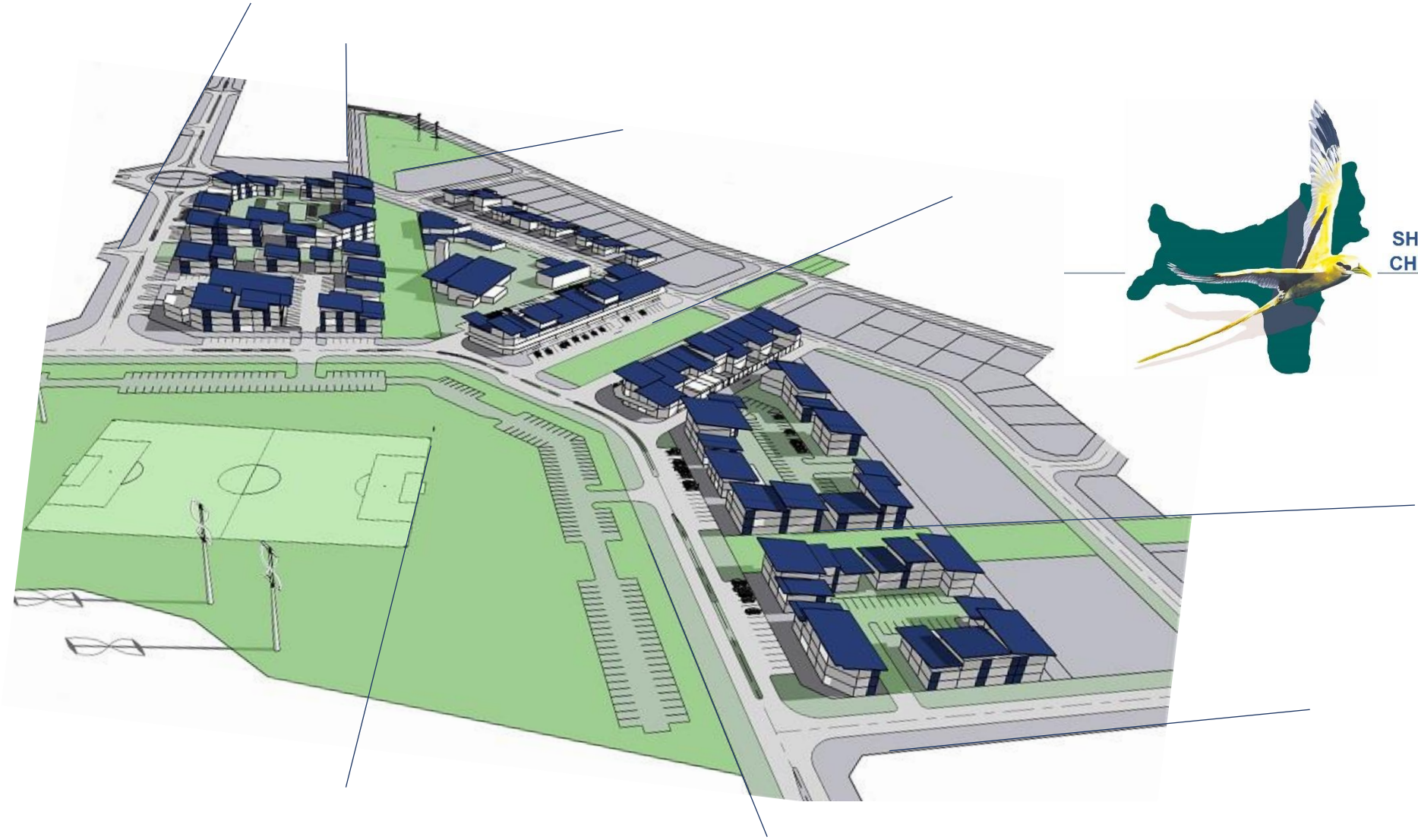
# PHOSPHATE HILL DRAFT STRUCTURE PLAN

February 2026



SHIRE OF
CHRISTMAS ISLAND

Approval Page

To be inserted by the WAPC upon approval

| Table of Amendments | | |
|---|---|---|
| | | |
| Amendment No. | Summary | Date approved by the WAPC |
| **1** | | |
| **2** | | |
| **3** | | |
| **4** | | |
| NOTE: The previous and current versions of the Structure Plan are available on the Western Australian Planning Commission (WAPC) and Shire of Christmas Island websites. | | |

# EXECUTIVE SUMMARY

The Phosphate Hill Structure Plan (the Structure Plan) has been prepared on behalf of the Shire of Christmas Island (SOCI) under the Australian Government's Housing Support Program (HSP). The HSP is designed to help achieve the *National Housing Accord's* target of building 1.2 million new, well-located homes over 5 years from 1 July 2024.

The HSP Stream 1 supports the delivery of increased housing supply by focusing on projects, such as this Structure Plan, that improve building planning capability for areas targeting future housing projects.

Phosphate Hill is the most appropriate area to provide long term expansion of the urban area on Christmas Island. The topography is not as severe as other areas, it is close to existing urban areas on the Island, it can capture existing services in close proximity and has significant community facilities already in place. Phosphate Hill provides significant area of developable land to cater for the long-term growth of the Island.

The need to formulate a Structure Plan at Phosphate Hill is a pre-requisite to future development under the Local Planning Scheme No.2 (LPS No. 2). The SOCI current Local Planning Strategy (LPS) endorsed by the Western Australian Planning Commission (WAPC) in May 2015 specifically advocates to "*Plan for a total population of 5000 permanent people as per the community-endorsed 2018 Plan."* The aim of the LPS at the time and pertinent ten years later, is "*that the relevant economic drivers for Christmas Island include population growth, local food production, tourism opportunities, construction material supply, future economic activities, private investment, accommodation supply and home business/mixed use."*

Like many isolated small communities, Christmas Island is experiencing the challenging correlation between population levels, job opportunities and housing capacity. The permanent resident population, at its highest at the 2011 Census with 2,072, came down to 1,692 at the 2021 Census and was estimated at 1250 at the end of 2024. The SOCI considers that a renewed economic output, supported by improved air accessibility and driven by the Departement of Planning Land and Heritage (DPLH) Crown land Enquiry Form (CLEF) process and the Department of Finance Commonwealth Property Disposal Policy (CPDP) is an important method to ultimately attract investment in new economic drivers (mainly targeting Singapore) such as urban food export, higher education, research and tourism. Such economic approach continues to coincide with community expectations.

A whole of island *Christmas Island Strategic Assessment (CISA* was active between 2019 and 2023 and designed as a land use planning tool for the streamlining of environmental approvals under the *Environmental Protection and Biodiversity Conservation Act 1999*. The life of the assessment was set at 30 years. From the outset the SOCI sought to ensure the CISA land use plan was to coincide with future land use planning associated with the review of the Shire LPS and capable of accommodating a permanent population of 5000 residents in order to maintain a sustainable economic output on the Island post-mining and be aligned with the population target of the SOCI 2015 LPS in force.

The CISA was paused in June 2023 by the Australian Government due to significant ongoing policy and law reforms however the Phosphate Hill Structure Plan has taken into account all environmental, planning and land use aspects envisaged for the precinct during the 2019 to 2023 CISA activities.

This Structure Plan will play a major role in ensuring the resilience of the Flying Fish Cove community residing at the Kampong. In 2010 the Attorney-General's Department commissioned the *Indian Ocean Territory Climate Change Risk Assessment* that identified the following risks and vulnerabilities for the Kampong at Flying Fish Cove:

- Sea level rise expected to exacerbate inundation, storm and tidal surge, erosion and other coastal hazards potentially threatening

Flying Cove jetty, wharf and boat ramp as well as the Kampong see wall and buildings beyond and

- Increase intensity in cyclonic rain inducing land slide and associate rock fall around Flying Fish Cove with potential impact to the structural integrity of buildings and amenities.

The need to address the vulnerability of the Kampong community is echoed in the SOCI's 2015 LPS that specifically advocates: *"Develop a long-term residential transition plan (20-30 years) for the Kampong towards safer existing and new urban areas".*

Published by the Australian Institute for Disaster Resilience and the Commonwealth Department of Home Affairs, the *2020 Land Use Planning for Disaster Resilient Communities* Handbook provides guidance on national principles and practices relevant to communities at risk and the role land use planning can play. Following the handbook guidance to achieve disaster resilience, the SOCI has facilitated workshops with the Kampong community to explore relocation options and opportunities in 2020 and 2021 whilst pursuing its review of its LPS.

As part of the HSP-Stream 1 program, the SOCI has facilitated workshops on the 7 and 14 November 2024 to further gauge the community's sentiments and expectations. This highlighted the need to consider at Phosphate Hill medium density apartments, low density residential homes for families with children, housing for ageing persons, local commercial outlets, community amenities, public open spaces and place of worship.

As of November 2024, the Kampong population was 427 of which 147 were children. This indicates that the orderly relocation of the Kampong residents could require land to accommodate up to 170 dwellings on single lots or apartment format. The Phosphate Hill Structure Plan, will allow the SOCI to prosecute its commitment to identify, reserve, protect and ultimately supply land assets and oversee the construction of affordable housing to ensure the long-term resilience of the Kampong community.

The Structure Plan covers an area of 139.03Ha of which 47.61% is a dedicated natural area forming a permanent Environmental Conservation corridor providing a green buffer with the Drumsite settlement to the west whilst maintaining a continuous ecological linkage between the southern and northern areas of the island National Park. This environmental impact mitigation approach is supplemented by the additional allocation of 14.3Ha of Public Open Space accommodating sports fields, neighbourhood parks and urban landscaped corridors with dedicated dual-use pathways, drainage infrastructure and enhanced ecological features.

The Structure Plan is designed to become the Island's long term "Central Business District" with the provision of up to 10,500m$^2$ of commercial floor space, some 900 homes over the next 30 years, 2.63Ha dedicated to education and vocational training. New sport and recreation facilities are also identified to cater for the entire island population.



The Structure Plan capacity is expected to meet the social and affordable housing immediate demand and in the longer term attract new businesses and investments to the Island in order to pivot the Island economy post mining. It offers direct short term vehicular and pedestrian connection to the CI District High School and long-term connectivity to the Hospital to the north and the eastern beaches vial Lily Beach Road to the east.

