

# ● Dialysis on Country

A study on Renal Care within remote  
Aboriginal Communities of Central  
Australia.

Byera Hadley  
Travelling Scholarships  
Journal Series

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He was dedicated to architectural education, both as a part-time teacher in architectural drawing at the Sydney Technical College, and culminating in his appointment in 1914 as Lecturer-in-Charge at the College's Department of Architecture. Under his guidance, the College became acknowledged as one of the finest schools of architecture in the British Empire.

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**Cover page:** Glen Helen Gorge in Central Australia, taken by author during scholarship travel.

**Opposite:** School children visiting the Purple House dialysis truck. Image courtesy Purple House.





# Foreword

*“It is hoped that this research may broadly inform Aboriginal communities on how to establish their own Dialysis on Country, so more Elders can remain on country and continue to hold the memories, traditions, culture and hope of their people.” Author.*

I wish to express my gratitude to our First Nations People, the traditional custodians of this land on which I travelled to conduct my research. I wish to acknowledge and pay respect to the Elders both past, present and future for they hold the memories, the traditions, the culture and hope of their people. This Dialysis on Country research is dedicated to all of you, with the sincere hope for more Elders to remain on country and continue to hold the memories, traditions, culture and hope of your people. I also wish to thank Sarah Brown and her fantastic team from Purple House, to whom I also owe a huge debt of gratitude as this research would not have been made possible without all your invaluable insights and generosity of time. Finally, I would also like to thank the NSW Architects Registration Board for awarding me with a Byera Hadley Travelling Scholarship, to cover my travel expenses so that this valuable research could be undertaken.

Aboriginal people should be aware that this publication contains images and names of people who have passed away. All the clinic photographs taken by the author and contained in this report have purposefully been taken outside of patient treatment times to respect patient amenity and privacy, except for images supplied by Purple House who have given consent for their inclusion. Visitation of the clinics contained in this report only occurred with the consent and supervision of Purple House and great care was taken to ensure patient amenity and privacy was always respected. All interviews were conducted in a semi-structured, informal manner and only once the purpose of the research had been fully explained.

It is hoped that this research may broadly inform Aboriginal communities on how to establish their own Dialysis on Country, so more Elders can remain on country and continue to hold the memories, traditions, culture and hope of their people.

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# 1. Research Context and Method

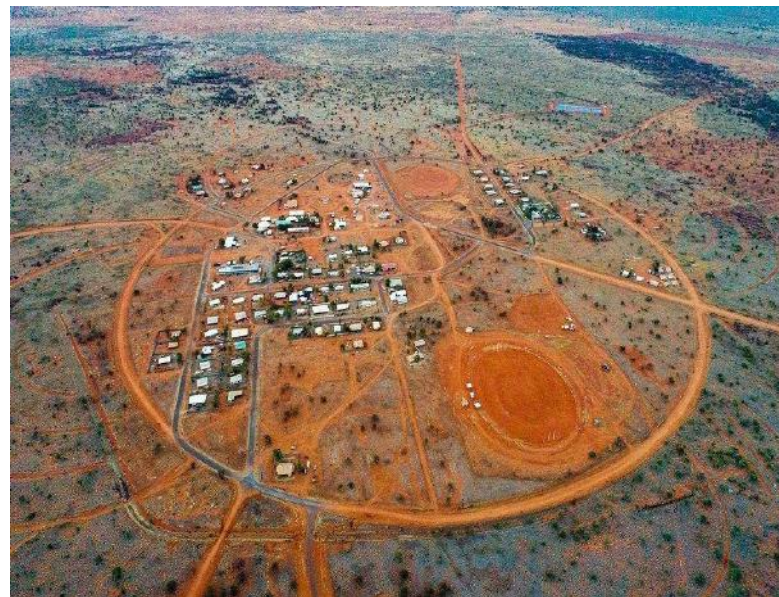
*The Architecture of Necessity encourages dialogues about the basic values of architecture. - Virserum Konsthall.*

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The Architecture of Necessity encourages dialogues about the basic values of architecture.

- Virserum Konsthall<sup>1</sup>

If you search for the term **Architecture of Necessity**, you will undoubtedly come across Ernesto Oroza who used the phrase in his 2006 book *For an Architecture of Necessity and Disobedience*. Oroza uses this term to describe the 'efficiency and ingenuity of Cuban citizens under Fidel Castro's regime and their approach to self-made solutions for their everyday needs.'<sup>2</sup> Oroza used this phrase to describe self-made, innovative Architectural typologies that evolved from everyday citizens making home alterations to suit their site-specific and low socio-economic means. Your search should also lead you to Virserums Konsthall in Sweden, who host an international triennial competition also entitled *Architecture of Necessity*, centred around 'sustainable community building.'<sup>2</sup> Entrants are open to Architecture that has been designed to be more responsible, diligent, sustainable, just and open, in accordance with the Swedish manifesto. Following on from these pretexts, there is also a new architectural typology that has emerged from Central Australia in the last 20 years, which to date has received very little research. These modest buildings are saving lives by providing **Dialysis on Country** within some of the remotest communities of Australia. Some of these building typologies display Oroza's 'efficiency and ingenuity,' such as the appropriation of shipping containers that were "constructed with 4/5th of nothing."<sup>3</sup> Others are more purpose-built, architect designed solutions providing 'sustainable community building' akin to the Swedish manifesto, reconciling patients with their families and country.



***This page:*** Aerial image of Papunya. Image sourced from ABC Darwin.<sup>5</sup>

- 1.& 3. <https://www.virserumkonsthall.com/tra/archnec-architecture-necessity/>
2. <http://architectureofnecessity.com/>
4. Sarah Brown interview with author 20th January 2020.
5. <https://www.facebook.com/ABCDarwin/>

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The purpose of this research was to gain an understanding of the pioneering Architecture of Necessity, which is providing a sustainable alternative to the mainstream, haemodialysis services, that by default remove patients from their families and country. It is hoped that by sharing a summary of this research that it may broadly inform Aboriginal communities on how to establish their own Dialysis on Country, so more Elders can remain on country and continue to hold the memories, traditions, culture and hope of their people.

Travelling to visit existing precedents enabled a deep appreciation for the context in which these buildings sit, which cannot be fully appreciated without a 'road trip' to grasp the geographical, environmental and cultural context in which this architecture is embedded. Post-occupancy evaluations enabled further understanding of the various building typologies and how these built forms have evolved over 20 years, largely due to their programmatic requirements and availability of funding. Part of the post-occupancy evaluations involved observing and documentation of the existing structures, both during and outside of patient treatment times. A broad cross section of interviews was also conducted with dialysis patients, in addition to nursing, maintenance, technical, construction and management staff. A summary of this research has been compiled into a mix of case studies with illustrated walk-throughs to further illustrate these main observations.

Given that Central Australia currently has the highest incidence of kidney disease and without coincidence the highest concentration of Dialysis on Country precedences, it was the most obvious geographic choice for

this research. However, it is certainly hoped that future funding can be obtained to undertake further research in other remote communities outside of Central Australia. Despite this research being limited to precedents within Central Australia, it should be pointed out that some of the buildings featured in the case study are identical to others in differing geographical locations. For example, the Hermannsberg Dialysis Centre is identical to the Groote Eyland Dialysis Centre, which is approximately 1,200 kilometres away. The key programmatic requirements for both buildings, in addition to all the other featured case studies, is also focused on the provision of Architecture of Necessity and therefore retains relevance through essential prerequisites. Therefore, given that very little research to date has been published on this specific topic, this research should retain relevance for any Aboriginal community keen to understand more about Dialysis on Country.



## 2. Dialysis On Country



Indigenous Australians comprise 2.5% of the population, with the vast majority residing in remote areas such as Central Australia and the Northern Territory, which accounts for the high 31.6% percentage in the Northern Territory. Remote communities have even higher percentages, as evidenced by Apatula (outside Alice Springs) which has a rate of 79%.<sup>6</sup> The prevalence of kidney disease within these remote communities is extremely high and continues to increase annually, with remote Indigenous people residing in Central Australia becoming 30 times more likely to develop end stage kidney disease than non-Indigenous Australians.<sup>7</sup> This disparity between population and ethnicity can best be illustrated with the following data taken from the ABS<sup>8</sup> and ANZDATA.<sup>9</sup>

*This page:* Patient Wentja Napaltjarri receiving treatment from Megan Croft at Purple House Alice Springs. Image courtesy Purple House.

6. Australian Bureau Statistics, “Aboriginal and Torres Strait Islander Population Tops Half a Million.”  
7. Menzies School of Health Research, “Diabetes and Kidney Disease.”  
8. Australian Bureau Statistics, “Aboriginal and Torres Strait Islander Population Tops Half a Million.”  
9. ANZDATA, Australia & New Zealand Dialysis & Transplant Registry Chapter 2.

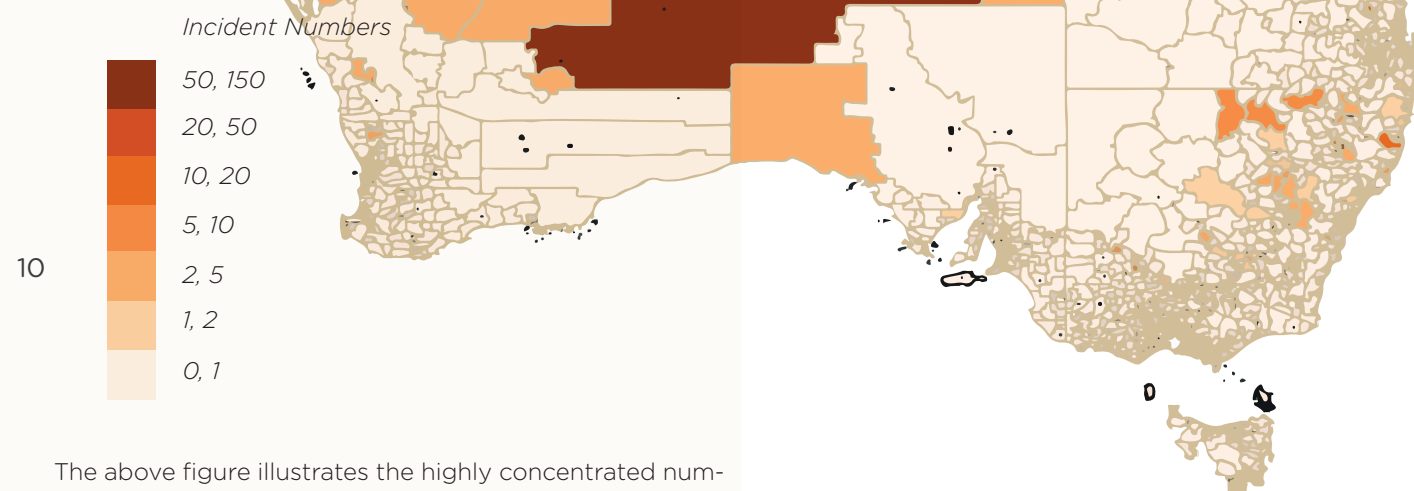
Preliminary estimated resident population by Indigenous status, 2006(a)						
State/Territory	Indigenous 2006	Non-Indigenous, 2006	Total, 2006	Indigenous as proportion of total Australian population	Indigenous as proportion of state/territory population	
	'000	'000	'000	%	%	
NSW	148.2	6,669.0	6,817.2	28.7	2.2	
Vic	30.8	5,097.5	5,128.3	6.0	0.6	
Qld	146.4	3,945.1	4,091.5	28.3	3.6	
SA	26.0	1,542.2	1,568.2	5.0	1.7	
WA	77.9	1,981.1	2,059.0	15.1	3.8	
Tas	16.9	473.0	489.9	3.3	3.4	
NT	66.6	144.1	210.7	12.9	31.6	
ACT	4.0	330.2	334.2	0.8	1.2	
Australia (b)	517.2	20,184.3	20,701.5	100.0	2.5	

a. Estimates are subject to revision once 2006 population estimates have been finalised and after analysis of the components of growth in the Indigenous population (demographic and non-demographic factors) between 2001 and 2006.  
b. Includes Other Territories

**Table 2.5 Prevalence of Renal Replacement Therapy by Ethnicity 2014-2018**

Country	Ethnicity	Modality	2014	2015	2016	2017	2018
Australia	Caucasian	Dialysis	8447	8498	8327	8261	8329
	Caucasian	Transplant	8429	8659	9025	9356	9703
	Aboriginal/Torres Strait Islander	Dialysis	1602	1678	1754	1880	1934
	Aboriginal/Torres Strait Islander	Transplant	219	235	258	270	298
	Asian	Dialysis	1286	1292	1347	1381	1448
	Asian	Transplant	1036	1125	1203	1328	1434
	Māori	Dialysis	132	132	135	139	138
	Māori	Transplant	56	60	62	65	71
	Pacific	Dialysis	378	411	446	495	525
	Pacific	Transplant	116	119	128	132	156
	Other	Dialysis	371	470	540	589	697
	Other	Transplant	180	213	259	310	359
Australia	Not reported	Dialysis	86	130	223	287	328
	Not reported	Transplant	42	70	121	160	232

Incident Indigenous Patients 2009- 2013  
By postcode



The above figure illustrates the highly concentrated number of patients receiving renal replacement therapy in Central Australia, as illustrated by the dark red centre as mapped by postcode by ANZDATA.<sup>10</sup>

Given that the vast majority of Indigenous Australians diagnosed with kidney disease reside in remote Central Australian communities, rather than in larger metropolitan and regional settings where Government run medical facilities are typically located, access to treatment requires remote patients to seek out 'hostel' style accommodation in order to receive treatment. Relocation away from family and country creates additional financial and emotional hardship for patients and their families. Language barriers also present additional difficulties for Indigenous patients, who often have English as a second or more subsequent language. The subsequent high demand for renal replacement therapies and difficulties faced by remote Indigenous patients to access the Government metropolitan and regional health services, has recently given rise to a number of private, Aboriginal community controlled health services offering alternative **Community Care** based models.

