedia.org/w/index>.



Swedish University of
Agricultural Sciences