The Plan also provides the SOCI with the opportunity to implement a near zero carbon emission policy for the built form expected to take advantage of the natural breezes prevalent in this part of the Island, maximise the capture solar energy on roofs and well exposed walls and set aside land assets for the establishment of medium scale vertical axis wind turbines as well as community batteries.

| Phosphate Hill Structure Plan Executive Summary Table | | | | |
|---|---|---|---|---|
| Total area covered by the Structure Plan | **139.1** Hectares | | | |
| | | | | |
| Area of each proposed land use | | | | Area % |
| Residential | Hectares | Lot Yield | Dwellings | |
| Residential R17.5 (Average lot size 850m$^2$) | 11.27 | 135 | 135 | 8.11 |
| Residential R40 | 7.19 | 13 | 280 | 5.17 |
| Residential R60 | 5.67 | 7 | 361 | 4.08 |
| Total estimated residential lot yield | | 155 | | |
| | | | | |
| Mixed Use | 5.1 | 9 | | 3.67 |
| Parking/Landscaping 45% | 2.30 | | | |
| Commercial 30% (Estimated floor space) | 1.53 | gross lettable | | |
| Residential 25% | 1.28 | | | |
| Dwellings @ R80 | | | 123 | |
| | | | | |
| Total residential | 25.41 | | | 18.27 |
| Total estimated number of dwellings | | | 899 | |
| Estimated dwelling density | 35 | per hectare | | |
| Estimated population (@ 2.5 p/household) | | | 2248 | |
| | | | | |
| Public Purposes - Education | 2.63 | 3 | | 1.89 |
| Public Purposes - Infrastructure Services | 3.65 | 3 | | 2.62 |
| Public Purposes - Recreation | 1.27 | 2 | | 0.91 |
| Civic and Community | 0.81 | 1 | | 0.58 |
| | | | | |
| District Open Space (Sports Fields) | 9.35 | 1 | | 6.73 |
| Neighbourhood Parks | 1.71 | 4 | | 1.23 |
| Landscaped Corridors (ecology and drainage) | 3.24 | 18 | | 2.33 |
| | | | | |
| Environmental Conservation (natural area) | 66.8 | | | 48.02 |
| Road Reserves | 20.41 | | | 14.67 |

| Housing Support Program (HSP) Team | |
|---|---|
| This Structure Plan has been prepared with the collaborative technical input from the following entities: | |
| Project Supervision and community engagement | Shire of Christmas Island |
| Affordable housing needs | Christmas Island Women's Association |
| Project Coordination and Town Planning | Calmy Planning & Design |
| Geographic Information System | Jeffrey Planning & Mapping |
| Civil Engineering and Essential Services | David Wills & Associates |
| Electrical Engineering | APD Global |
| Geophysical Survey | MNG SubSpatial |
| Environmental Assessment and Approvals | JBS&G |
| Clean Energy Input - Stage 1A | Unlimited Energy |
| Neighbourhood Wind Power Generation – Stage 1A | VAWT-X and Flinders University |
| **Disclaimer** | |
| This document follows the prescribed format of the ***WA Panning Manual Guidance for Structure Plans August 2023***<br>It has been produced by the Housing Support Program Team on behalf of the Shire of Christmas Island. Any representation, statement, opinion or advice expressed or implied in this publication is made in good faith and on the basis that the Housing Support Program Team employees and agents are not liable for any damage or loss whatsoever which may occur as a result of action taken or not taken, as the case may be, in respect of any representation, statement, opinion or advice referred to herein. Professional advice should be obtained before applying the information contained in this document to particular circumstances. | |

## ACRONYM

| | |
|---|---|
| CHP | Community Housing Provider |
| CIDHS | Christmas Island District High School |
| CI | Christmas Island |
| CIP | Christmas Island Phosphates |
| CISA | Christmas Island Strategic Assessment |
| CIWA | Christmas Island Women's Association CIWA |
| CLEF | Crown Land Enquiry Form |
| CPDP | Commonwealth Property Disposal Policy |
| DFES | Department of Fire and Emergency Services |
| DITRDCSA | Department of Infrastructure, Transport, Regional Development, Communication, Sport and the Arts |
| DOS | District Open Space |
| DPLH | Department of Planning Land and Heritage |
| DWA | David Wills & Associates |
| DWER | Department of Water and Environmental Regulation |
| EAR | Environmental Assessment Report |
| HAFF | Housing Australia Future Fund |
| HSP | Housing Support Program |
| IDC | Immigration Detention Centre |
| IOT | Indian Ocean Territories |
| LPS | Local Planning Strategy 2015 (active and under review) |
| LPS No. 2 | Local Planning Scheme No. 2 (active) |
| POS | Public Open Space |
| PRL | Phosphate Resources Limited |
| R-Codes | Residential Design Codes of Western Australia |
| SOCI | Shire of Christmas Island |
| VAWT | Vertical Axis Wind Turbines |
| WAPC | West Australian Planning Commission |

# CONTENTS

## CONTENT (cont.)

## FIGURES



## TECHNICAL APPENDICES 71

# PART ONE - Implementation

## 1.STRUCTURE PLAN AREA AND OPERATION

The Structure Plan (the Plan) applies to the area depicted at **figure 1 p.35**.

The Plan is in effect from the date stated on the approval page (a date decision letter will be distributed to the SOCI) and for a period of 10 years or for any other period approved by the WAPC. The instruments that will inform the implementation of the Structure Plan will be the reviewed 2015 Local Planning Strategy (LPS) and ultimately a new Local Planning Scheme (LPS No.3).

## 2. PURPOSE

The Phosphate Hill Structure Plan aligns with the core objective the Australian Government's Housing Support Program (HSP) designed to help achieve the National Housing Accord aspirational target of building 1.2 million new, well-located homes over the next five years.

One of the immediate actions of the Accord is to improve zoning, planning and land release and identify whether suitable Commonwealth land can assist as part of the contribution to delivering social and affordable housing. The HSP is designed to accelerate the delivery of increased housing supply by funding the SOCI to advance planning and environmental approvals associated with the objectives of this Structure Plan and increase housing affordability on the island.

The key objectives of the Structure Plan are to:

a) assist the DITRDCSA in exploring options for disposal of Crown Land;
b) increase social and affordable housing offerings on the island in line with identified needs spanning more than a decade;
c) provide choices to develop dwellings on single lots or grouped format;
d) facilitate the orderly growth of the permanent resident population to 5000 over the next 30 years;
e) provide an integrated transition solution to support the resilience and, in time, the relocation of the Kampong residents at risk from the effects of climate change at Flying Fish Cove;
f) introduce new community facilities for all islanders alongside the existing oval and the recreation centre;
g) create a direct road and pedestrian connection between the oval/recreation centre area and the CI District High School;
h) maintain a continuous ecological linkage between the southern and northern areas of the island National Park
i) introduce mixed uses allowing Phosphate Hill to become the prime area for new retail and commercial businesses and
j) ultimately assist the island economic transition from mining and immigration to tourism, higher education, research and agri-businesses operating on exhausted mining areas focusing on niche products for export.

# 3. STAGING

## 3.1 Introduction and funding mechanisms

The implementation of the Structure Plan is intended to be prosecuted in 7 stages as depicted at **figure 2 p.14**. The release of Crown Land is subject to agreement by the Minister for territories and the Minister for Finance. Subsequently it may become possible for the SOCI to subdivide land in accordance with the Structure Plan and the stages defined in this section.

Consistent with the objective of the HSP Stream 1, stage 1A and stage 1B will be subject to a Form 1A application to the WAPC for approval of freehold subdivision (refer to preliminary subdivision layout in **Appendix 1**). A concurrent application for a permit to clear native vegetation under Part V of the *Environmental Protection Act 1986* (CI) will be submitted to the Department of Water and Environmental Regulation (DWER).

This early subdivision and land clearing process is the essential tool for the timely identification and creation of developable lots required to construct housing projects. The construction of roads and services for these early projects will be dependent on the *2022 National Housing Accord* collaborative and innovative financing arrangements available to the SOCI through the National Housing Infrastructure Facility (NHIF) and other avenues. As the primary land owner, the SOCI will have responsibility for the orderly programming and coordination to establish roads and install essential services and will cover infrastructure costs and maintenance from rates and the proceeds of land sales of the new housing area.

The Housing Australia Future Fund (HAFF) for its part, will seek to assist superannuation and institutional capital investment in social and affordable housing, alongside established state and territory programs. The SOCI will continue to explore models for funding and construction of social housing. This may include the availability of Government grants. Land allocation will be made for affordable housing where the SOCI may be eligible as funding recipient of the NHIF facility for the construction of roads and services whilst affordable housing providers could be eligible as funding recipients of the HAFF.

## 3.2 Short term (2 to 3 years)

**Stage 1A** is intended to be the first area subject to development in order to expedite the early release of social and affordable housing. The area, with gentle slope, offers the best option to develop new housing and mixed-use projects in relatively close proximity to Vagabond Road and existing community assets such as the recreation centre, the swimming pool and the oval. This stage can be serviced by the existing sewer main flowing northward along Hawkes Road and be supplied with an upgraded water storage that can be co-located with the existing water tower adjacent to the recreation centre (refer to engineering report at **Appendix 3**).

**Stage 1A** is also proposed to “set the tone” as a medium density residential/mixed use precinct subject to the requirements of the *State Planning Policy 7.2 Precinct Design Guidelines* whilst addressing the design elements associated with urban ecology, urban structure, public realm, movement, land use and built form. Finally, this stage provides the necessary framework to introduce for the first time on the island the capture, storage and distribution of renewable solar and wind energy at a neighbourhood scale.

**Stage 1B** will supplement **Stage 1A** to create the central spine of the Structure Plan with the completion of the East-west Avenue ultimately linking the Christmas Island District High School (CIDHS) with the recreation centre/oval area. This stage provides the primary vehicular connectivity for the orderly development of all other stages of the Structure Plan. It allows for the installation of a secondary sewer main running westward and across Murray Road thus joining with the exiting network flowing directly to the treatment plant at Smith Point and facilitate the extension of the power grid from the recreation centre area directly to the power station along Murray Road. The focus of Stage 1B is to mainly provide 32 residential lots at R17.5 and averaging 870m$^2$ together with some 6000m$^2$ of residential at R40.

The School to Oval neighborhood road or East West Avenue, as depicted at **Figure 2 p.14**, is an essential component of the Phosphate Hill Structure Plan vehicular network for the following reasons:

a) Compliance with the urban design principles of the WAPC State Planning Policy 7.0 where new developments are expected to contribute to a fine-grain network of direct and connected routes within and beyond urbanised areas, avoid creating large non-permeable blocks and create clear and efficient wayfinding between neighborhood;
b) Facilitate time saving and effective deployment of emergency responses to and from the new areas earmarked for residential, commercial and active recreation development;
c) Significant reduction of travel distances for multiple daily vehicle movements with abatement of carbon emission in the near term and social sustainability overall:
d) Provision of a safe and walkable route for the school staff and children allowing a 15mn walk from the school to the oval, swimming pool and recreation centre instead of relying on the current 4Km bus shuttle route and
*e)* Adherence to the long-term vehicular movement network depicted in the *SOCI Local Planning Strategy* endorsed by the WAPC in May 2015 and consequently approved by the Federal Minister responsible for the Indian Ocean Territories thus resulting in the gazettal of the *SOCI Local Planning Scheme No.2* on the 17 February 2016.

## 3.3 Medium term (4 to 9 years)

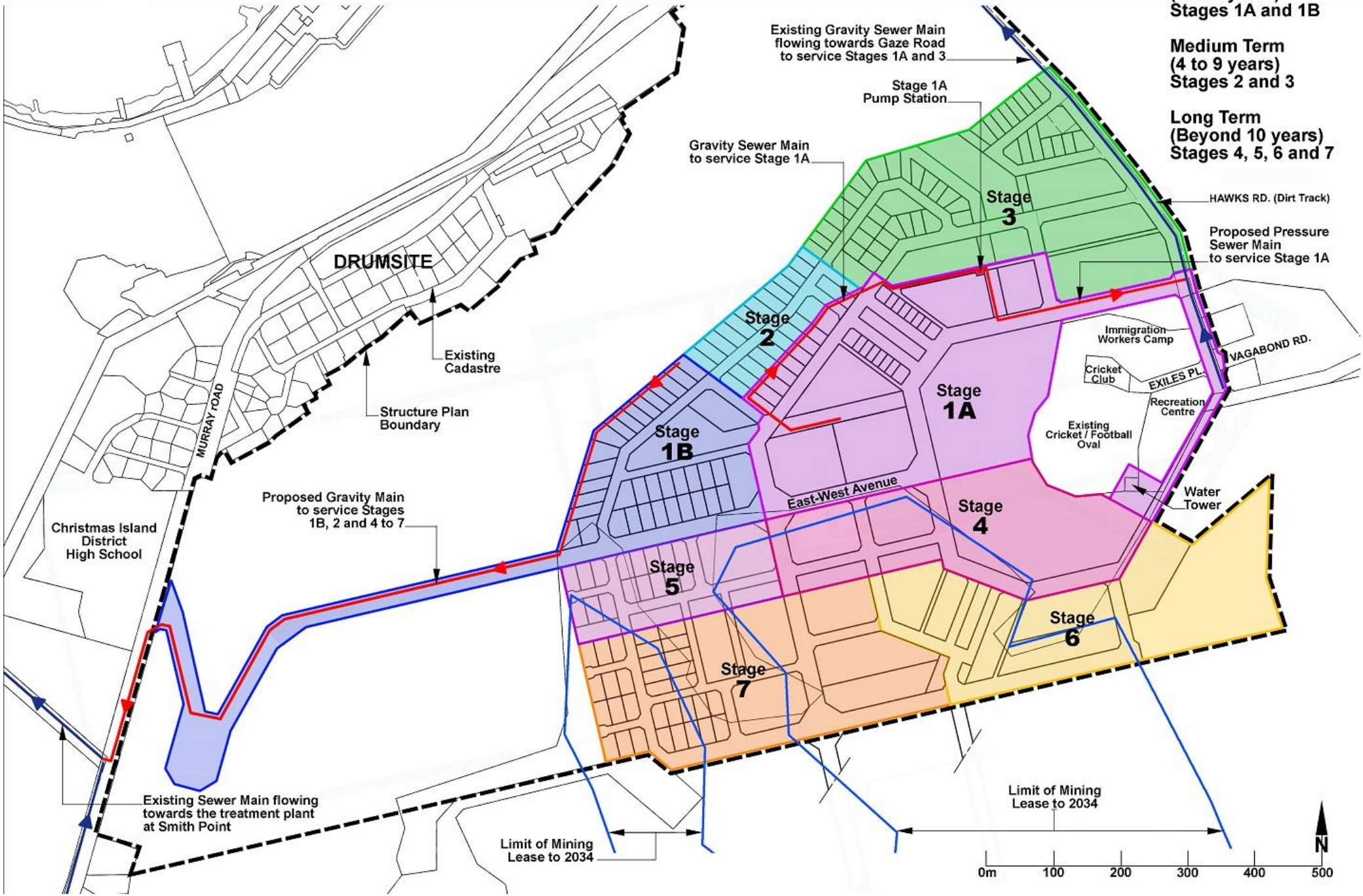
The focus of **Stage 2** is to continue the rollout of residential lots that will further support the retail and commercial investments made at **Stage 1A** and connect to the gravity sewer main constructed at **Stage 1B.**