Currently in Australia renal replacement treatment options consist of either haemodialysis (HD) and peritoneal dialysis (PD), which are further characterised by the treatment setting and the method for administering the treatment. The summary provided overleaf gives an outline of the available methods of treatment currently offered by both Government and private, Aboriginal community controlled health services within Australia.

**This page:** Indigenous Patient numbers mapped by postcode by ANZDATA. Image sourced ANZDATA.

10. ANZDATA Australia & New Zealand Dialysis & Transplant Registry Chapter 12 Indigenous People and End Stage Kidney Disease, 38th Annual Report 2016.


#### Summary of Renal Replacement Therapies

- **Hospital HD** – Haemodialysis is performed within a large hospital facility and administered by trained dialysis nurses, usually within large teaching hospitals and co-located with a renal ward. Facilities generally have around 6-10 dialysis chairs with morning and afternoon shifts. Treatment generally takes 4-5 hours and takes place 3 times a week, requiring patients from remote communities to seek 'hostel' style accommodation in order to receive treatment.
- **Satellite HD** – Haemodialysis is performed within a large, purpose built medical facility and administered by trained dialysis nurses, in a large metropolitan or regional setting. Facilities generally have 8-16 dialysis chairs with morning and afternoon shifts. Treatment generally takes 4-5 hours and takes place 3 times a week, requiring patients from remote communities to seek 'hostel' style accommodation in order to receive treatment.
- **Community Care HD** – Haemodialysis is performed within a small, purpose built medical facility that can be anything from a renal-ready room attached to a Primary Health Care Clinic, demountable or separate dialysis building. Dialysis is administered by trained dialysis nurses to patients who generally already reside within the community or adjoining communities, which allows patients to stay in their existing home and communities, lessening the financial and emotional hardship experienced with hospital and satellite treatment. Facilities generally are limited to 2-4 dialysis chairs with morning and afternoon shifts. Treatment generally takes 4-5 hours and takes place 3 times a week. The uptake of this model of treatment in remote communities has been strong, but is currently entirely reliant upon the provision of available, private facilities.

- **Self Care/Home HD** – Haemodialysis is performed within a small, purpose built community facility such as a renal-ready room attached to the rear of a Primary Health Care Unit or sometimes a demountable building. Treatment is administered by the patient after successfully completing self-care dialysis training and the patient does not receive nursing support. This treatment is also referred to as Home HD, in instances where housing provisions and security are considered suitable enough for the patient to administer the treatment in their own home. The uptake for this model of treatment in remote communities has been limited, due to the necessity for the patient to have access to appropriate, secure housing/treatment areas and being able to self-administer their treatment correctly.

- **Peritoneal Dialysis (PD)** – Peritoneal dialysis is generally performed by the patient after appropriate treatment in their own home via a catheter surgically inserted into the stomach and requires daily administering. The catheter remains in the patient's stomach and therefore must always be kept clean. Treatment options are either day time treatments of 4 times a day for about 30 minutes each time or automated peritoneal dialysis (APD) that is done each night when the patient sleeps. The uptake for this model of treatment in remote Aboriginal communities has been limited, again due to the necessity for the patient to have access to appropriate housing and being able to administer their treatment correctly without nursing or family support.



1.3 IMPROVE ACCESS TO HEALTH SERVICES FOR ALL TERRITORIANS		
WHY ARE WE DOING IT?	HOW WILL WE DO IT?	WHO?
<ul style="list-style-type: none"> <li>Many people have difficulty in accessing health services. Barriers include: health literacy, cultural security, language, distance.<sup>6, 7</sup></li> <li>Community-controlled Primary Health Care services will enhance effective service delivery.<sup>8</sup></li> <li>Community engagement has the potential to improve the quality of services supplied, and to improve the opportunities and capability of those who rely on services, which lessens their need for them.<sup>9</sup></li> <li>Culturally and linguistically diverse populations, including Aboriginal peoples, may require specific enabling services to enhance health literacy, self-management and improve access to care.<sup>10</sup></li> <li>Community control of Aboriginal Primary Health Care (PHC) services will enhance effective service delivery, through the reorientation of care to meet the needs of the population.</li> <li>Evaluation is a key to effective practice and ongoing practice improvement.</li> </ul>	<ul style="list-style-type: none"> <li>Encourage and promote tools to enable the design and implementation of health service systems that account for people's age, ethnicity, disability, geographic location, gender, sexuality, socio-economic status, race and religion.</li> <li>Promote the integrated delivery of multi-disciplinary chronic conditions care closer to home.</li> <li>Promote initiatives to improve health literacy across health services and in the community.</li> <li>Promote involvement of local communities in decision-making processes that impact on chronic conditions prevention and management.</li> <li>Support reorientation of health services to implement cultural security systems and practices.</li> <li>Advocate for further development of Aboriginal community controlled health services in the NT.</li> <li>Encourage and support health services to regularly survey their patients to inform improvements in service delivery.</li> <li>Share findings of health needs surveys (as appropriate) / needs assessments to inform broader health service delivery.</li> </ul>	

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The Northern Territory Implementation Plan 2014-2016 for Chronic Conditions Prevention and Management Strategy for 2010-2020 acknowledged the importance for health service systems to facilitate people's management of chronic conditions closer to home and Aboriginal community controlled health services.<sup>11</sup> The above extract summarises the difficulties remote patients experience and the recognised benefit of community controlled health services.

Prior to the N.T Implementation Plan, The Australian Government Department of Health Central Australia Renal Study published in 2010, made recommendations for a sustainable transition from the prevalent urban satellite model to more community based care 'hub and spoke model,' as per the following extracted summary.<sup>12</sup>

"Broadly, a 'hub and spoke' model, which has three broad arms, is recommended:

- The Hub renal unit would coordinate the provision of comprehensive renal services across the continuum of CKD. Alice Springs is recommended to be the Hub, given its serviced capacity, with Tennant Creek functioning as a mini hub.
- The spokes will be the sites where nurse-supported and self-care options are expanded in communities, to allow patients to be closer to home. Expansion of self-care HD and nurse-supported, mini-satellite HD are the most appropriate and sustainable options for increasing the proportion of renal patients able to return home for ongoing RRT. Several sites, based on consultation for the Study, were identified as suitable for the first wave of community care expansion.

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- The spokes will not allow patients from all communities to obtain treatment closer to home: Mobile dialysis and respite dialysis is recommended to provide supplementary service to allow more people to be closer to home."

Despite the Northern Territory Implementation Plan and Central Australia Renal Study both acknowledging the importance of community based care, the N.T Government currently does not operate any Community Care HD. Therefore the vast majority of Indigenous Australians receiving renal replacement therapies in N.T still receive treatment in larger metropolitan and regional Satellite HD facilities, away from family and country. The graph opposite taken from ANZDATA clearly illustrates the prevalence of Satellite HD in N.T, provided at large government facilities such as Alice Springs and Darwin.<sup>13</sup>

**This page:** Extract taken N.T Implimentation Plan 2014-2016.

**Opposite: 1.** Indigenous Patient numbers mapped by postcode by ANZDATA overlaid with locations of Purple House Dialysis Clinics by author. **2.** Graph taken from ANZDATA illustrating the prevalence of Satelelite HD in N.T.

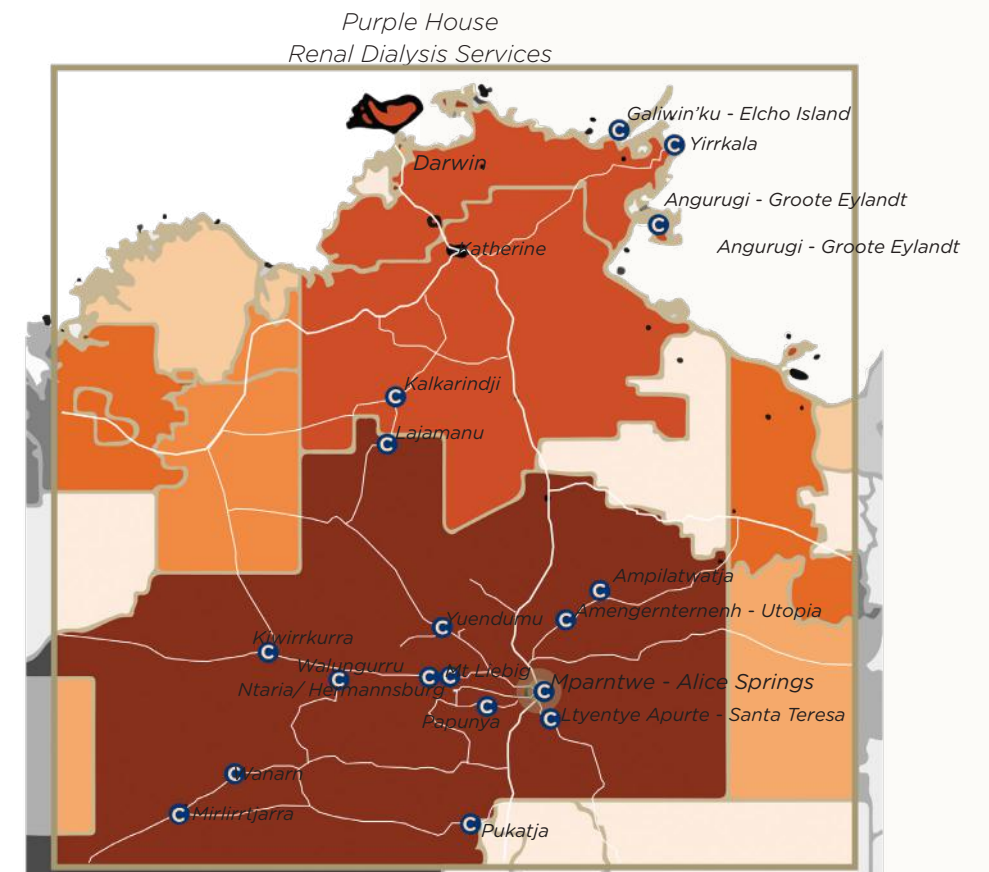
11. Northern Territory Government, Northern Territory Implementation Plan 2014-2016 Chronic Conditions Prevention and Management Strategy 2010-2020.

12. Australian Government Department of Health, Central Australia Renal Study Part 1: Key Findings, Recommendations and Implementation Plan and Part 2: Final Report.

13. ANZDATA Australia & New Zealand Dialysis & Transplant Registry Chapter 2.



Purple House  
Dialysis Services



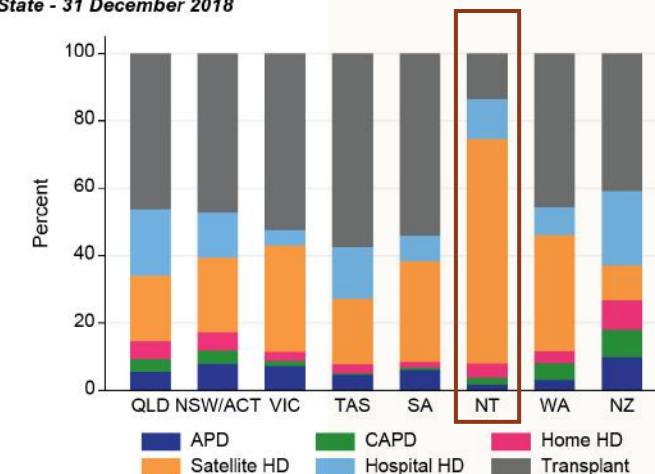
13

The high demand for HD facilities and the lack of suitable alternatives for remote Aboriginal communities, has been the catalyst for several private, Aboriginal community-controlled health services to start developing their own HD services. At the time of this research, Kimberley Aboriginal Medical Services (KAMS) is currently operating 4 Satellite HD facilities in the Kimberley region of W.A. Although KAMS is currently only providing Satellite HD rather than Community Care HD, patients now have access to treatment within the Kimberley region, as an alternative to relocation to Perth. A second organisation called Purple House, pioneered the 'nurse-supported, mini-satellite HD' (also known as Community Care HD) that is referenced in the N.T Implementation Plan. Starting out with makeshift clinics constructed with '4/5th of nothing' in Central Australia, Purple House now provides Community Care HD to 18 remote Aboriginal communities in high need across W.A, S.A and the N.T. Their modest **Architecture of Necessity** buildings are providing

**Dialysis on Country** within some of the remotest communities of Australia, reconciling patients with their families and country. The above figure illustrates the location of the 18 Purple House HD services, overlaid on the ANZDATA patient data, illustrating the concentration of clinics with Central Australia where kidney disease is most prevalent.

Given the importance for more **Dialysis on Country** for remote Aboriginal patients and their families, which is acknowledged by both the N.T Implementation Plan and Central Australia Renal Study, the research undertaken within this report is timely. The contained post-occupancy research of Purple House and N.T Government commissioned Architecture of Necessity will enable further understanding of the various building typologies and how these built forms have evolved over 20 years, which is largely due to their programmatic requirements and availability of funding.

Figure 2.5 - RRT Modality by State - 31 December 2018





### 3. Purple House



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#### Strategic Goals Summary

- 1. On Country, Ngurra  
Help people to be on or return to country
- 2. A Good Life, Kurrumpa Wanka  
Help patients and their families to live the best life possible
- 3. Right Way, Tjukarurru Wangkantjaku  
The organisation will work hard to do the best we can for the patients, families and stakeholders.



At previously highlighted, at the time of this research the only provider of Community Care HD in the N.T is Purple House, or Western Desert Nganampa Walytja Palyanthaku Tjutaku Aboriginal Corporation (WDNWPT). Purple house is an Aboriginal community-controlled heath service, started in response to the growing number of Pintupi and Luritja people from Central Australia that were being forced to leave their families and country to receive treatment for end-stage renal failure. Until the establishment of Purple House, their only treatment option was to relocate to larger cities such as Alice Springs and Darwin, meaning community elders suffered great hardship and loneliness, in addition to not being able to pass on their extensive cultural knowledge.

In 2000 artists from Walungurru (Kintore) and Kiwirrkurra came together and created four extraordinary collab-

orative works which were auctioned alongside other donated works at the Art Gallery of New South Wales, to raise over \$1 million and kick-start WDNWPT.

Nganampa Walytja Palyanthaku Tjutaku translates to “Making All Our Families Well” and the Purple House logo is derived from the original paintings. This Aboriginal controlled health service continues to dedicate their efforts to keep people on country, live their best life possible and work hard to do the best they can for their patients, families and stakeholders.

**This page:** Image taken from Purple House Strategic Plan 2017-2022.

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**This page:** 1. Original collaborative men’s painting auctioned in 2000.  
2. Original collaborative women’s painting auctioned in 2000.  
Images courtesy Purple House.



# 3.1 The Establishment of Purple House

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The establishment of Purple House and the current suite of services has moved through three distinct incremental phases of development since it's inception. Today Purple House offers social outreach and advocacy services, operates 2 aged care facilities, in addition to operating a mobile dialysis unit and providing **Dialysis on Country** in 18 locations across three states. The following is a brief summary taken from an interview between Sarah Brown (Purple House CEO) and Paul Memmott in 2017.

“Aboriginal people from these communities were not put off by the medical and technical complexities of getting renal services out into remote desert communities. These challenges included the need for very expensive medical

equipment, high quality water treatment, non-renewable medical supplies, the limited availability of highly specialised renal dialysis nursing staff and the need for medical sign-off to have dialysis away from existing services. This set of obstacles were well beyond the capacity of the existing government and private medical systems at the time and their policies.”<sup>15</sup>

*This page:* Image taken from Purple House Strategic Plan 2019-2022.

15. Sarah Brown in “The Purple House” by Paul Memmott et al, 2017.  
16 & 17. Opposite page: Ibid.



## Social Outreach and Advocacy

“Initial social outreach and advocacy included hospital visits, assisting with paperwork, shopping and social activities that brought Pintupi/Luritja people in Alice Springs together. The service grew as people saw the value of doing these things. The Purple House, in Alice Springs was rented through Territory Housing and the program began by providing social support services to renal dialysis patients from these remote communities to ensure greater participation in the existing medical system.”<sup>16</sup>

## Return to Country Visits

“By 2004, the first remote dialysis clinic was established in Walungurru (Kintore) and a single dialysis chair and service was made available to Pintupi-Luritja from the Purple House in Alice Springs... The remote dialysis chair was preceded by Pintupi-Luritja Homeland Medical Services – which meant that there were medical clinics throughout remote communities – and at the first site, Walungurru (Kintore), there was a spare room at the back of the new Primary Health Care clinic which had been designed as an emergency waiting room... this room was given over to the Purple Houses for dialysis and a single dialysis chair was purchased and located in the room... These visits were programmed on a three week rotation. Prior to returning to country, the patient and a remote area nurse spent time together doing dialysis in Alice Springs, building a relationship of trust and then travelling out to Walungurru. The patient lived there with family for three weeks and received dialysis under the supervision of the nurse in the little room at the back

of the Medical Centre. Then they would swap over with another incoming nurse and patient, and return to Alice Springs to once again be back at the Purple House.”<sup>17</sup>



*This page:* 1. Visitors dropping into the Purple House ‘Home Away From Home’ in Alice Springs.  
2. The late artist Patrick Tjungurrayi returning to visit his country in Kiwirrkurra. Patrick was one of the original Papunya Tula artists whose artwork helped raise the initial \$1 million that kick-started WDNWPT, now known as Purple House. His artwork is also featured on the Purple House mobile truck.  
Images courtesy of Purple House.



“Back home you got families here and you see a lot of people here, but when you’re in the city or town you feel homesick. You need to see your family.” -Dirk Jackson.<sup>18</sup>



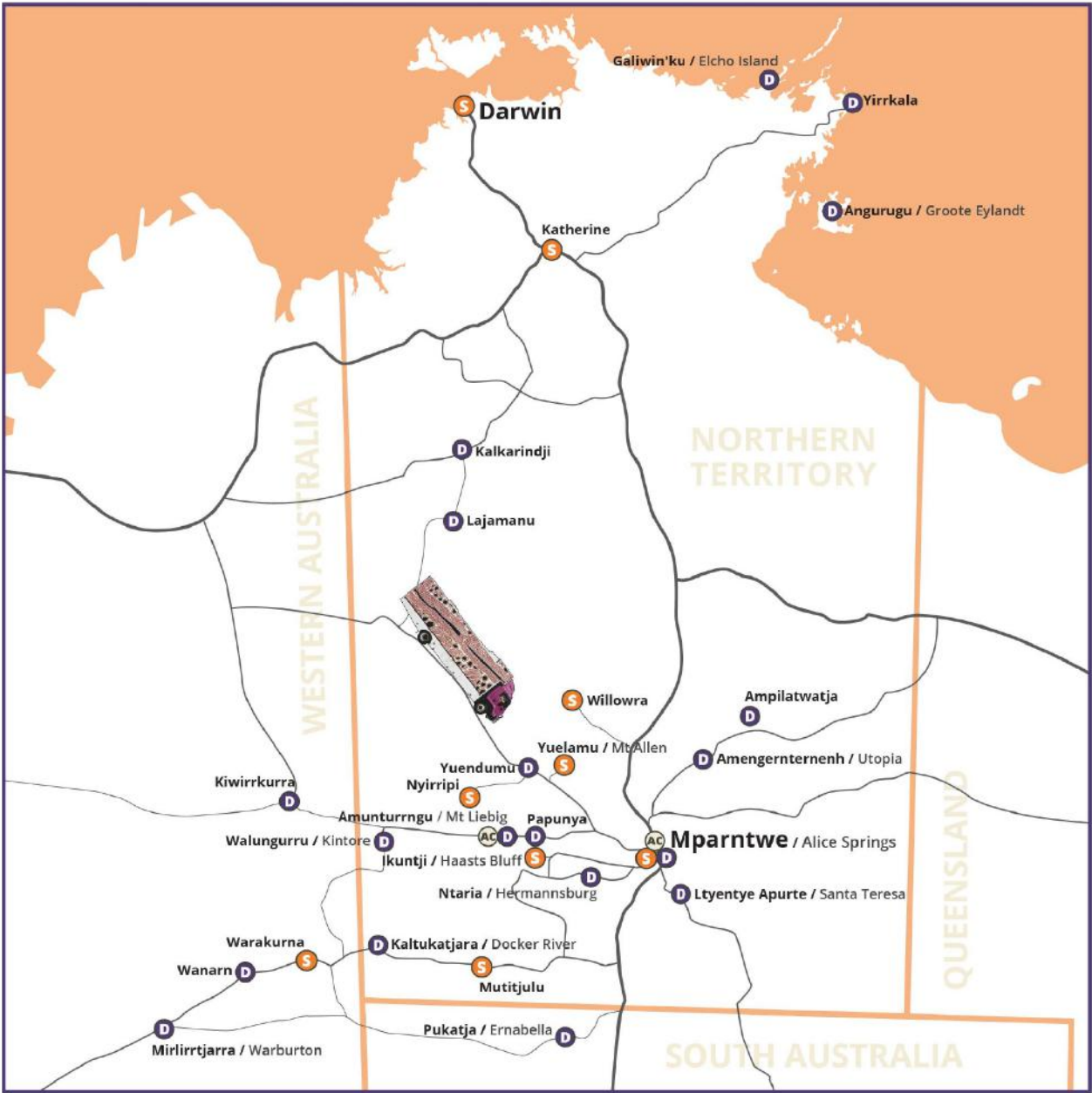
Living on Country

“In getting renal dialysis patients from Alice Springs back out into community to dialyse on country, a number of medical and social support milestones needed to be addressed including medical checks and sign-off by a nephrologist, transport, and ensuring family and accommodation support in communities for patients and accommodation for the accompanying dialysis nurse. After a period of time it was realised that it was far better and more cost effective to have a dialysis nurse who was learning the language living permanently out in the community rather than a number of nurses rotating back and forth between Walungurru and Alice Springs. In 2006, a nurse was employed to live full-time in the community and provide dialysis both to visiting patients and support

a single resident who could stay on country and have dialysis.”<sup>18</sup>

With the establishment of **Dialysis on Country** in 18 locations, “Central Desert has gone from having the worst to best survival rates for dialysis in Australia.”<sup>19</sup>

18. Dirk Jackson in “The Remote South Australian Dialysis Unit Keeping Aboriginal Patients on Country.”  
19. Sarah Brown in “The Purple House” by Paul Memmott et al, 2017.  
20. <https://www.purplehouse.org.au/our-story>



D

Dialysis services

S

Social support services

AC

Aged care services



The Purple Truck  
mobile dialysis unit

**This page:** Image sourced Purple House 2020 Calendar.  
**Opposite:** William Sandy and Tjunkiya Tapaya return home to Pukaja in 2019, with the opening of Kinyin McKenzie Dialysis Centre. Image courtesy Purple House.



## 4. Case Studies

*“It contributes to cultural sustainment by reconciling person and place, community and country. Its function is not disembodied or abstracted from the socio-cultural, but grounded in it. Rather than being isolated, objectified, aestheticised or monumentalised, architecture exists primarily as a site of cultural practice – and its success is judged inasmuch as it affords and promotes this practice.”*

*Michael Tawa<sup>21</sup>*

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Three distinctly different design scenarios were observed when researching all of the 18 Purple House operated dialysis units. The earlier clinics received no state or commonwealth funding and contained little design input, other than a cost-effective solution to get patients back on country. Heavily reliant upon philanthropic donations, most of the earlier clinics were designed with limited pro-bono assistance or no assistance, then “constructed with 4/5th of nothing.”<sup>21</sup> Surprisingly, these clinics proved to be highly functional and purposeful. Later clinics gave more thought to design as additional funding became available resulting in architect designed, purpose built facilities and extensions, such as Eutopia by Less Platt and Lajamanu by NBC Aboriginal Corporation. A third design scenario was also observed when Purple House has taken over the operation of brand new clinics commissioned by a third party, such as the N.T Government and Aboriginal Health Corporations. All three scenarios have been studied and each offered invaluable design lessons.