**Stage 3** is also focused on the delivery of residential development with a combination of R17.5 and R40 lots and one R60 lot in the south east corner. All lots will be serviced by the Hawkes Road gravity sewer main.

## 3.4 Long term (Beyond 10 Years)

**Stages 4 to 7** are all affected in part by the existing mining lease until its expiry in 2034. At this point, the early release of land in that area is not considered feasible prior to 2034.

# Figure 2 Staging Plan & Indicative Timeline



# 4. SUBDIVISION AND DEVELOPMENT REQUIREMENTS

## 4.1 Land use zones and reserves

The designated proposed zones/precincts and reserves are depicted in the Structure Plan map at **figure 1 p.35.**

### 4.1.1 Zones

#### Zoning

The zones shown on the Structure Plan map are consistent with all aspects of the Local Planning Scheme No. 2.

The aims of the LPS No. 2 zones are to:

- appropriately plan for the Island's diverse cultural, topographic and climatic characteristics;
- provide for future urban expansion in appropriate areas;
- enhance and diversify the Island's economic base through the provision of land for a range of economic activities;
- recognise and enhance the Island's unique heritage, both built and cultural;
- provide appropriate controls to protect development from the effects of extreme weather events; and
- preserve the Island's unique natural attributes and environmental values.

#### Stage 1A precinct

The Stage 1A precinct, being the first area to be developed within the green field Structure Plan, is to act as a pilot project from an environmental, cultural, socio-economic and overall land use perspective. With this in mind the objectives of the precinct are consistent with the *State Planning Policy 7.2* and are intended to:

- protect, enhance and respond to the ecological systems where applicable;
- acknowledge and respond to the sense of place and culture of the long-time residents of the island;
- reduce the environmental and climate change impacts of the development;
- ensure the pattern of blocks, streets, buildings and open space respond and contribute to a legible and distinct character;
- promote an urban structure that supports accessibility and connectivity within and outside the precinct;
- ensure the urban structure supports the built form, public realm and residential, commercial, community and recreation activities intended for the precinct;
- ensure the public realm is designed to promote community health and wellbeing;
- enable local character and identity to be expressed in the public realm design to enhance sense of place;
- ensure that the key environmental attributes are protected and enhanced within the public realm;
- ensure the public realm is designed to be inclusive, safe and accessible for different users of all ages and abilities;
- ensure the road network and public realm pedestrian network supports the functions and ongoing development of the precinct;
- ensure the quantity, location, management and design of parking supports the objectives of the precinct;
- ensure the planned land uses respond to the needs and expectations of the community;
- ensure that the built form is responsive to the purpose and contextual characteristics of the island;
- guide the building placement, scale and massing to enhance the streetscape; and

- ensure the built form design reduces energy demand by facilitating climate responsive design.

These objectives have been encapsulated in the design of the Stage 1A masterplan at **figure 14 p.68**.

### 4.1.2 Road reserves

The Reserves shown on the Structure Plan map are consistent with those found in the LPS No. 2 map and are depicted in detail at **figure 3 p.18**. The Road Reserves represents 20.77Ha or 14.94% of the total Structure Plan area.

The hierarchy of these Reserves which, for the purpose of definition only have relative correspondence with Main Roads WA Road types are solely used as a point of reference since the mainland traffic criteria cannot reflect the island circumstances where there is no possible interference or impact of regional external traffic on local vehicular movements. In this context, the proposed road types and associate Reserves are as follows:

#### District Distributor B – Reserve width 25m

This Reserve is illustrated in the form of future road connections in the constraint and opportunities map at **figure 9 p.49** and is shown as a neighbourhood connector on the Structure Plan Map at **figure 1 p.35**. In the long term, this proposed road system is intended to provide the highest connectivity between the Structure Plan and all other parts of the Island to the west, north, east and south.

It is understood that District Distributor B usually run between land-use cells rather than through them because of constraints associated high traffic volumes. In this instance, where Phosphate Hill is destined to become the long-term CBD of the Island, all Mixed Use and R60 zones of the Structure Plan are serviced by the District Distributor. Therefore, the majority of the public parking function of the Structure Plan is provided within the Reserve or immediately accessible to it as illustrated on the Stage 1A precinct Masterplan at **figure 12 p.63**.

Throughout the urbanised area of the Structure Plan the District Distributor is provided with a 2m wide median strip that accommodates a central row of trees to emphasise its expected “boulevard” characteristics.

#### Local Distributor – Reserve width 20m

In the northern section of the Structure Plan the Reserve acts as a ring road to the District Distributor and provide access to the Civic and Community zone as well as the R60, R40 and R17.5 zones. Through traffic vehicular movements are expected but at a lesser rate than on the District Distributor. To emphasise the local character of the Reserve, street trees can be expected to be planted on both verges.

#### Access Road A – Reserve width 16m

The Reserve is mainly servicing low density R17.5 zoned lots at and some R40 zoned lots. The Access Road A network is not configured to attract through traffic. This reserve type is commonly found in the Silver City and Drumsite residential network. There is no immediate intention from the SOCI to plant trees on the verges of this Reserve type.

#### Access Road B – Reserve width 12m

This narrow Reserve is exclusively used to access R17.5 lots mainly facing neighbourhood parks or not exceeding 100m when access to R17.5 lots is provided on both sides.

### Laneways – Reserve width 6m

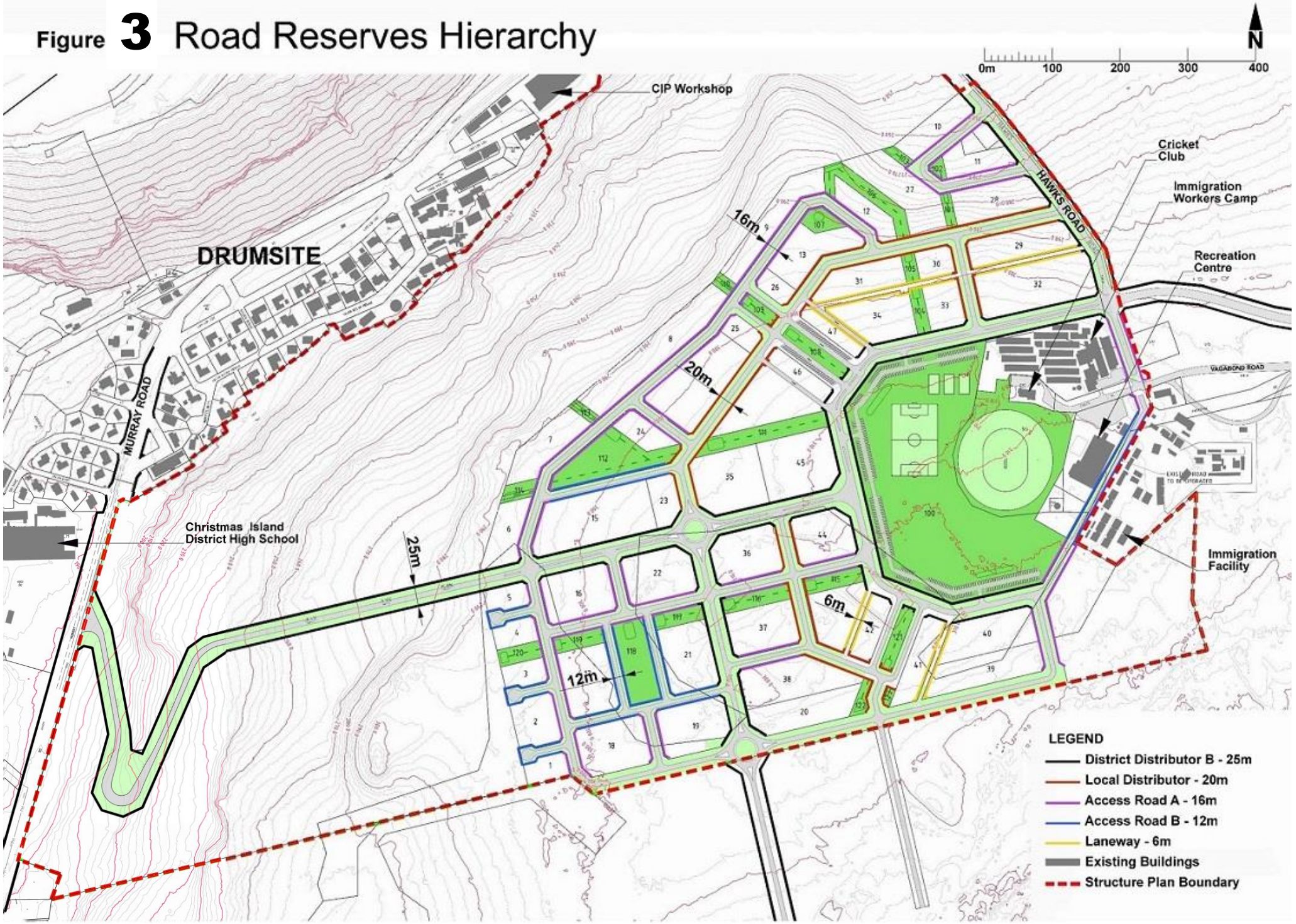
The Laneways Reserves are essentially providing service access to the back of the mixed use traditional shop houses and the R60 Public, Social and Affordable housing lots as depicted in the Stage 1A masterplan at **figure 12 p.63**.

Traffic on the fully sealed laneway Reserves is to be one way only. Right angle parking directly onto the laneway for visitors of the Civic and Community Reserve will be possible.

### Street Verge

The care and maintenance of all street verges is the responsibility of the SOCI. Verge landscaping, including natural lawns, verge gardens (ornamental or food producing) is the responsibility of the householder of the property adjacent to the verge. The SOCI encourages residents and businesses to take pride in their verges to enhance the aesthetic value of their properties and the streetscape as a whole. At the time of implementation, the SOCI will introduce a *Street Verge Landscaping Guidelines* document for every Reserve type to cover what will be restricted or permitted to private owners including dedicated visitor's and or longer-term street parking arrangements.

# Figure 3 Road Reserves Hierarchy



### 4.1.3 Public open space

The proposed POS extent, type and function is encapsulated in the Urban Ecology plan at **figure 4 at p.20**. The POS as shown on the Structure Plan map is further divided in 3 discreet types as follows:

#### District Open Space

The District Open Space represents 9.35Ha or 6.73% of the total Structure Plan area. It has an active recreation purpose that accommodates the existing oval and future sports fields. It is proposed on flat land in the immediate proximity of the recreation centre and outdoor swimming pool. The ultimate function of the District Open Space it to service the sports and recreation need not only of the new residential area of the Structure Plan but the entire island population.

#### Landscape Corridors

Landscape Corridors also referred as ecological connectors represents 3.24Ha or 2.33% of the total Structure Plan area. They are mainly dedicated to maintain the existing topography, retain major trees where feasible and provide surface drainage channels together with stormwater retention basins in appropriate locations (refer to the engineering report at **Appendix 3**). The corridors being 20m or 25m in width are generally running perpendicular to the contours and are all designed to tentatively create a continuous canopy linkage between the District Open Space and the Environmental Conservation natural area to the west and north of the proposed urbanised area. The Environmental Conservation area is 66.19Ha or 47.61% of the Structure Plan total area.

#### Neighbourhood Parks

Four Neighbourhood Parks representing 1.71Ha or 1.23% of the total Structure Plan area are to address the needs of the low-density residential areas generally situated further away from the District Open Space. They are strategically positioned adjacent or in very close proximity to the landscape corridors to maximise environmental and ecological synergies.

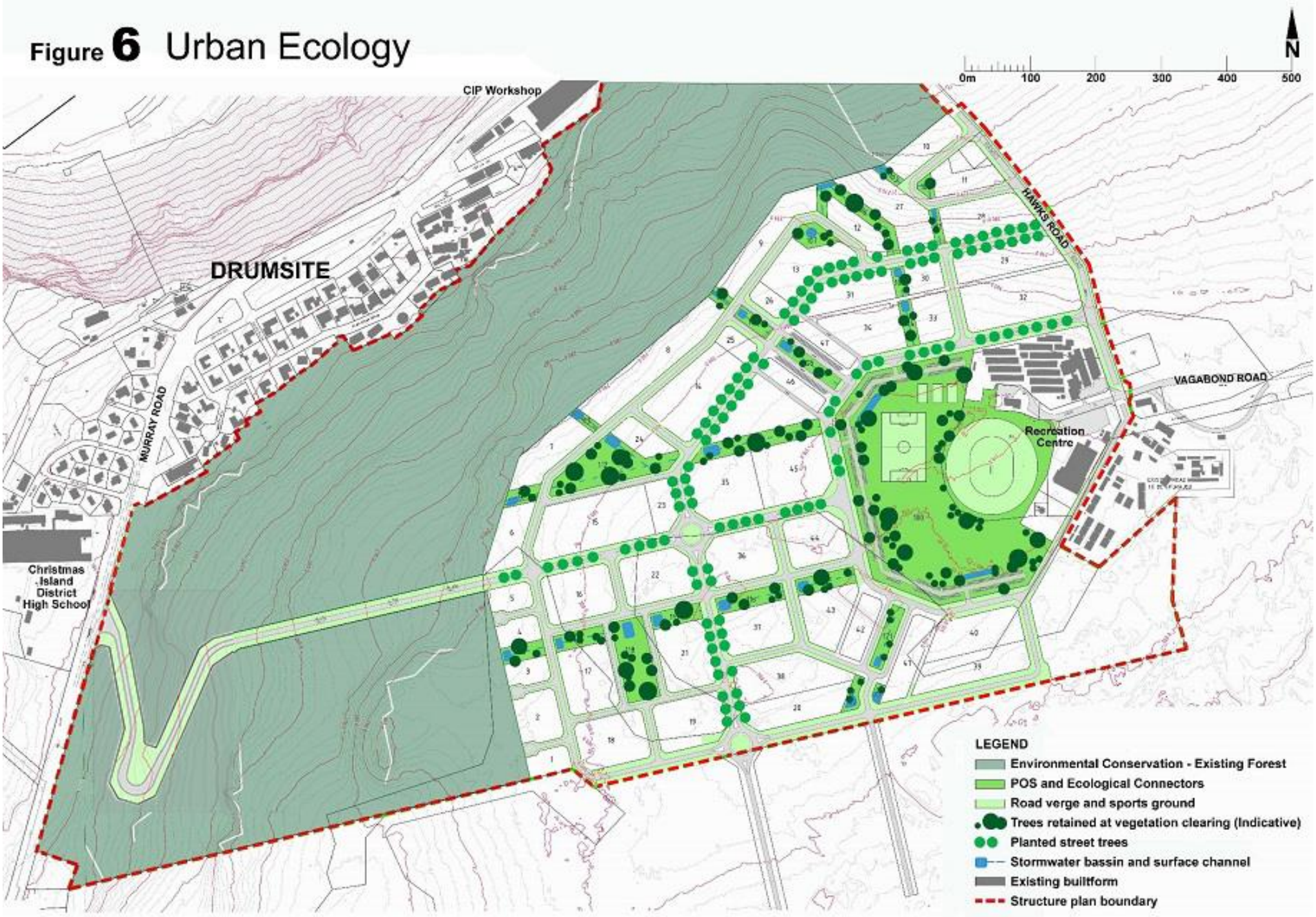
#### POS Ecology

The Phosphate Hill Structure Plan incorporates a network of green corridors which will act as Public Open Space and Ecological Connectors, with retained rainforest trees. In addition to this, supplementary tree plantings are planned for road verges. This will improve visual amenity, provide shade, reduce local ambient temperature and provide an ecological connection for forest birds and shelter for red crabs moving up and down hill during the migration. Red crabs require shade and humidity to breathe and survive on land. Without these, they quickly die when trying to cross open ground. The proposed design will provide shelter perpendicular to the topography and consistent with migration patterns.

#### Drainage

An average of 12% of the POS areas is expected to be used for stormwater drainage purposes (refer to the Civil Engineering and Services report at **Appendix 3**).

# Figure 6 Urban Ecology



### 4.1.4 Other reserves

#### Environmental conservation

The Structure Plan proposes the creation of an Environmental Conservation area representing 66.19Ha that will provide an ecological connection between currently disconnected areas of the Christmas Island National Park.

Three likely and two confirmed nest trees for the Abbott's booby (*Papasula abbotti*; Endangered under the EPBC Act) were recorded near the Structure Plan area during 2024 surveys (JBS&G 2025), with the closest being immediately adjacent to Murray Road and the proposed road and three being within 200m of the Structure Plan Area. The Abbott's Booby must land by flying into the wind, so it typically nests on the north-western sides of trees in areas of the island that provide shelter from the prevailing south-easterly winds. Habitat critical to the survival of Abbott's Booby is considered to be all forest vegetation within a 200m radius of such a tree and a further 100m buffer is recommended to reduce nest abandonment due to turbulence created by clearing. Christmas Island is the only known breeding location for Abbott's Booby.

The Christmas Island Giant Gecko (*Cyrtodactylus sadleiri*; Endangered under the EPBC Act) was observed during the 2024 fauna survey of the Stage 1A and 1B areas, and is conservatively estimated to have a population density of 31.7 geckos per hectare (standard error > 7.9, 95% confidence interval 21.2-53.7) in the Phosphate Hill area, which is also the part of the island were geckos occur at the highest densities. Later estimates based on vegetation type indicated that there were more geckos in regrowth vegetation but this may reflect a bias caused by spotting distance, with effective spotting distance being under 20m and primary rainforest extending up to 30 m higher than observers are capable of accurately identifying geckos. Thus, this estimate reflects the highest estimate of density made in the Phosphate Hill area. Habitat loss has been a significant threat to the Giant Gecko historically. The preservation of part of the Structure Plan area for Future Environmental Conservation will provide security for the Christmas Island Giant Gecko population.

An indicative trail through the rainforest is proposed to connect Stage 1A of the Phosphate Hill Structure Plan area to Drumsite (refer to **figure 9 p.49**). This will provide access to Tracks Tavern, the Baha'i Faith Temple and Taoist Sheng Wong Temple on Sung Miaw Low, and Kookai'z Cafe. Christmas Island's temples and shrines offer an insight into the spiritual traditions of both past and present residents, serving as distinctive and visually striking elements of the island's cultural heritage. The trail will be managed under the same principles as trails within the Christmas Island National Park, with clearing restricted to management of understory vegetation, and provision of international standard yellow triangular trail markers to prevent people from wandering off trail. Under the Christmas Island National Park Management Plan 2014-2024, walking track maintenance is categorised as an action considered likely to have no impact, or no more than a negligible impact on the park's environment and values. The trail will serve a dual purpose for walkers and people renting mountain bikes and e-bikes through the Christmas Island Tourism Centre.

#### Public Purpose – Education (High School)

The Christmas Island District High School (CIDHS) has a built-in capacity to accommodate 700 students from pre-primary to year 12. In 2023 the island resident population was estimated at around 1,250 with only 240 students attending the CIDHS. It had triple that number in the 1990's when the Christmas Island population was the highest in its modern history with the reopened phosphate mine and the casino resort in operations. There is no immediate pressure on the school infrastructure that could service a permanent resident population of approximately 3,000.

Consistent with the 5000 permanent resident population target in the next 30 years, the Structure Plan proposes the establishment of a 1.82Ha Public Purpose – Education Reserve in replacement of the temporary immigration workers camp located immediately north of the cricket club and oval. This would ultimately allow, at the appropriate time, the creation of an annexe to the CIDHS on that Reserve.

### Public Purpose – Education (Vocational Training / TAFE)

A significant proportion of existing exhausted mining areas located in the Rural Zone have been identified as viable assets to develop a niche food export industry to assist the pivot of the island economy in the short to medium term. Other emerging targeted economic drivers such as renewable energy, aquaculture, hospitality and eco-tourism could also require the on-island training of the island's upcoming young generation. In this context it is proposed to create a 0.8Ha reserve for such purpose to the immediate south-east of the oval.

### Public Purpose – Water Infrastructure

Two Water Reserves exist along the eastern boundary of the Structure Plan. A ground water tank located at the northern end along Hawks Road currently supplies potable water to Poon Saan, Taman Sweetland and Silver City. A water tower located along the south-eastern boundary of the oval supplies the airport, the recreation centre, the swimming pool, the Phosphate Hill immigration facilities and the oval itself. Water demand in the medium to long term is expected to increase with the Structure Plan proposed for Silver City and the Phosphate Hill Structure Plan itself. In both cases the current areas for these Reserves would be a limiting factor for infrastructure upgrade/expansion. The Structure Plan proposes to increase the Hawks Street Reserve from 0.10Ha to 0.19Ha and the oval Reserve from 0.04Ha to 0.33Ha to ensure the smooth implementation of the foreseeable water infrastructure upgrades in the future.

### Public Purpose – Sewer and Power Infrastructure

A small 0.18Ha Reserve is proposed on the south-west corner of the Structure Plan area to link Murray Road with the hairpin of the proposed neighbourhood connector. The Reserve will provide direct access from the urbanised area of the Structure Plan to the existing sewer infrastructure running between Murray Road and the island water treatment plant at Smith Point. The Same Reserve will provide a cost-effective arrangement to establish underground electrical cabling from the power station the urbanised area of the Structure Plan.

### Public Purpose – SOCI

Through the Structure Planning process, the SOCI seeks to be allocated land on the south-east corner of the Structure Plan immediately adjacent to the rubbish tip Reserve. This would allow part of the municipal landscaping and road verge vegetation maintenance outfit to be located there in the long term. The proximity to the tip site may facilitate the establishment of a green waste processing facility with direct access from the tip entrance. The size of this proposed Reserve is 3.11Ha.

## 4.2 Density and development

### 4.2.1 Density and R-Codes

The Structure Plan map at **figure 1 p.35** designates the proposed Zones and Reserves for the Structure Plan area.

The Structure Plan identifies a number of areas suitable for urban expansion, and future subdivision of these areas will be required to have consideration for the objectives and requirements of the R-Codes. The Structure Plan's guiding principles for density distribution and R-Codes location are associated with the intended role and function of the District Open Space (DOS), the ecological influence of the environmental conservation area and the significance of the neighbourhood connector between the DOS and the CIDHS.