Research of these 3 distinctly different design scenarios was undertaken by way of post-occupancy evaluations of numerous Purple House Community Care HD clinics. As mentioned, some of the buildings evaluated were commissioned by Purple House and some which were commissioned by the N.T Government and Aboriginal Health Corporations. Extensive interviews were also conducted with dialysis patients, in addition to nursing, maintenance, technical and management staff from Purple House, in order to better understand the ‘perfect dialysis building.’ Interviews were also conducted with builders who participated with the construction of Purple House clinics, to identify potential areas of improvement. This research *Byera Hadley Travelling Scholarships Journal Series*

has been compiled into a mix of Purple House and N.T Government commissioned case studies with illustrated walk-through summaries provided on each.



20. Michael Tawa, Wilcannia Health Service.

21. Sarah Brown interview with author 20th January 2020.

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**This page:** Patient waiting area at Purple House Alice Springs unit with Lindsay Corby playing guitar. Image courtesy Purple House.

**Opposite:** Artwork donated by Amata Community Grandmothers and Granddaughters to raise funds for Pukatja Dialysis Clinic in 2017.



# 4.1 Early Purple House Commission

Case Study  
Tanami Dialysis Centre  
Yuendumu, N.T.

Design: Centre of Appropriate Technology (CAT), Alice Springs.  
Construction: Murray Hall, Yuendumu.  
Population: 900.  
Required Nursing Staff: 2.  
Patient capacity: 16 (4 chair).  
Opened: 2010 & upgraded in 2015.

**Tanami Dialysis Centre** in Yuendumu is a good example of an early Purple House pro-bono commission, which originally opened in 2010 to enable Walpiri people from Yuendumu, Yuelamu, Willowra and Nyirripi to receive dialysis on country. Currently Yuendumu is the busiest clinic operated by Purple House and is currently running at full capacity with 16 regular patients, based on 2 x 5 hour shifts per day/6 days a week. This clinic was “constructed with 4/5th of nothing,”<sup>2</sup> on a very limited budget and with limited pro-bono design assistance from The Centre of Appropriate Technology, Alice Springs. The clinic derives it’s very rectilinear shape since it is primarily constructed from repurposed shipping containers.

The original clinic consisted of 4 x 40’ shipping containers, which were cut down and joined together on site, then clad in Bondor insulated panels on both sides, which provides the building with good levels of insulation. A self-supporting roof structure was then constructed to provide shading, along with an attached lockable storage area for the storage of water tanks, composite decking with seating and disabled ramps to the front and rear of the building.

Additional funding for renovation works enabled further expansion in 2015, increasing the facility from 2 to 4 chairs. Renovation works consisted of the conversion of 2 additional shipping containers, in addition to extending the existing decking and roofing structure.

Despite being built with a limited budget and design input, this clinic is surprisingly functional and fit for purpose.

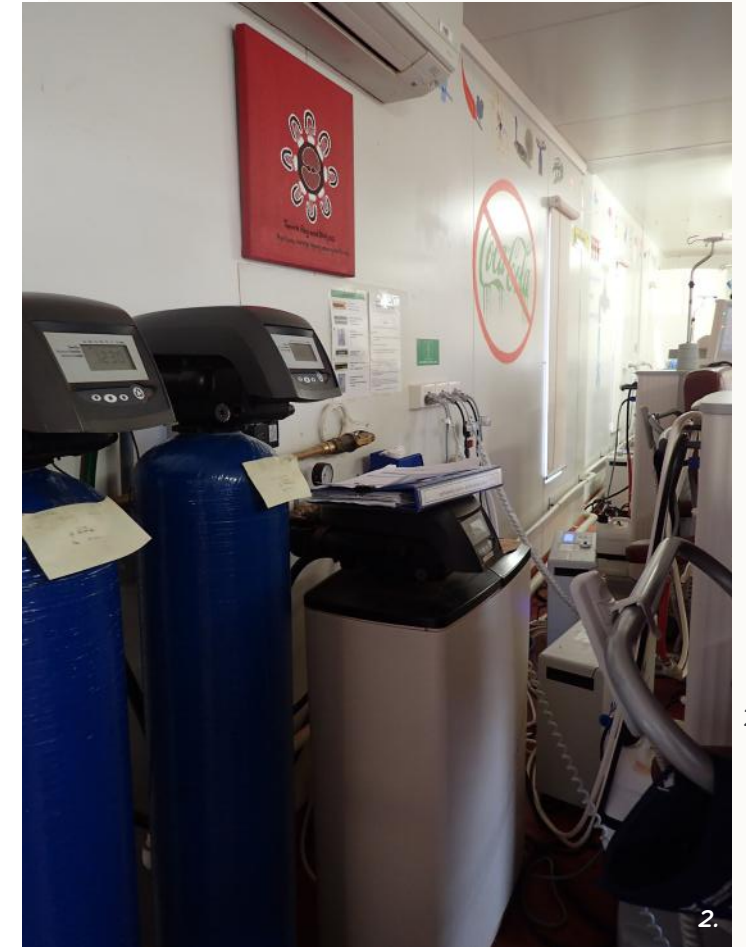


**This page:** 1. Front view taken in 2010 prior to Stage 2 renovation. Image courtesy Purple House. All other images by author in 2020.  
2. Front view illustrating building after stage 2 renovation.  
3. Rear view illustrating external laundry & access to water tanks.

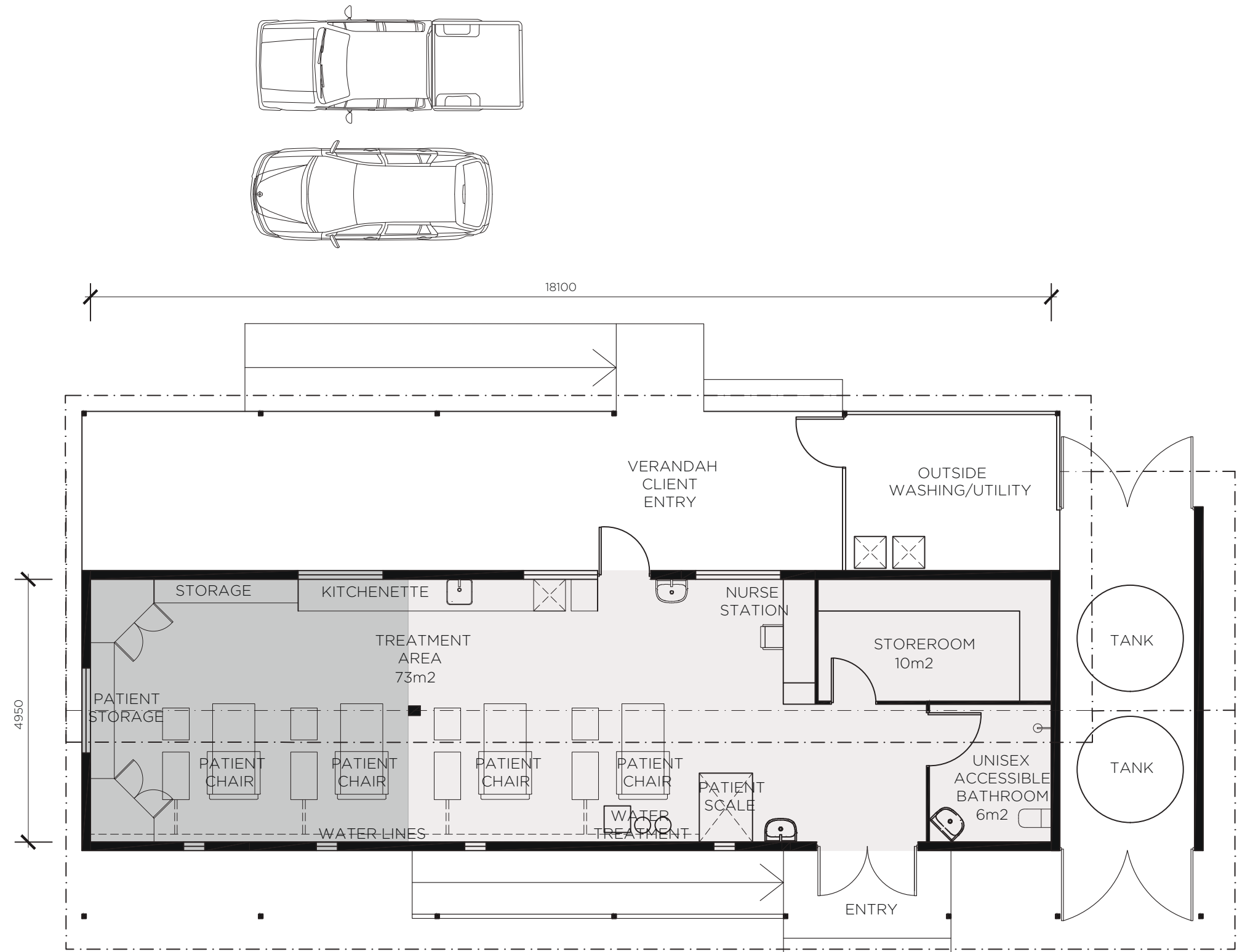




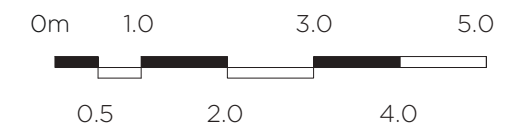
**This page:** 1. View from Stage 1 looking towards Stage 2 extension. 2. Nurse station. 3. Storeroom.  
**Opposite:** 1. Shared patient/staff bathroom. 2. Water treatment. 3. Ambulant patient scales. 4. Patient chair with artwork above.







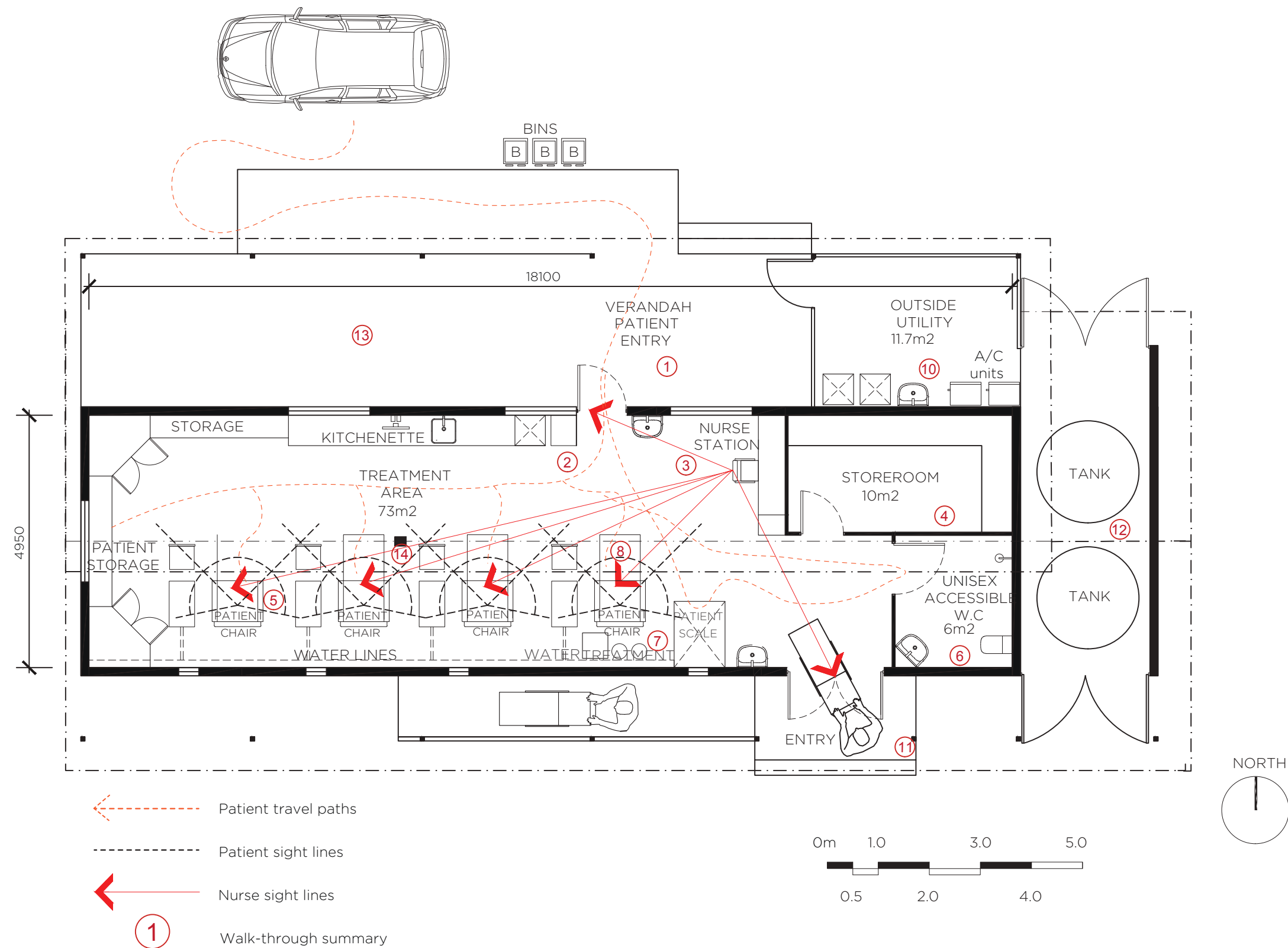
- Stage 1 - 2 Chair Unit from 4 Shipping Containers
- Stage 2 - 4 Chair Unit from 2 Added Shipping Containers





Tanami Walk-through Summary

- 1. Patients use rear rather than front entrance, as patients are collected/dropped off by nurses who park at the rear of the building.
- 2. Patient flow paths from entry to bathroom, scales and treatment chair works well, but patient storage is not ideally located.
- 3. Nurse station is orientated with back to patient treatment area and entrances, which requires nurse to turn around to observe patients and visitors. Line of sight to last two patient chairs is also quite long.
- 4. Storeroom is an appropriate size but lacks external access, requiring double handling of deliveries increasing nurse workload. Extra space allocated for bulky patient items such as wheelchairs etc would be beneficial, as these items are currently stored in the toilet or externally.
- 5. Patients can only view/converse with adjacent patients and there is only one wall mounted television making viewing difficult. Patient windows provide limited natural light due to size of windows and blinds typically drawn during treatment for privacy.
- 6. Patient and staff need to share the same toilet as there is only one toilet.
- 7. Water treatment location would be more appropriate in the storeroom, however this would increase cost due to longer plumbing lines. Floor waste would also be beneficial.
- 8. First patient chair is located close to both entrances and amenities which makes relaxation difficult.
- 9. Water lines are exposed which makes access for repairs and maintenance easy. No floor wastes observed adjacent to main junctions which is not ideal since water lines often leak.
- 10. External laundry and cleaners sink require nurses to leave treatment area to access, which makes work-flow difficult. Disposal of blood which should be done in the cleaner sink is sometimes done in the toilet so nurse can remain close to patients.
- 11. Double door entrance and landing at front of building is sufficient for patient transfer onto an ambulance stretcher.
- 12. Water tanks are external and require in-line chiller to maintain the water temperature below 37 degrees.
- 13. Large covered outdoor patient area is unutilised, as patients prefer to go home immediately after treatment. Space is currently used as additional storage but is not lockable or protected from the weather.
- 14. Stage 2 addition required installation of centre post. Minor changes in floor and ceiling levels were also observed.



This page: Yuendumu Floor Plan illustrating travel paths, sight lines and walk-through summary points.



# 4.2 Recent Purple House Commission

## Case Study

### Kinyin McKenzie Dialysis Centre

Pukatja, S.A.

Design: NBC Aboriginal Corporation, based on Les Platt design.  
Construction: Murray River North, Alice Springs.  
Population: 400.  
Required Nursing Staff: 2.  
Patient capacity: 16 (4 chair).  
Opened: 2019.

**Kinyin McKenzie Dialysis Centre** in Pukatja opened in August 2019 is the most recent example of a Purple House, architect designed commission and is also the first clinic opened by Purple House in South Australia. This clinic was designed as a prefabricated building by NBC Aboriginal Corporation, with the same internal layout as the Amengernternah Community clinic in Utopia, N.T, which was also opened in 2019. The Amengernternah clinic was commissioned just prior to the Kinyin clinic and was designed by Les Platt Consultants for on-site construction, who were also commissioned to design the adjacent Primary Health Care Unit for the Urapuntja Health Service. NBC Aboriginal Corporation adopted the internal layout but changed the external design of the building to suit prefabrication, making the building more cost effective. Due to the overall size of the building, it is made up of two modules to suit transportation widths, then joined together on-site with metal cover strips. The flat metal strips are not overly obtrusive, but the design could have benefitted from small modifications to the internal planning for better alignment so joins avoided doorways and the wall positioned within each module. It is interesting to note when comparing the earlier and latter designs that the building footprints are very similar,

but the latter design is a lot more accommodating to patient and staff needs, showing a substantial progression in the overall design resolution. There is good provision for nursing staff with a separate staff toilet, dedicated nursing station and laundry facilities. A 0.8mm stainless steel corrugated water tank is also currently being trialled to see if the tank design and internal location can assist with keeping the stored water temperature below 37 degrees, without the need to install an inline chiller. Currently all of the Purple House clinics have inline chillers, but these are costly to install and run, in addition to sometimes overloading the power system. The inclusion of the water tank though has significantly reduced the amount of wall storage space so plans are underway to implement an extension to the storeroom to correct this, as shown overleaf. If the water tank location proves successful, then future designs will make provision for the inclusion of internal water tanks so that storage space is not compromised.



**This page:** 1. Side view showing patient entry ramp and A/C services at rear of building. 2. Front view. 3. Views of external services within secured cages. 4. View from emergency entrance.

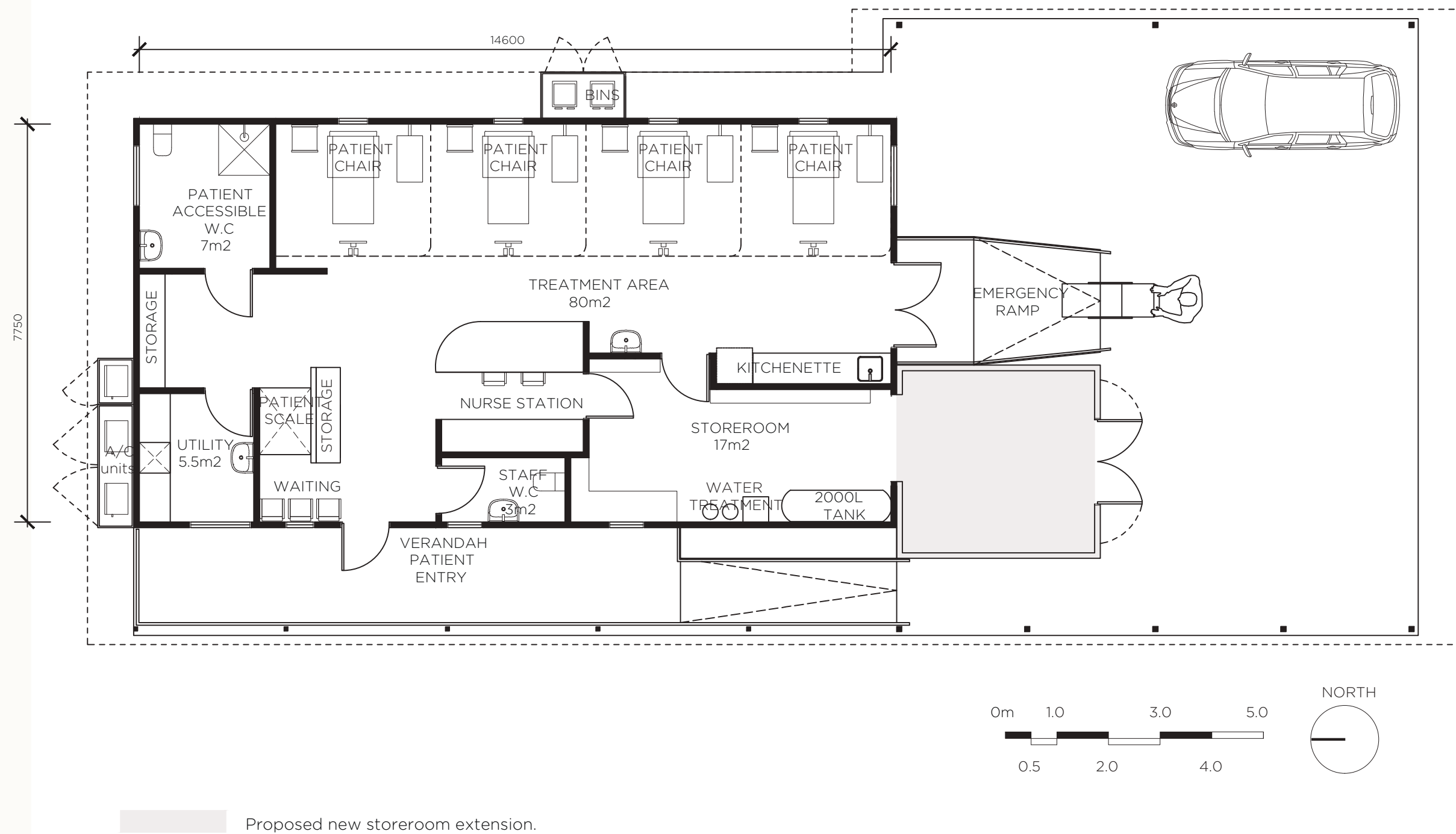




**This page:** 1. Interior view looking towards northern side wall. 2. Nurse station. 3. Dirk Jackson receiving care from Margaret Lillie.  
**Opposite:** 1. Storeroom with double door entry & internal water tank. 2. Utility room. 3. Patient bathroom with shower. 4. Ambulant patient scales.