With its sizeable flat area and its sports and active recreation focus the DOS is designed to attract whole of island civil and cultural events, festivals, sports carnivals and, with the adjacent recreation centre, could have a role to play at times of emergencies. At the Structure Plan level, the DOS is envisaged as the green heart of the future settlement and it is purposely formally defined at its periphery by the boulevard like 25m wide road Reserve.

The environmental conservation area is purposely linked to the DOS via the landscaped corridors that further emphasises the nucleus function of the DOS.
Finally, the east-west neighbourhood connector provides a clear demarcation between the northern section of the Structure Plan envisaged to be developed in the early years and the southern section partially encumbered by the active CIP mining lease until 2034 as illustrated in the staging plan at **figure 2 p.14**.

The contours in the northern section are more pronounced when approaching the environmental conservation area in particular in the north eastern area thus generating a more organic street structure whilst the southern section with a gentler topography offers the benefit of establishing a well-connected gridded street structure.

### 4.2.2 Locational criteria

An R-Codes plan is to be submitted at the time of subdivision for the entire Structure Plan area. The plan will allocate R-Codes for proposed street-blocks/lots (as the case requires). Once approved by the WAPC, the R-Codes plan forms part of the Structure Plan.



The general principle of density distribution throughout the Structure Plan locates the higher densities and intensive commercial areas as an inner ring around the DOS and progressively activity intensity and residential density are reduced concentrically outwards towards the environmental conservation area. The totality of the Mixed-Use cells is therefore situated adjacent to the DOS together with a couple of R60 lots. The remaining R60 lots form a second layer behind the Mixed-Use cells, a third layer encompasses the majority of the R40 lots whist all R17.5 lots are displayed in one or two layers along the environmental conservation area.

The SOCI's criteria for the allocation of R-17.5, R40 and R60 zoning within the greenfield Structure Plan are:

a) community aspiration and or dislike of various existing housing density and built form settings on the island;
b) apartment types and sizes expected in social and affordable housing;

c) the need to achieve housing affordability in apartment format for all age groups and single women in particular;
d) the impracticality of a built form higher than 3 storeys in terms of on-island construction costs and potential lift requirements; and
e) the expectation that higher R-Codes areas have visual as well as immediate physical connectivity to public open spaces.

Lots zoned R17.5 found at the Silver City residential area are most popular. They are larger than the regulatory 571m$^2$ and range from approximately 820m$^2$ to 1000m$^2$. The total R17.5 zoned area of the Structure Plan covers 11.27Ha divided in 135 lots thus generating an average lot size of 835m$^2$. This provides sufficient space to accommodate large family, the parking of boats, the establishment of fruit and vegetable gardens and the comfortable development of ancillary dwelling offering the opportunity to maintain family cultural cohesion with the seniors age group.

The total R40 zoned area of the Structure Plan covers 7.19Ha divided in 13 lots with an average lot size of 5531m$^2$ that could accommodate 22 dwellings. This R-Code is expected to provide a built form not exceeding two storeys in small clusters of apartments.

The total R60 zoned area of the Structure Plan covers 5.67Ha divided in 7 lots with an average lot size of 8100m$^2$ that could accommodate 22 dwellings.
This R-Code is expected to provide a built form not exceeding three storeys with modest size apartment blocks sufficiently separated from one another to increase vista choices and capture the natural cooling benefit of the trade winds prevalent on the Phosphate Hill plateau.

There is a presumption that the R40 and R60 lots will not be further subdivided in smaller parcels unless otherwise supported by the SOCI. The Stage 1A Masterplan at **figure 12 p.63** illustrates the anticipated built form distribution for these densities.
A finer grain preliminary concept subdivision layout for Stage 1A and Stage 1B is attached at **Appendix 1**.

### 4.2.3 Development provisions

The development provisions applicable to the Structure Plan area are to be read in conjunction with the Precinct Masterplan at **figure 12 p.63** as follows:

a) land use permissibility and general provisions in the residential and mixed use zones shall be the same as those within those zones under LPS No. 2.
b) all dwellings are required to comply with the Residential Design Codes unless otherwise provided for in this Structure Plan.
c) development for each site is to be in accordance with the density coding identified in the Structure Plan map.
d) the SOCI may require the preparation of a detailed masterplan with community input prior to development of the Civic and Community site.
e) solar arrays on skillion roofs in one or more segments to maximise decarbonisation are mandatory on all buildings.
f) a minimum of one third of east, north and west façade areas are to be utilised for the capture of solar energy.
g) all developments are to facilitate onsite rainwater capture.
h) For R40 & R60 lots:
    i. with the exclusion of undercroft parking, buildings on sites zoned R40 are not to exceed 2 storeys.

ii. with the exclusion of undercroft parking, buildings on sites zoned R60 are not to exceed 4 storeys (including ground floor).
iii. a minimum of one on-site parking bay per dwelling/apartment shall be provided.
iv. all outdoor parking areas are to be paved with green pavers with exception of the mandatory disabled bays.
v. loft areas within roof spaces permitted (as a result of skillion roof forms).

i) all developments are to be set back 6m from all streets with the bulk of the built form established at the setback line.
j) where lots share a boundary with POS the side setback is to be nil.
k) the Mixed-Use traditional shop houses are to be developed with zero street setback and continuous 4m awning projecting into the road reserve.
l) the Mixed-Use traditional shop houses may have one or two storeys for residential purposes above the shop at ground level.
m) a minimum of two parking bays accessible from the rear laneway are to be provided for each Mixed-Use traditional shop houses.

### 4.2.4 Development layout

Land uses within a Mixed-Use lot are calculated as a percentage of the lot area as follows: Parking/Landscaping 45%, Commercial gross floor area 30% and Residential Dwellings 25% at R80. These percentages are not to override the maximum of 3 storey for the built form.

The built form is expected to be set back 6m from all streets with the bulk of the built form established at the setback line with shops and commercial venues facing the street whenever possible. The typical street, parking and built form relationship is shown in two cross sections at **figure 13 p.64**.

Outdoor parking in the mixed-use areas is expected to be sealed, located within the development and be provided with dual street access. Street parking for the R60 and mixed use areas will be permissible in the street verge at the discretion of the SOCI and on a case-by-case basis. This arrangement has the following advantages:

a) It allows parking access manoeuvres to occur using the street lane and save space within the R60 or mixed use lots;
b) It reflects current and acceptable practices occurring on the island;
c) the total amount of parking bays required may not be all establish upfront; and
d) it provides a mechanism for the SOCI to collect a contribution in lieu of parking with independent developers on an as needed basis.

### 4.2.5 Local Development Plans (LDP)

The formulation of LDPs, pursuant to Schedule 2, Part 6, Clause 48(1) of the *Planning and Development (Local Planning Schemes) Regulations 2015*, is not considered desirable or appropriate for the orderly implementation of the Structure Plan.

### 4.2.6 Interface with adjoining areas

The Structure Plan interfaces with adjoining areas in four directions, identifiable at **figure 5 p.37** and as follows:

a) to the north-west, no land use transition or development interface are envisaged with the Drumsite settlement as it will be separated from the urbanised area of the Structure Plan by the future environmental conservation area.

b) to the north-east, the Structure Plan is purposely separated from the adjacent Urban Development Zone under the LPS No. 2 by Hawks Rd. This will allow for a coordinated vehicular movement integration and where the SOCI will have influence in the Urban Development mandatory Structure Planning process. The neighbourhood connector towards Phosphate Hill Road and ultimately Lily Beach Rd will have to be considered (refer to **figure 9 p.49**).
c) to the east all land uses within and or immediately outside the Structure Plan are of public purpose nature involving the SOCI at the oval and the tip site and the Commonwealth with immigration facilities.
d) to the south, the urbanised area of the Structure Plan is purposely bordered by a road reserve for maximum land use interface flexibility and where the southward neighbourhood connector is expected to link with Irvine Hill Rd. The proposed reconfiguration of the Rural and Urban development zones south of the Structure Plan will be finalised by the SOCI through the finalisation of the forthcoming Draft local Planning Strategy.

### 4.2.7 Heritage

There are no heritage features or buildings within the Structure Plan area that would require a protection mechanism.

## 4.3 Other requirements

### 4.3.1 Bushfire protection

Christmas Island is not identified as a bushfire prone area on the WA Department of Fire and Emergency Services (DFES) map of bushfire prone areas that covers the Indian Ocean Territories. In this instance, the WA *State Planning Policy 3.7 Bushfire* and accompanying *Planning for Bushfire Guidelines* are not applicable to the proposed Structure Plan.

There is no historical record referring to bushfires having occurred on the island, due to generally unfavourable fire weather conditions (i.e. monsoonal climate, high annual rainfall, winter dry season, high relative humidity) and vegetation characteristics that are not conducive to bushfire occurrence (i.e. rainforest with very high moisture content and minimal surface fuel due to nutrient cycling).

No island wide Bush Fire Management Plan has ever been formulated. There is no Fire Danger Ratings available for Christmas Island to assist in determining Bush Fire Risks. A bushfire Management Plan may be formulated in the future to inform risk management approaches.

From the planning perspective the Local Planning Scheme No. 2 has no provision to implement and or enforce the prescriptions of the *Bush Fires Act 1954 - Part III Prevention of bush fires - Division 6 General restrictions, prohibitions and offences - Section 33 Local government may require occupier of land to plough or clear fire-break.*

### 4.3.2 Infrastructure arrangements

#### Roads

The proposed roads are typically 6m wide with kerbing on one or both sides. All roads and intersections have been designed to allow a 19m long articulated truck to access the roads.

The 1km winding road connecting the development to Murray Road to the west is proposed to consist of 8m wide pavement, with no kerbing. The topography of this section of road has a steep gradient, and this road has been designed with a maximum longitudinal gradient of 15.3 percent. For comparison, the existing Linkwater Road on the eastern side of the island that connects the airport to the former casino via Lily beach Road has a gradient of 18 percent. The intersection of the 1km winding road with Murray Road has been designed to provide a wide turning area for school buses and trucks.



The rest of the proposed roads within the urbanised area of the Structure Plan are within typical gradients of less than 10%.

#### Red Crab Migration

Vehicular movements represent a major threat to the red crab during the migration period that can span during the wet season from October to January were sections of roads can be closed under the direction of National Park. At the road detail design and or construction stage, the SOCI will consult with the National Park staff to ensure the design, and location of impact mitigation infrastructure for red crab migration is adequately provided.

## Sewer

The existing sewer in Phosphate Hill serves the Recreation Centre and the Immigration Detention Centres with a 150mm diameter Polyvinyl Chloride (PVC) pipe flowing under gravity flows. This 150mm diameter PVC pipe discharges to the sewer north of the site, running along Hawks Road (gravel track) at an average grade of approximately 1 in 7. The sewer main extends southwest along the Hawks Road alignment for approximately 370m, and then north along the mining incline acting as service corridor for approximately 1.1km to the gravity sewer system in Gaze Road.

The closest existing sewer to the west is approximately 1.5km to the west of the oval and at an elevation of approximately 150m lower than the Phosphate Hill plateau. This gravity sewer system serves the Drumsite settlement including the Christmas Island High School. This sewer discharges into Access Chamber D0110 located approximately 220m southwest of the High School, within an easement and Christmas Island Phosphates (CIP) lease area. The sewerage is then directed north to the Christmas Island Sewer Treatment Plant.

Access Chamber D0110 is also the discharge point for the 50mm diameter HDPE sewer pressure main serving the North West Point Immigration Detention Centre (IDC). The centre was designed for a regular operating capacity of over 1000 people and serviced approximately 2400 at its peak. The IDC is currently not operating, being kept in a “hot contingency” state. As the sewer downstream of Access Chamber D0110 has served the IDC while it was operating at overcapacity in the past, it is anticipated that there is adequate capacity in the existing system to serve the development of the Stage 1B of the Structure Plan.