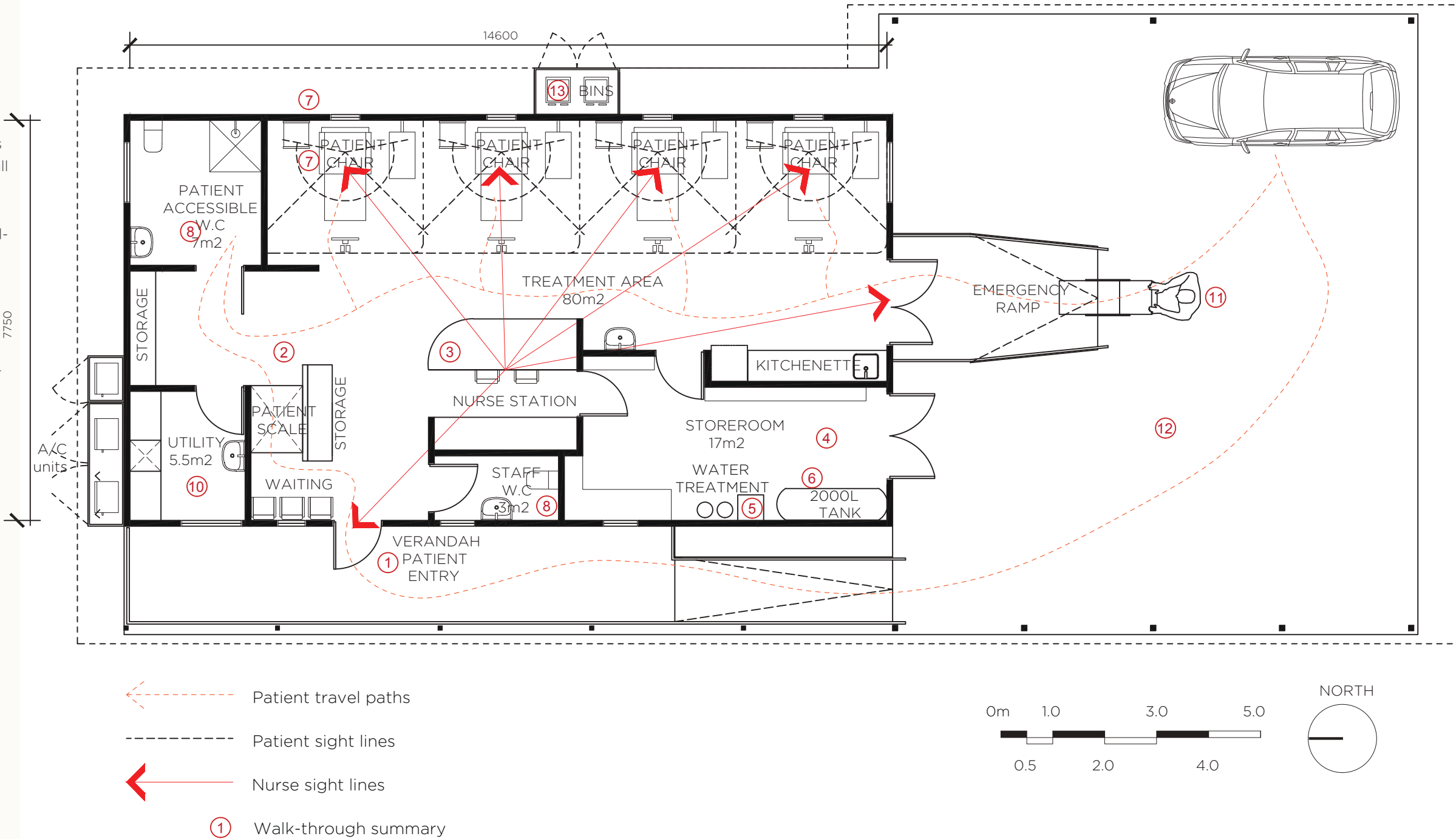


**This page:** Kinyin McKenzie Floor Plan illustrating design for increased storage area.



**Kinyin McKenzie Walk-through Summary**

- 1. Patients mostly use emergency ramp entrance rather than side entrance, as patients are collected/dropped off by nurses who park at the rear of the building. Visitors mostly use emergency ramp entrance as it's a more direct route.
- 2. Patient flow paths from entry to scales, bathroom, storage and treatment chair works well, with no obstructions.
- 3. Nurse station is orientated well towards patient treatment area, but both entrances are obstructed requiring nurse to leave desk to observe. Line of sight to last patient chair is also quite long and obstructed.
- 4. Storeroom is an appropriate size with double doors wide enough for pallet deliveries minimising double handling, but design was modified to include a 2000 litre water tank and water treatment equipment. This additional equipment and the number of door openings into the room has significantly reduced the available wall storage space. Plans have been costed to implement an extension to the storeroom to correct this and provide additional storage for bulky patient items such as wheel-chairs etc.
- 5. Water treatment location in the storeroom frees up floor space in the treatment area and has a floor waste which is beneficial.
- 6. A stainless steel corrugated water tank is currently being trialled to see if the tank design and internal location can assist with keeping the stored water temperature below 37 degrees, without the reliance of an in-line chiller.
- 7. Patients can only view/converse with adjacent patients. Individual T.V's and curtains facilitate privacy, however it was noted that T.V location made viewing angle too steep for patient comfort. Patient windows provide limited natural light due to placement directly behind patient chairs and blinds typically drawn during treatment for privacy.
- 8. Patient and staff have separate toilet facilities, which was appreciated by patients and nurses.
- 9. Water lines are concealed within walls which is more aesthetically pleasing but difficult to access for repairs and maintenance.
- 10. Internal utility room with washing facilities and cleaners sink was well equipped and spacious.
- 11. Double door emergency entrance and ramp at front of building is ideal for patient transfer onto an ambulance stretcher.
- 12. Large covered parking area provides good weather protection for nursing staff to do patient transfers.
- 13. Lockable bin storage at side of building is located out of sight from main entrance and appropriately located to deal with the high volumes of daily medial and general waste.



**This page:** Kinyin McKenzie Floor Plan illustrating travel paths, sight lines and walk-through summary points.



# 4.3 Early N.T Government Commission

## Case Study

### Hermannsburg Dialysis Centre

Hermannsburg, NT.

Design: Bennett Architecture, Darwin.  
Construction: Unknown  
Population: 600.  
Required Nursing Staff: 1.  
Patient capacity: 8 (2 chair).  
Opened: 2010.

In addition to commissioning their own clinics, Purple House also provides nurse assisted Community Care HD within clinics commissioned by third parties, such as the N.T Government and Aboriginal Health Corporations. **Hermannsburg Dialysis Centre** was constructed in 2010 at the same time as the Purple House **Tanami Dialysis Centre**, but was commissioned by the N.T Government. This clinic was designed as a prefabricated building by Bennett Architecture and is a very compact, 2 chair clinic. Unlike the Tanami Dialysis Centre this clinic has not been further expanded and remains in it's original condition.

The main observed differences in design when compared to the pre-renovated Tanami Dialysis Centre, is the lack of provision for storage, a dedicated nursing station, laundry/cleaning facilities and consideration for patient evacuation. The omission of these things is assumed to be attributed to the clinic being designed as a self-care facility rather than as a nurse assisted facility, due to the N.T Government's preference for self-care facilities over nurse assisted facilities. The orientation of the building also seems somewhat counter-intuitive, with patients arriving at the rear of the building and requires walking up a pathway that then does a switch-back onto a ramp. Flipping the

building would have minimised travel distances for the patients and put the services at the rear of the building. Groote Eylandt Dialysis Centre, which is another clinic operated by Purple House, is identical to this clinic and similarly designed by Bennett Architecture and completed at the same time in 2010.

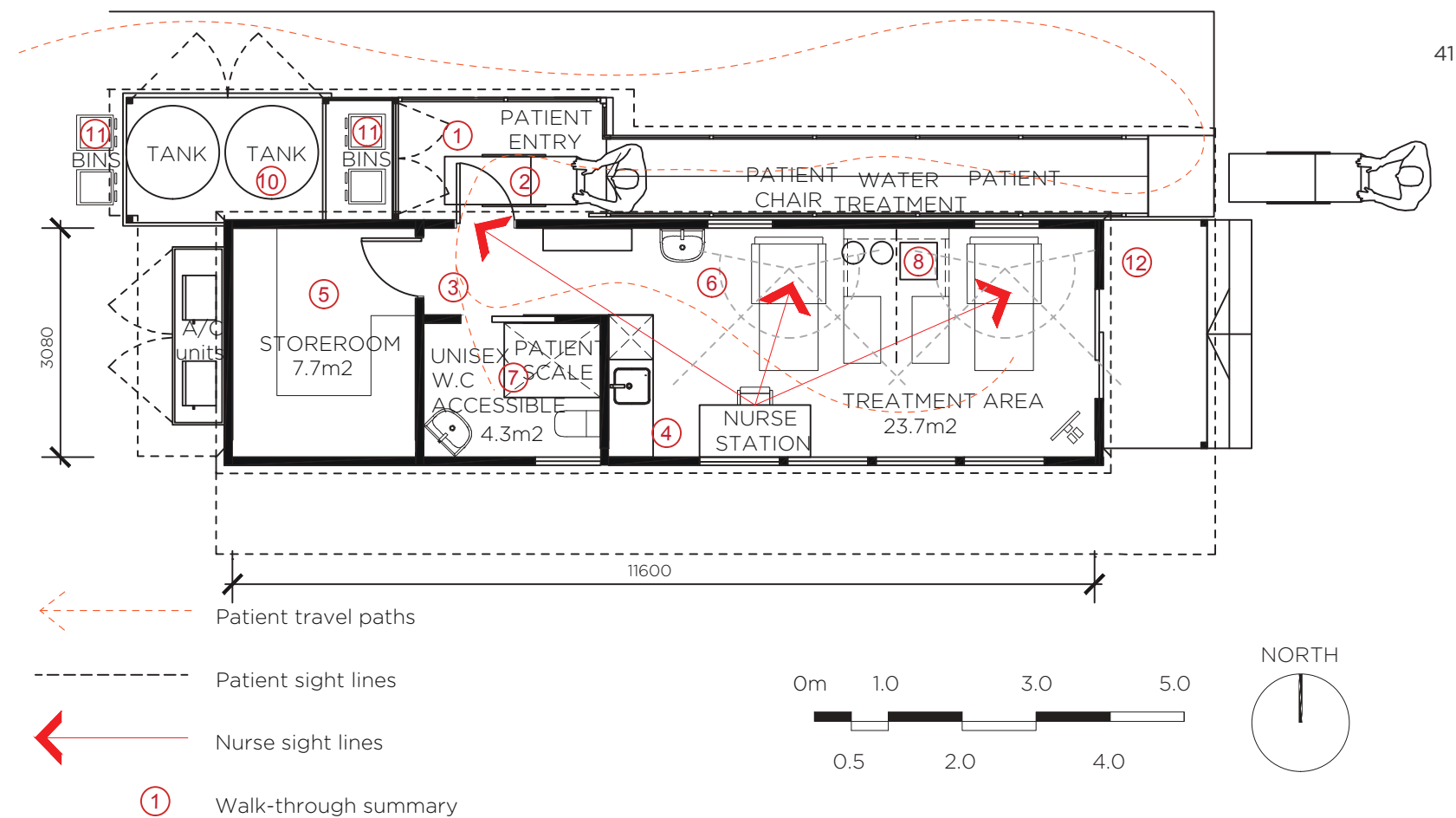
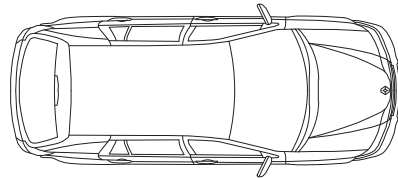


**This page:** **1.** Exterior view showing patient ramp and outdoor area. **2.** Front view illustrating patient approach. **3.** Interior view showing patient treatment area.



### Hermannsburg Walk-through Summary

1. Patient approach is from the rear of the building past the water tanks and A/C units, which creates an indirect path of travel to access the patient ramp and small landing.
2. The entrance landing is not wide enough to allow an ambulance stretcher to manoeuvre into the building, nor is there sufficient clearance within the building for a patient transfer onto an ambulance stretcher.
3. Patient flow paths from entry to bathroom, scales and treatment chair are constricted due to the size of the building, with the patient scales located in the bathroom. There is no dedicated storage space for patient belongings.
4. Nurse station is poorly orientated towards patient treatment area and main entrance, requiring nurse to turn around to view patients and leave desk to view entrance due to blocked sight-lines.
5. Storeroom is an appropriate size and located close to the entrance, however could have been improved with an additional external access door. Extra space allocated for bulky patient items such as wheelchairs etc would be beneficial as these items are currently stored in the toilet which is already overcrowded.
6. Patients can view and converse with adjacent patients, as well as shared T.V, but have very little privacy. Patient windows provide limited natural light due to placement directly behind patient chairs and blinds typically drawn during treatment for privacy, but opposite windows provide good amounts of natural light and make treatment area feel more spacious.
7. Patient and staff have shared toilet facilities, which is very small and also contains patient scales, which makes usage congested.
8. Water treatment location restricts access around chairs and would be more appropriate in the storeroom, although this would increase cost due to longer plumbing lines. Floor wastes would also be beneficial. Water lines are exposed which makes access for repairs and maintenance easy.
9. No laundry with washing machine to wash patient clothes or cleaners sink for filling of a mop bucket and disposal of blood, which are essential daily functions.
10. Water tanks are external and require in-line chiller to maintain the water temperature below 37 degrees.
11. Lockable bin storage at entrance is well located due to high volumes of daily medial and general waste, but makes collection difficult due to the ramp so bins are often left at front of building.
12. Covered outdoor patient area is unutilised, as patients prefer to go home immediately after treatment.



**This page:** Hermannsburg Floor Plan illustrating travel paths, sight lines and walk-through summary points. **Note:** Hermannsburg and Groote Eyland Floor Plans and building structures are identical and both completed in 2010.



# 4.4 Recent N.T Government Commission

## Case Study

### Mt Liebig Dialysis Centre

Mt Liebig, NT.

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Design: Bennett Architecture, Darwin.  
Construction: Unknown  
Population: 150.  
Required Nursing Staff: 1.  
Patient capacity: 8 (2 chair).  
Opened: 2017.

**Mt Liebig Dialysis Centre** is a more recent example of a 2 chair clinic, designed again by Bennett Architecture for the N.T Government and opened recently in 2017, in conjunction with other clinics in Papunya and Docker River. It is interesting to note when comparing the earlier Hermannsburg clinic and this latter design, that the overall building footprint and design is virtually unchanged and is similarly designed as a prefabricated building. Therefore despite the 7 year gap and the same architect commissioned for both designs, there does not appear to be any progression in the overall design resolution, unlike the Purple House commissions which improve upon each subsequent design in an attempt to resolve any design shortcomings.

Despite Purple House having extensive knowledge in the provision of services for Community Care HD clinics, there was no consultation with Purple House during the design phase, which would have been beneficial to both the staff and patients of this clinic, to make the building more conducive to current operational needs. For example, the storeroom would have been more suitable in the same position as Hermannsburg and the building could have been potentially increased in size at minimal cost

to incorporate additional storage, a nursing station, laundry facilities and a larger external landing to make patient transfer onto an ambulance stretcher possible. This lack of consultation is assumed to be due to the N.T Government's preference for self-care facilities over nurse assistance facilities, despite the clinics not ever being run as self-care facilities.



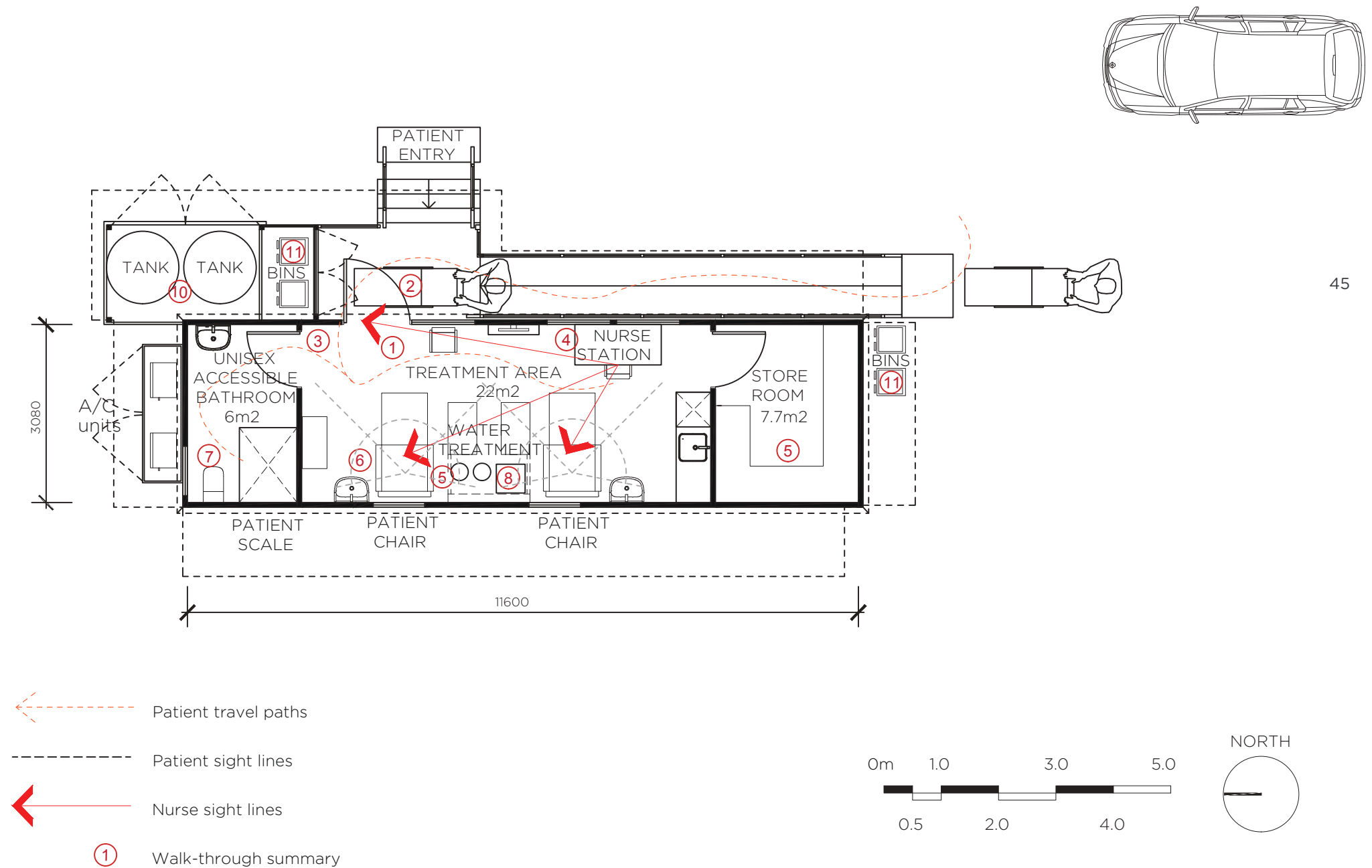
**This page:** 1. Front view illustrating patient approach. 2. Street view showing Primary Health Care Clinic in the background. 3. Interior view showing patient treatment. Image courtesy Purple House.

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### Mt Liebig Walk-through Summary

1. Patient entrance is via a ramp with a small landing.
2. The entrance landing is not wide enough to allow an ambulance stretcher to manoeuvre into the building, nor is there sufficient clearance within the building for a patient transfer onto an ambulance stretcher.
3. Patient flow paths from entry to bathroom, scales and treatment chair are constricted due to the size of the building, with the patient scales located in the bathroom. There is no dedicated storage space for patient belongings.
4. Nurse station is poorly orientated towards patient treatment area and main entrance, requiring nurse to turn around to view patients and leave desk to view entrance due to blocked sight-lines.
5. Storeroom is an appropriate size but poorly located as it requires moving stores through the treatment area, which could have been avoided with an additional external access door. Extra space allocated for bulky patient items such as wheelchairs etc would be beneficial for both designs, as these items are currently stored in the toilet which is already overcrowded.
6. Patients can view and converse with adjacent patients, as well as shared T.V, but have very little privacy due to size of treatment area. Patient windows provide limited natural light due to placement directly behind patient chairs and blinds typically drawn during treatment for privacy, but opposite windows provide good amounts of natural light and make treatment area feel more spacious.
7. Patient and staff have shared toilet facilities, which also contain patient scales, which makes usage congested.
8. Water treatment location restricts access around chairs and would be more appropriate in the storeroom, although this would increase cost due to longer plumbing lines. Floor wastes would also be beneficial. Water lines are exposed which makes access for repairs and maintenance easy.
9. No laundry with washing machine to wash patient clothes or cleaners sink for filling of a mop bucket and disposal of blood, which are essential daily functions
10. Water tanks are external and require in-line chiller to maintain the water temperature below 37 degrees.
11. Lockable bin storage at entrance is well located due to high volumes of daily medial and general waste, but makes collection difficult due to the ramp so bins are often left at front of building.



**This page:** Mt Liebig Floor Plan illustrating travel paths, sight lines and walk-through summary points.



# 4.5 Recent N.T Government Commission

## Case Study

### Papunya Dialysis Centre

Papunya, NT.

Design: Bennett Architecture, Darwin.  
Construction: Bullant Building, Alice Springs.  
Population: 300.  
Required Nursing Staff: 2.  
Patient capacity: 16 (4 chair).  
Opened: 2017.

**Papunya Dialysis Centre** is a recent example of a 4 chair clinic, designed by Bennett Architecture at the same time as the Mt Liebig Dialysis Centre and similarly opened in 2017. This clinic has the same 16 patient capacity as the previous Purple House commissioned case studies and is of an equivalent size to the Tanami clinic. It was been designed for on-site construction, rather than as a prefabricated design, with a squarer configuration in comparison to all the previous case studies. The squarer configuration means patients are orientated opposite each other, rather than seated side by side like all the previous case studies. This alternative orientation was preferred by interviewed nursing staff due to the minimised travel distances between patients and the clear site lines from the nursing station.

Like the two previous N.T Government commissioned case studies, this clinic was designed without consultation with Purple House, which would have been beneficial to both the staff and patients of this clinic. Fortunately, the overall size of the clinic and good internal planning makes the building quite conducive to adaptations for current operational needs, however a cleaners sink/laundry facilities and increased space to set up an adequate nursing station could have potentially been incorporated

at minimal additional cost.

Docker River Dialysis Centre, which is another clinic operated by Purple House, is identical to this clinic and similarly designed by Bennett Architecture and completed at the same time in 2017.



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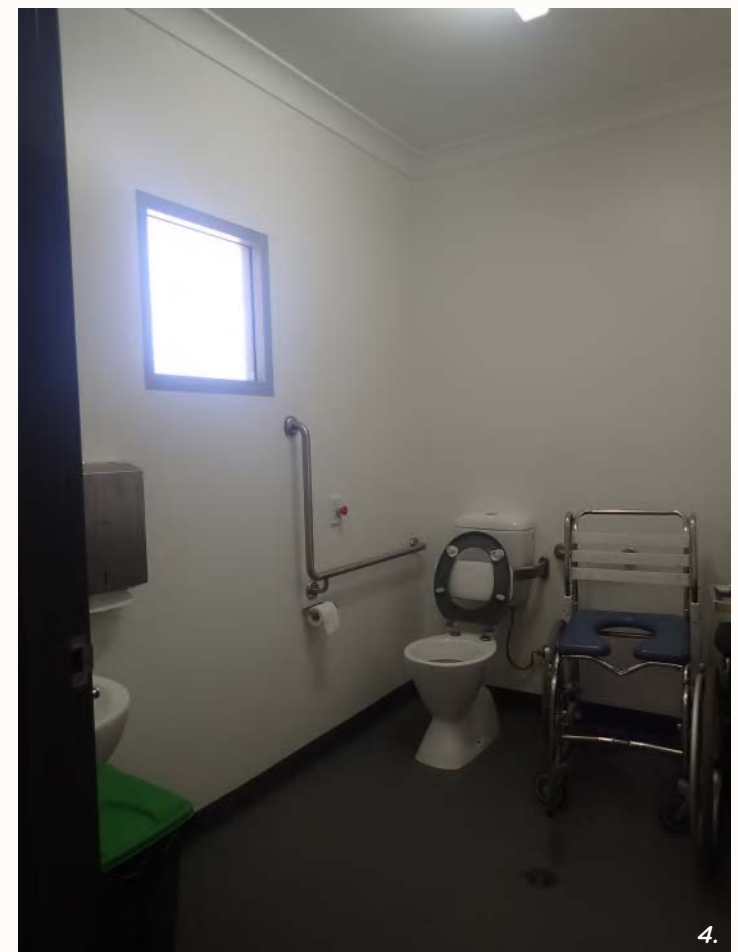
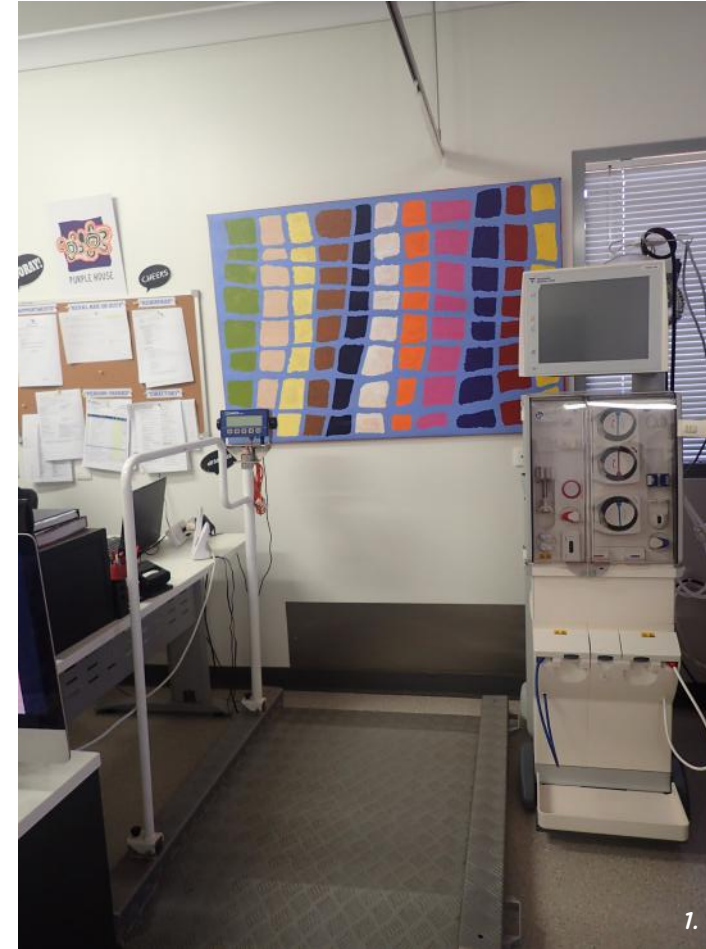
2.



3.

**This page:** 1. Street view with Primary Health Care Clinic shown in background. 2. Front view showing patient approach. 3. Rear view illustrating external A/C equipment & water tank.