## Water

An existing elevated water tank is located adjacent to the Phosphate Hill oval. From the tank, a 200mm PVC Class 12 (P-12) extends to the Airport, and a 200mm diameter P-12 water main extends to the north along Hawks Road (gravel track). There is an additional 280mm diameter Medium Density Polyethylene (MDPE) water main that does not appear to be connected to the tank, and runs from the Airport to the north of Phosphate Hill. The water main then reduces to a 150 P-12 and serves the settlement of Drumsite. This main may have been a temporary installation and may be able to be abandoned after direction from the Water Corporation.

There is also a water tank located along Hawks Road to the northeast of the development which serves the developments downstream at Poon Saan, Taman Sweetland and Silver City.(refer to **Appendix 3**).

To provide an adequate supply of water to the Structure Plan area, the existing elevated water tank near the oval is likely to require being upgraded. The Water Corporation operates the system but, unlike with the mainland, it does not own the infrastructure and confirmation as to the exact upgrade requirements will involve the DITRDCSA. Should an upgrade be agreed to and to minimise costs, it is proposed that instead of replacing the existing elevated water tank, an additional larger capacity tank be installed near it at ground level. A pump at ground level would supplement water flow by supplying the existing elevated tank in order to meet the increased demand born from the implementation of the Structure Plan.

## Power

Overall estimated electrical load requirement for the proposed infrastructure is calculated based on AS3000 standards. The proposed Structure Plan for Phosphate Hill is estimated to need 1.3MVA with 193kVA for the residential side and 1.116MVA for the mixed-use site. The proposed Structure Plan requires the installation of a new 1MVA and a 500kVA transformers to provide sufficient power (refer to **Appendix 4**).

For Stage 1A, this proposed area includes commercial and residential lots. The electrical supply to the new lots will initially be provided by the existing SUB 202 substation. The key design elements are as follows:

- A new substation will require to be installed near lots 46 and 47, within the public open space. This will enhance the local power distribution and cater to future developments;
- A new 1 MVA transformer will be installed to supply the new residential and commercial lots, ensuring sufficient power for these areas;
- The recreation centre will continue to be supplied by the existing Transformer 208, suggesting that this location already has adequate capacity; and
- The new substation (SUB1) will be initially supplied from SUB202 and once the construction of Stage 1B is completed, the new substation will be supplied directly from the Power station.

For Stage 1B, the designated area consists solely of residential lots. The electrical supply to these new lots will be provided by the new substation installed in Stage 1B. The main design features include:

- The installation of a new transformer to supply sufficient power to the remaining residential lots and future expansion; and
- As previously mentioned, the new substation will be directly connected to the power station. A new feeder line will be routed along the new road.
- The substation (SUB2) installed in Stage 1B will be supplied from SUB1.

The future stages consist of both commercial and residential lots. The key design elements include:

- The installation of 2 new 1MVA transformers near lot 17, lot 43 and lot 13 to ensure reliable power distribution for residential and commercial developments.
- The new substation, SUB# and SUB 5 will be supplied from SUB 2 and SUB4 will be supplied from SUB 3.

## Renewable power generation

A feasibility study on utilising hybrid energy systems for Stage 1A was carried out by VAWT-X Energy Australia Pty Ltd to assist the Structure Planning Process (refer to **Appendix 5**).

The study has demonstrated the technical and economic viability of deploying a hybrid energy system at Phosphate Hill. Through extensive simulation using HOMER Pro, a variety of system configurations were analysed, incorporating solar PV, wind turbines (as per **Figure 16 p70**) at different hub heights, lithium-ion battery storage, and diesel generators.

The results indicate that, compared to solar-only configurations, the most optimized hybrid systems achieved a reduction in the levelized cost of electricity (LCOE) by 67.6% at a 20-meter hub height and 70% at a 50-meter hub height. These findings clearly highlight the economic benefits of diversifying energy sources and optimizing system design—particularly through strategic wind turbine placement.

On Christmas Island, a solar panel system is expected to produce around 1,400 kWh annually per kilowatt-peak (kWp). The power and energy usage estimates, shown in **Table 1**, based on the listed zones and functions of Stage 1A, the nominal 183 dwellings are estimated to each use approximately 25 kWh/day of energy or less.

In this case, the total energy usage per day for the residential areas would be 4,695 kWh/day. Based on the Stage 1A masterplan, the maximum available roof area could reach 18,700m². The skillion roof form could conservatively provide 50% usable space (9,350m²) for solar panels.

The roof-mounted solar system could reach a total capacity of 2,226 kW, which would generate an annual average 8,526 kWh/day. The battery size is estimated at 3,411 kWh to accommodate nighttime and overcast day energy needs, along with on-grid backup.

In total, the 50% roof utilisation provides an energy-positive outcome that indicates a strong possibility for self-sufficiency. Based on the modelling in **Table 1**, at 100% roof utilisation the surplus of energy produced above the residential demand is estimated at 12,258 kWh. This surplus could be directed to electric vehicle charging stations.

Wind power generation, in the form of VAWTs, could be added to further assist during the monsoon season. Such deployment is likely to require an environmental assessment under the EPBC Act to mitigate potential impact on volant fauna.

## Table 1 – Stage 1A Residential Power and Energy Estimates

| | ***Renewable energy modelling – Unlimited Energy Australia*** | | | | | | | | | | | | **50%** | | | | kWh |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Floor area $m^2$ | | Energy usage/day | | Energy usage/day/Total | | Max roof area $m^2$ | Solar roof area $m^2$ | Solar peak power KWp | Solar Energy kWh/day | | Battery Storage |
| A | Mixed use 3000$m^2$ Commercial (shops, retail) | 24 | dwellings | | | 100 | $m^2$ | 25 | kWh/day | 600 | kWh/day | 2400 | 1200 | 286 | 1094 | kWh/day | 438 |
| B | Affordable Housing 56 dwellings | 56 | dwellings | | | 100 | $m^2$ | 25 | kWh/day | 1400 | kWh/day | 5600 | 2800 | 667 | 2553 | kWh/day | 1021 |
| C | Civic & Community (1 hour school) 8 dwelling | 8 | dwellings | | | 100 | $m^2$ | 25 | kWh/day | 200 | kWh/day | 800 | 400 | 95 | 365 | kWh/day | 146 |
| D | 8 Houses 150$m^2$ | | | 8 | houses | 150 | $m^2$ | 40 | kWh/day | 320 | kWh/day | 1200 | 600 | 143 | 547 | kWh/day | 219 |
| E | Commercial and 8 dwellings (shops, retail) | 8 | dwellings | | | 100 | $m^2$ | 25 | kWh/day | 200 | kWh/day | 800 | 400 | 95 | 365 | kWh/day | 146 |
| F | Commercial and 8 dwellings (shops, retail) | 8 | dwellings | | | 100 | $m^2$ | 25 | kWh/day | 200 | kWh/day | 800 | 400 | 95 | 365 | kWh/day | 146 |
| G | 45 Dwellings | 45 | dwellings | | | 100 | $m^2$ | 25 | kWh/day | 1125 | kWh/day | 4500 | 2250 | 536 | 2052 | kWh/day | 821 |
| H | 26 dwellings | 26 | dwellings | | | 100 | $m^2$ | 25 | kWh/day | 650 | kWh/day | 2600 | 1300 | 310 | 1185 | kWh/day | 474 |
| | Street lighting | | | | | | | | | | | | | | | | est. |
| | **Total** | **175** | **dwellings** | **8** | **houses** | | | | **Energy** | **4695** | **kWh/day** | **18700** | **9350** | **2226** | **8526** | **kWh/day** | **3411** |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | Energy plus kWh/day | | **3831** | kWh/day | |

### Communications

Following a review of the existing communications infrastructure in the Phosphate Hill area, it has been confirmed that optic fibre is available along Vagabond Road. This presents an opportunity to establish a centralised communications node to support key facilities in the area. It is proposed that a central distribution point be located at the junction of Vagabond Road and Exiles Place. This location is strategically positioned to service the surrounding facilities, including the Recreation Centre and the two Immigration facilities, which are currently identified as the primary users with potential demand for broadband connectivity.

To implement this, the following infrastructure works are proposed:

- Installation of new P50 communications conduits to establish a protected pathway for fibre cabling from the central node to each facility;
- Identification and location of existing communications pits along Vagabond Road, using available as-built drawings, on-site inspection, and cable locator tools;
- Connection of the new conduits into the existing pits to integrate with the current network pathway and enable seamless fibre extension;
- Upgrade of existing communication pits where necessary to meet current standards for size, accessibility, and capacity; and
- Installation of new pits where required to support conduit runs, allow for efficient cable pulling, and provide access points for future maintenance.

These works will ensure reliable, standards-compliant connectivity to the NBN, with flexibility for future network expansion. The combined use of existing and new infrastructure will also minimize disruption and reduce overall construction costs.

### 4.3.3 Development contributions

The Shire lodged a Crown Land Enquiry Form (CLEF) with the WA Department of Planning Land and Heritage (DPLH) on the 12 December 2024 in order to trigger a possible disposal from the Commonwealth of the northern section of the Structure Plan (refer to **figure 10 p.53**) This step is considered necessary to facilitate and achieve the early construction of affordable and social housing projects.

The early steps to implement Stage 1A of the greenfield Structure Plan will be a public endeavour. The financial participation to clear vegetation, initiate land and geotechnical surveys, produce deposited plans and register titles, conduct earthworks, construct roads and install the infrastructure to provide essential services for each lot and build housing is expected to be achieve with Commonwealth assistance.



The *National Housing Accord 2022* designed to facilitate collaboration and improve financing for new social and affordable housing projects intends to *"Provide availability payments and other innovative financing techniques through the Housing Australia Future Fund (HAFF) and/or National Housing Infrastructure Facility (NHIF) that will seek to facilitate superannuation and institutional capital investment in social and affordable housing, alongside established state and territory programs".* The SOCI is committed to explore the most appropriate avenues to obtain funding for the implementation of the Structure Plan.

Notwithstanding and without ignoring the standard infrastructure contribution requirements associated with the *WA State Planning Policy 3.6* and the outcome of the CLEF process, the SOCI will establish a development contribution framework that could reflect the unique

circumstances of Christmas Island displaying close market characteristics.

These negotiations, affecting development contributions, could include but are not limited to the following actions and or intentions:

- the SOCI to redirect rates towards infrastructure and maintenance;
- land allocation for affordable housing through Government affordable housing schemes and funding programs with rates and sale processes to be allocated to the infrastructure and maintenance for the new housing areas; and
- allocation of free hold land blocks where the income for sale processes and rates to also be allocated to the infrastructure and maintenance with the new housing area.

The reservation of land to specifically assist with the relocation of the Flying Fish Cove residents is likely to require the design and creation of an agreed funding scheme allowing freehold owners to access, on a like for like basis, developed freehold titles in the new allocated areas.

### 4.3.4 Stage 1A development incentives for community benefit

The delivery of community benefits for the wellbeing of the early residents of Stage 1A will not be acute and may not necessarily require immediate contribution given the existence of established facilities in the immediate vicinity of the precinct such as the recreation centre, the island public swimming pool, the cricket club and the oval.

In the medium to long term private developers acquiring land within the Structure Plan will be expected to contribute financially towards community funds, capacity building, education programs, infrastructure development and environmental stewardship initiatives. The establishment of the criteria based on which these initiatives are to apply will be integral to the development contribution framework and subject to SOCI's ability to secure public and or private funding arrangements.

### 4.3.5 Protection or management of landscape features

The Environmental Assessment Report (EAR) (**Appendix 2**) describes the environment and outlines proposed environmental management strategies for the Structure Plan Area. These will be dependent on conditions of approval but are likely to include a weed management plan and a fauna management plan. No conservation significant flora has been found in the Structure Plan Area so it is unlikely that a flora management or relocation plan will be required.