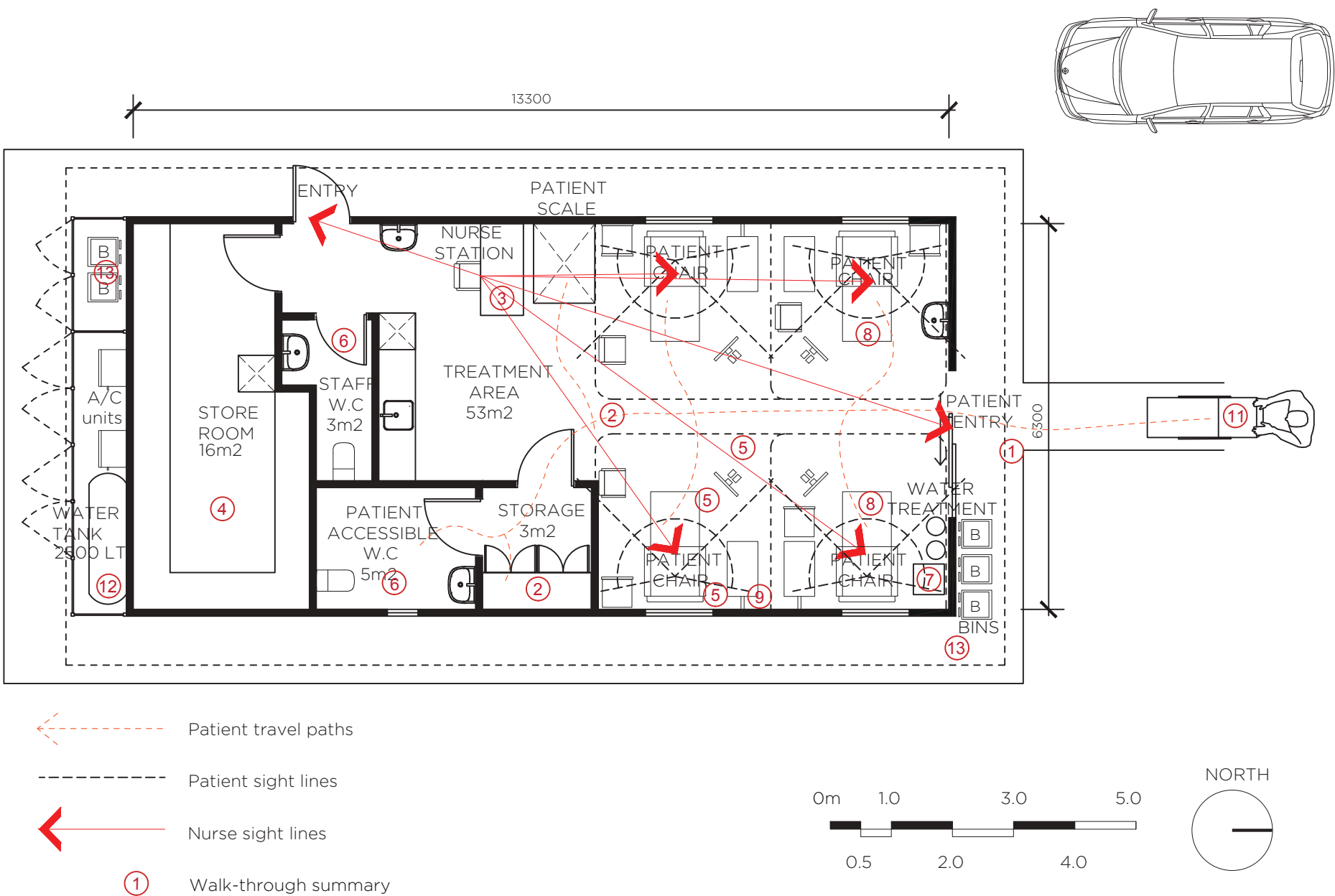


**This page:** 1. View from nursing station towards patients and entrance of clinic. 2. View towards nurse station & kitchenette. 3. Patient chairs with artwork above. **Opposite:** 1. Ambulant patient scales. 2. Storeroom. 3. Water treatment. 4. Patient bathroom.



Papunya Walk-through Summary

1. Patient entrance is via a sliding door which makes wheelchair access and movement of equipment over floor track difficult.
2. Patient flow paths from entry to bathroom, scales, storage and treatment chair works well, with the storage area outside the patient toilet provisioned well for the storage of patient belongings.
3. Nurse station is mostly orientated well towards patient treatment area and main entrance, however only 3 patients can be viewed adequately while seated. Secondary side entrance can also be viewed while seated by turning around.
4. Storeroom is an appropriate size and located close to the side entrance, minimising double handling of deliveries. Extra space allocated for bulky patient items such as wheelchairs etc would be beneficial, as these items are currently stored in the toilet.
5. Patients can view all patients and converse with adjacent patients. Individual T.V's and curtains facilitate privacy. Patient windows provide limited natural light due to placement directly behind patient chairs and blinds typically drawn during treatment for privacy.
6. Patient and staff have separate toilet facilities, which was appreciated by patients and nurses.
7. Water treatment location restricts access to adjacent chair and would be more appropriate in the storeroom, although this would increase cost due to longer plumbing lines. Floor waste would also be beneficial.
8. First 2 patient chairs are located close to main entrance which makes relaxation difficult.
9. Water lines are concealed within walls which is more aesthetically pleasing but difficult to access for repairs and maintenance.
10. No laundry with washing machine to wash patient clothes or cleaners sink for filling of a mop bucket and disposal of blood, which are essential daily functions.
11. Level pathway and width of sliding door is sufficient for patient transfer onto an ambulance stretcher, although movement of stretcher wheels may be difficult over floor track.
12. Water tanks are external and require in-line chiller to maintain the water temperature below 37 degrees.
13. Lockable bin storage at rear is not practical due to high volumes of daily medial and general waste, so bins are often left at front of building.



**This page:** Papunya Floor Plan illustrating travel paths, sight lines and walk-through summary points. **Note:** Docker River and Papunya Floor plans and building structures are identical, but built by different contractors. Docker River building was constructed by Pedersens N.T, Darwin.



## 5. Considerations & Recommendations

*“It would be incredibly sad if the next reason why people are forced off their country... will be because we can’t access enough water to dialyse people.”<sup>22</sup>*

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The purpose of this research was to gain an understanding of the pioneering Architecture of Necessity, which is providing a sustainable alternative to mainstream, haemodialysis service, that by default remove patients from their families and country. The modest buildings presented in the case studies are providing Dialysis on Country within some of the remotest communities of Australia, reconciling patients with their families and country. This is a final summary of some additional considerations and recommendations to further assist communities and/or design professionals looking to establishing **Dialysis on Country**.

### Preliminary Considerations

The most poignant recommendation is the importance to investigate water and power connections/upgrade requirements N.T Power and Water (or other equivalent authority if outside N.T), as this research has uncovered that not all communities are granted approval for supply. Already most remote communities in the arid region of the N.T are already “faced with some level of water stress,”<sup>23</sup> which could present a significant long-term challenge for dialysis patients who require “600 litres of clean, cold water,”<sup>24</sup> three times a week. Purple House recognises this is an issue and is urging medical equipment companies to start thinking of technology this is more robust, cheaper and uses less water<sup>25</sup>. In addition to water, increased power costs are also a serious threat to remote communities.

In addition to water and power requirements, this research highlighted several other preliminary considerations that are ideally undertaken, prior to commencing the design process. This is by no means an exhaustive list, but certainly all these points are worth consideration at an early feasibility stage.

- Establish where the clinic will be located and discuss potential lease arrangements with the current landowner or organisation.
- Make an application to the Central Land Council for a Sacred Site Clearance Certificate.
- Make investigation of essential service requirements, necessary approval processes and associated cost for water and electricity connection/upgrade for the site with NT Power and Water (or equivalent authority if in another state). Initial enquiries can be made via “An Expression of Interest.” Information for engineers and other design professionals is contained in The Indigenous Community Engineering Guidelines for Remote Communities publication.

23. Sarah Brown quoted in “Heatwave and Drought a Dangerous Mix for Dialysis Patients in Remote Communities” by Lorena Allam.

24. N.T Power and Water quoted in “Heatwave and Drought a Dangerous Mix for Dialysis Patients in Remote Communities” by Lorena Allam.

25. Lorena Allam, “Heatwave and Drought a Dangerous Mix for Dialysis Patients in Remote Communities.”

- In addition to the availability of power and water services for the site, the water quality is equally important to establish, to ensure the supplied water will be free from high levels of contaminants and suitable for pre-treatment and reverse osmosis haemodialysis processes.

- The disposal of the waste-water used for dialysis treatment within the site also be considered, due to the high volumes. In most instances this means large septic tanks since most remote communities don’t have sewer connections, so the septic location needs to be accessible and considerable in size. This point is often overlooked in the design process and similarly not factored into the running costs.

- Confirm licensing standards and requirements to obtain a license to operate a private health care facility. Note that at the time of preparing this report there are no licensing standards or requirements to obtain a licence to operate a private haemodialysis facility within N.T, however it is recommended that all future clinics adopt the relevant licensing standards and guidelines for other states to ensure a smooth transition once licensing becomes mandatory in N.T.

- Commence consultation with local Primary Health Care Service to gauge support for the establishment of a haemodialysis clinic and emergency backup provisions.

- Forecast potential patient numbers to establish approximate building requirements, considering the

increasing prevalence of kidney disease in remote communities. For this reason, it is recommended that clinics be designed large enough to accommodate 4 chairs, even if patient numbers initially reflect 2 chairs.

- Forecast potential nursing staffing numbers and accommodation options within community, to establish if additional building works will be required to house nursing staff within community. Nursing staff are required to dialyse patients 6 days a week in most clinics, so must be housed within community, so this cost must be considered as part of the feasibility process. All new housing/building works will require the same preliminary steps as outlined earlier for clinics, such as leases, sacred site clearance, N.T Power and Water etc.



**This page:** Photo courtesy of Purple House.

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### Design Recommendations

Upon satisfactory completion of the feasibility phase, the following points are worth considering during the design process. Again, this is by no means an exhaustive list and community consultation will probably reveal a few more items to be added onto this list.

- The Community Care HD clinics illustrated in this research may appear rather rudimentary, but they have a lot of programmatic patient and staff requirements that can easily be overlooked in the design process. Due to their remote location, nursing staff also carry out many roles other than nursing, such as being responsible for storage of medical and water treatment supplies, preparation of patient meals and washing of patient belongings. The following is an outline of key design requirements that should be considered:

- o Patients spend 5 hours/treatment x 3 times a week so permanent, individual lockers for storage of patient belongings such as blankets, tourniquets and valuables create a feeling of familiarity and 'home away from home.'
  - o Nursing station large enough to facilitate administrative and training purposes, with good sight lines to patient chairs and points of entry.
  - o Adequate kitchen facilities for the preparation of patient meals by nursing staff.
  - o A separate staff and patient toilet is preferable.
  - o Large storage room of min. 16m<sup>2</sup> to store 3 months of 'dry' and refrigerated medical supplies, with direct external access wide enough for 'pallet' deliveries.
  - o Provision for 2000 litre water tank. Be mindful to increase size of storage room if installing within store room.
- Byera Hadley Travelling Scholarships Journal Series*

- o Provision for water pre-treatment equipment approx. 1.2 x 0.6 metres.
- o Provision for wheelchair accessible weigh scales approx. 1x1.3 metres.
- o Provision for treatment chairs min. 3x3 metres/chair.
- o Floor wastes adjacent to dialysis machines and pre-treatment areas to prevent flooding of floors.
- o Storage space for oxygen bottles, sharps and medical waste.
- o Separate air conditioning systems for patient areas and storage rooms. Storeroom to be fitted with two split system A/C wall units to run continuously on alternative days, in case of breakdown.
- o Washing machine for washing of patient blankets etc.
- o Cleaners sink & mop/broom storage.
- o Lockable cages for external taps, bins and A/C equipment.

- Purple House currently operate several remote clinics that they were not given the opportunity for consultation during the design process, or their feedback was largely ignored. This has resulted in some fundamental design issues that could have been easily addressed during the design process, rather than resulting in poor outcomes for patients and staff alike. As a key stakeholder and the most experienced provider of remote Community Care HD clinics in Australia, it is recommended that they be consulted for a good design outcome.

- Methods of construction vary considerably between on-site and pre-fabrication, but both methods are generally costed as part of tender process. This can result in additional time and expenditure for engineering and

re-design, particularly when a building has been designed for on-site construction but ends up prefabricated. It is therefore recommended that potential pre-fabrication tenderers be identified early in the design process and be consulted with, so that buildings can be configured accordingly to transportable sizes.

- The temperature of stored water for community dialysis treatments is increasingly becoming an issue in remote Central Australia, since machines will not operate above 37 degrees. Community water is stored in large, exposed holding tanks and circulated via uninsulated pipes, meaning that by the time the water reaches the clinic storage tank it would exceed 37 degrees. All of the Purple House clinics have inline chillers, but these are costly to install and run, in addition to potentially overloading the power system. Alternatives are currently being researched by Purple House, such as the 0.8mm corrugated stainless steel 2000 litre tanks installed within the storeroom at Pukatja and Utopia.

- Clinics must conform to AS1428.1 Design for Access and Mobility, with accessible door openings. Buildings should be designed low to the ground if possible, to minimise ramp heights and distances. Generous doorways, landings and ramps to accommodate a stretcher in the event of an emergency should also be considered. Post occupancy evaluations found that both Hermannsberg and Mt Liebig clinics had accessibility issues.

- Clinics should be designed to be culturally sensitive and with community consultation, rather than a 'one size fits all' approach.



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- Artwork features heavily in the Purple House story, "great art is, and has always been, central to what we do."<sup>27</sup> Provision should be made in the design for buildings to incorporate artwork from community members. In larger clinics that service more than one community, inclusion of surrounding community artwork is particularly important, so visiting patients all feel connected and included.

**This page:** Young Purple House visitor. **Opposite:** Patient receiving treatment at Papunya Dialysis Centre. Images courtesy of Purple House.



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