### 4.3.6 Water resource management

On Christmas Island, the use of infiltration basins and channels offers a viable and sustainable approach to water management. Given the island's porous limestone terrain, these systems are simple, widely used and particularly well-suited to the environment. They require minimal maintenance and deliver multiple benefits, including reducing surface runoff, improving water quality, and enhancing groundwater recharge. Their integration into local infrastructure planning supports nature-based solutions tailored to the island's unique ecological and geological conditions.

# 5. ADDITIONAL DETAILS

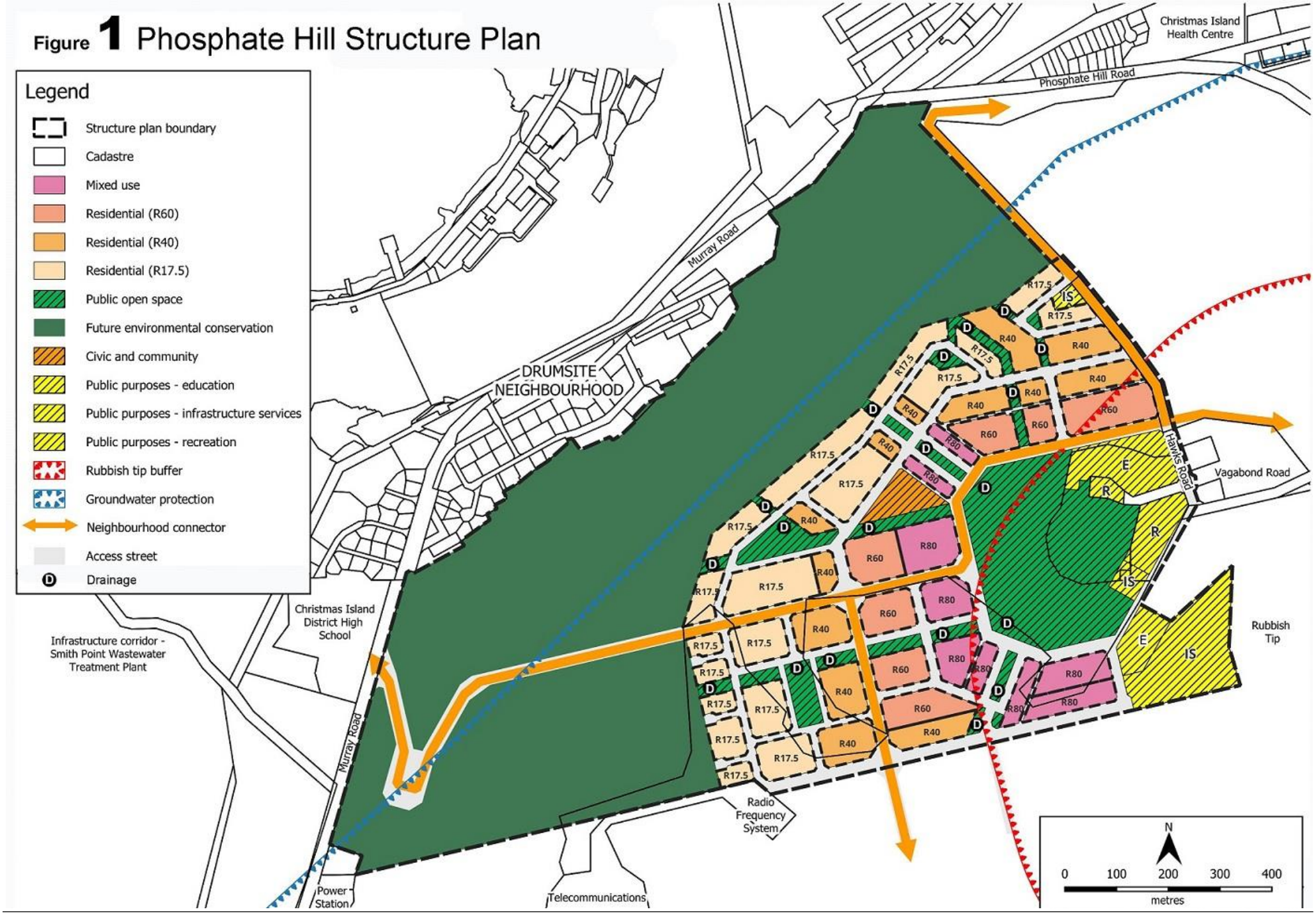
## 5.1 Information to be submitted with an application

| Additional information/purpose | Approval stage | Responsible agency (consultation required) |
|---|---|---|
| Conveyance Infrastructure Report for Water Supply | Subdivision (pre-design) | Water Corporation |
| Treatment Plant and Conveyance Infrastructure Report for Sewerage System | Subdivision (pre-design) | Water Corporation |
| Building Site Profile / Level Guidelines Plan | Subdivision | Shire of Christmas Island |
| R-Code Plan (to allocate R-Codes for proposed street blocks/lots) | Subdivision | Shire of Christmas Island |

## 5.2 Studies required under condition of subdivision/development approval

| Additional information/purpose | Responsible agency |
|---|---|
| Geotechnical Report, including locating underground voids and certification the land is physically capable of development. | Shire of Christmas Island |
| Stormwater Drainage Management Plan | Shire of Christmas Island |
| Road Pavement Construction Materials Study | Shire of Christmas Island |
| Engineering Drawings for water supply and sewerage | Shire of Christmas Island |
| Engineering Drawings for earthworks, roads and footpaths | Shire of Christmas Island |
| Engineering Drawings for power supply and street lighting | Indian Ocean Territory Power Services |

# STRUCTURE PLAN MAP



# PART 2 – Explanatory Section

## 1. INTRODUCTION AND PURPOSE

The Phosphate Hill Structure Plan (PHSP) has been prepared for the Shire of Christmas Island (SOCI) under the Australian Government's Housing Support Program (HSP) designed to help achieve the National Housing Accord target of building 1.2 million new, well-located homes over the next 5 years. The HSP supports the delivery of increased housing supply by funding projects that seek to deliver enabling infrastructure, provide amenities to facilitate new housing development or improve building planning capability.

The PHSP represents the first Stream of the HSP that provided funding to State, Territory and Local governments for projects which could advance and improve planning capability and land subdivision readiness ahead of the construction of new affordable homes on the island.

### 1.1 Relevant WA planning instruments

This Structure Plan, consistent with the orderly and proper planning and essential for the future growth and prosperity of the island community, is designed having due regard to the objectives of a number of Western Australian planning documents, including:

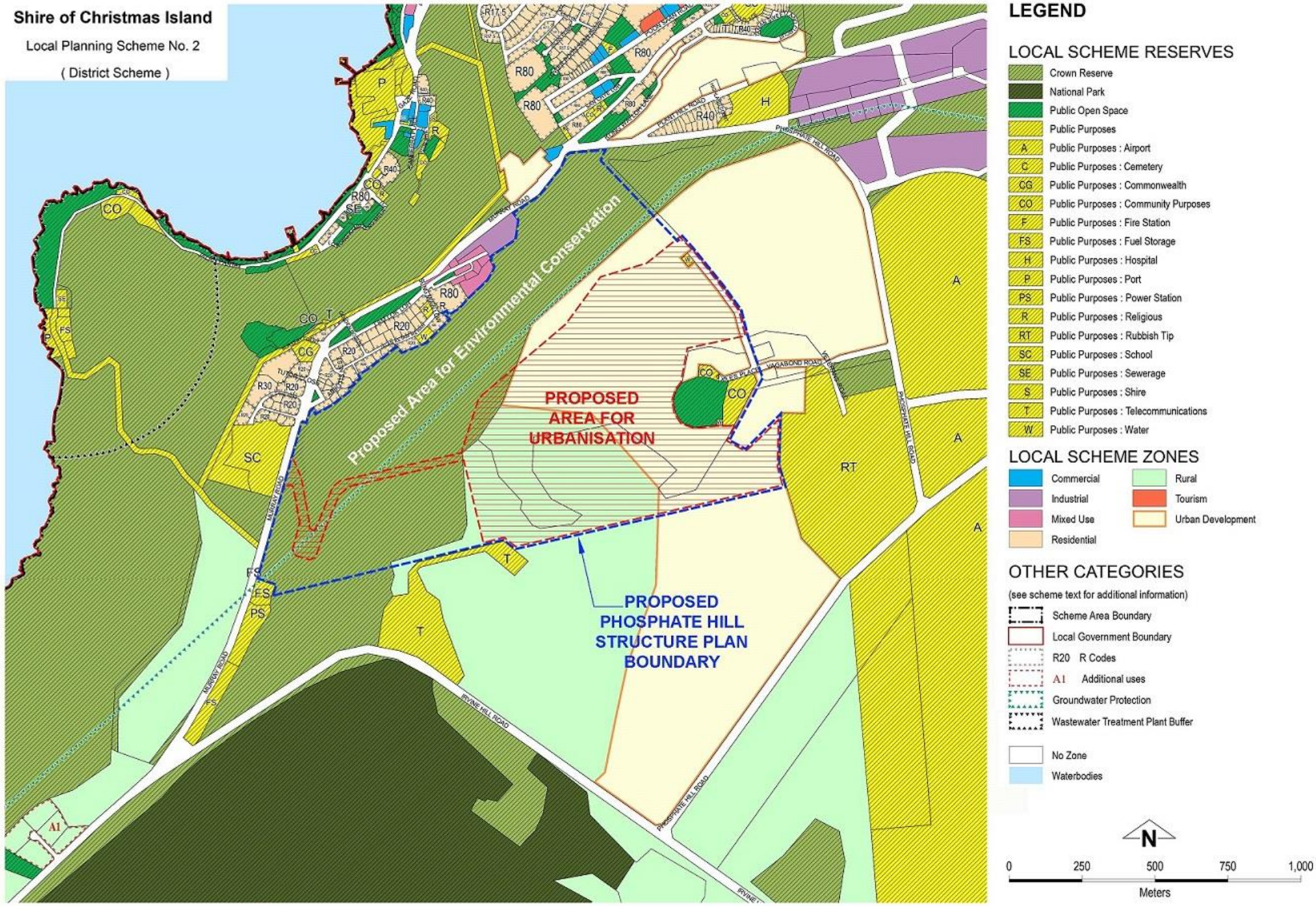
- Schedule 2, Part 4 of the Planning and Development (Local Planning Scheme) Regulations 2015;
- State Planning Policy 2.6 State Coastal Planning Policy
- State Planning Policy 7.0 Design of the Built Environment;
- State Planning Policy 7.2 Precinct Design;
- State Planning Policy 7.3 Residential Design Codes Vol. 1 & 2;
- Liveable Neighbourhoods and
- Operational Policy 1.1 Subdivision of land general principles 2020.

The Structure Plan represents the guiding planning instrument to facilitate future residential and mixed-use development on the Phosphate Hill plateau in close proximity to the island sole Recreation Centre and Sports Oval and provides the long-term planning rationale and mechanisms to inform the detailed planning and design arrangements including implementation, staging and expected character of development.

This greenfield Structure Plan targets the development of vacant Unallocated Crown Land (UCL) at the heart of the island infrastructure rich settled areas. It is intended to ultimately develop as a major residential hub and the island's focal point for new businesses by expanding freehold land offerings at an affordable price to support the expansion and diversification the island economy post mining and immigration.

The relationship between the Structure Plan envelope and the LPS No. 2 is shown at **figure 5 p.37**

## Figure 5 2016 Local Planning Scheme No.2 (Active)



## 1.2 Shire of Christmas Island 2015 Local Planning Strategy

The SOCI LPS was endorsed by the Western Australian Planning Commission (WAPC) in May 2015. The relationship between the Structure Plan envelope and the LPS *Phosphate Hill/Recreation Centre Precinct* is shown at **figure 6 p. 40**.

The LPS identified the need to ensure that the Christmas Island economy achieves greater diversification and moves away from its traditional dependency on phosphate mining. The consensus of opinion, at the time and pertinent ten years later, is "*that the relevant economic drivers for Christmas Island include population growth, local food production, tourism opportunities, construction material supply, future economic activities, private investment, accommodation supply and home business/mixed use."*

Section 4.1.1 of the LPS deals with population growth and illustrates a determinant challenge for the island:
*"Current Issue; The lack of accurate information defining the extent of fresh water resources prevents the establishment of definite population targets.*
*Strategic Response; Mapping of the basalt layer. Plan for a total population of 5000 permanent people as per community-endorsed 2018 Plan."*

The Phosphate Hill Structure Plan is fully aligned with the objectives of the LPS that states:
*"Phosphate Hill is the most appropriate area to provide long term expansion of the urban area on Christmas Island. The topography is not as severe as other areas, it is close to the existing urban areas on the Island, has existing services in close proximity and has significant community facilities already in place. Phosphate Hill provides significant area of developable land to cater for the long-term growth of the Island. Future development will be subject to detailed Structure Planning that should consider the following key concepts for the precinct:*

- *Connectivity – road connections to Poon Saan and Drumsite;*
- *Education – additional educational facilities should be considered as well as the long-term location of the CIDHS;*
- *Recreation facilities – additional playing fields adjacent to the cricket oval to cater for other sports;*
- *Accommodation – provision of a range of accommodation types, include aged care and short stay and*
- *Environment - provision of environmental buffers and crab migration corridors across the site."*

This 139.03 hectares Structure Plan is designed to become an important attractor for future residential and business developments with the provision of:

- Up to up to 10,500m$^2$ of commercial floor space to attract new businesses and investments to the Island in order to pivot the Island economy post mining;
- Some 900 dwellings on single lots or grouped format to address the immediate need for social and affordable housing and contribute to the long-term objective of achieving the 5000-population target;
- 2.63Ha dedicated to education and vocational training;
- 3.83Ha reserved for infrastructure services; and
- 20.77Ha reserved for the establishment of the road network.

From an environmental and public open space perspective the Structure Plan provides:

- The establishment of a permanent Environmental Conservation zone on steeper terrain representing 66.19Ha or 47.61% of its total area to mitigate the impact of the area to be urbanised, acting as buffer with the Drumsite settlement whilst maintaining a continuous ecological linkage between the southern and northern areas of the island National Park; and
- The additional allocation of 14.3Ha of Public Open Space accommodating sports fields, neighbourhood parks and urban landscaped corridors with dedicated dual-use pathways, drainage infrastructure and enhanced ecological features.

The Structure Plan also provides the SOCI with the opportunity to implement a near zero carbon emission policy for the built form expected to take advantage of the natural breezes prevalent in this part of the Island, maximise the capture solar energy on roofs and well exposed walls and set aside land reserved for the establishment of vertical axis wind turbines (as per **Figure 16 p.70**) as well as community batteries.

# Figure 6 Local Planning Strategy 2015 (Active)

## 5.7 Phosphate Hill/ Recreation Centre Precinct

### 5.7.1 Objective

To provide for the long term expansion of the urban area of Christmas Island on Phosphate Hill, facilitate the creation of a 'Sports and Recreation Precinct' and consolidate waste management practices.

### 5.7.2 Land Use Priorities

Phosphate Hill is the most appropriate area to provide long term expansion of the urban area on Christmas Island. The topography is not as severe as other areas, it is close to the existing urban areas on the Island, has existing services in close proximity and has significant community facilities already in place.

The large scale development of land for urban uses in the precinct will be subject to a series of constraints, such as:

- The future of the rubbish tip;
- The future of the immigration detention centre;
- The potential mining of phosphate resources;
- Buffers associated with the communications towers; and
- The Obstacle Limitation Surface restrictions.

### 5.7.3 Key Opportunities & Initiatives

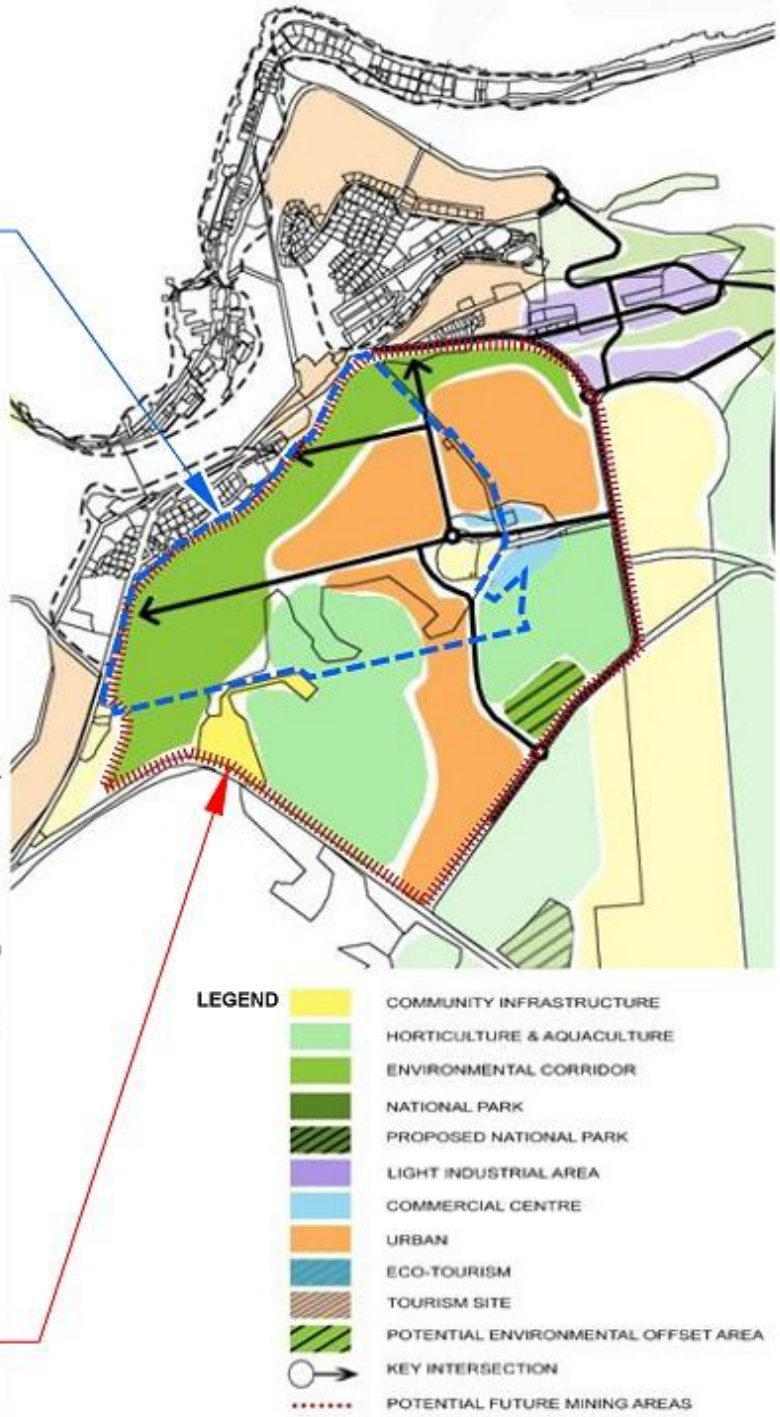
*Staged Mining and Development Opportunities*

Urban development areas coincide with identified phosphate deposits. These deposits have been subject to two mining lease applications by CIP, both rejected. Future urban development in this precinct should not sterilise economically viable phosphate deposits, and mining should occur prior to development. Any future mining lease application should be supported in this area, subject to including provisions in the Mine Abandonment Plan that ensure the post mining landscape is suitable for urban development.

*Urban Expansion Opportunities*

Phosphate Hill provides significant area of developable land to cater for the long term growth of the Island. Future development will be subject to detailed Structure planning. Planning should consider the following key concepts for the precinct:

- Connectivity – road connections to Poon Saan and Drumsite.
- Education – additional educational facilities should be considered as well as the long term location of the CIDHS.
- Recreation facilities – additional playing fields adjacent to the cricket oval to cater for other sports and investigation of the provision of an 18 hole golf course in areas unsuitable for urban development (i.e. buffer areas).
- Accommodation – provision of a range of accommodation types, include aged care and short stay.
- Environment - provision of environmental buffers and crab migration corridors across the site.
- Rural land uses - horticultural and aquacultural activities, especially within buffer areas.
- Constraints – consideration to the radio tower buffers, rubbish tip buffer, ANEF noise contours, Obstacle Limitation Surface area of an extended runway, and the relocation of the immigration detention centre.



## 1.3 Christmas Island Strategic Assessment (CISA) – 2019/2023

A whole of island Strategic Assessment under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC) was initiated in February 2019 through and Agreement between the Federal Ministers for the External Territories and the Environment. From the CISA's outset the SOCI and the then Department of Infrastructure Regional Development and Communications came to the understanding that the CISA Land Use Plan would be best to coincide with the land uses regulated under the statutory local planning instruments. In effect the CISA Land Use Plan would match the land uses depicted in a new draft LPS already under preparation at the time. As part of that process, it was agreed the life of the CISA Plan was to be set at 30 years.

The CISA was paused in June 2023 by the Australian Government "while significant policy and law reforms are ongoing". This change of direction has delayed the possibility for an early release of Crown land and has increased the need to prepare the structure plan at Silver City to enable the potential introduction of new social and affordable housing on the island.

## 1.4 Attorney-General's Department Indian Ocean Territory Climate Change Risk Assessment - 2010

The specific risks and vulnerabilities for the Kampong at Flying Fish Cove are:

- Sea level rise expected to exacerbate inundation, storm and tidal surge, erosion and other coastal hazards potentially threatening Flying Cove jetty, wharf and boat ramp as well as the Kampong see wall and buildings beyond and
- Increase intensity in cyclonic rain inducing land slide and associate rock fall around Flying Fish Cove with potential impact to the structural integrity of buildings and amenities.

In terms of adaptation to the effects of climate change the risk assessment report makes at page vi the following recommendation:

*"Adapting to climate change involves preparing for, responding to and coping with climate induces changes. This can be best achieved through government and community working together to improve the ability of island communities to cope with or respond to the impacts of climate change. Hence, it is strongly recommended that a community-based approach be implemented to dealing with climate change over the long term. Of course, there are also a number of immediate short-term issues, such as the protection of coastal infrastructure, life and property, and emergency preparedness that need to be addressed as a matter of urgency, and again it is imperative that community be given the opportunity to be involved in the adaptation planning and decision-making process associated with these activities."*

The report makes this specific recommendation:

*"Develop a Climate Change overlay for planning development in Christmas Island including a longer-term transition plan for the Kampong".*

## 1.5 Land Use Planning for Disaster Resilient Communities – 2020 Handbook

Another purpose of the Structure plan is to provide, when the time comes, land use choices at Phosphate Hill to assist with the orderly relocation of the Flying Fish Cove Kampong community at risk from sea level rise, storm surges and rock falls. Published by the Australian Institute for Disaster Resilience and the Commonwealth Department of Home Affairs, the *2020 Land Use Planning Handbook* provides guidance on national principles and practices relevant to communities at risk and the role land use planning can play for promoting disaster resilient communities. The SOCI, following the Handbook process, has facilitated workshops with the Kampong Community in 2020 and 2021.

The vulnerability of the Kampong area is identified in the SoCI 2015 LPS that specifically advocates at page 46: *"Develop a long-term residential transition plan (20-30 years) for the Kampong towards safer existing and new urban areas".* The SOCI resolved at its 22 September 2020 Ordinary Council Meeting to initiate a formal dialogue with the Kampong residents to collaboratively explore a future sustainable planning and social approach in response to on-going climate change induced risks at Flying Fish Cove. The SOCI subsequently facilitated two workshops where relocation possibilities at Phosphate Hill, Silver City and Taman Sweetland were explored with sustained interest from the community.

As part of the HSP-S1 program, the SOCI has presented the Phosphate Hill and Silver City proposed structure plans (ref. following maps) at public meetings at the Kampong on the 7 and 14 November 2024 to further gauge the community's sentiments and expectations associated with these more detailed plans. It was subsequently agreed the SOCI would prepare a questionnaire to be issued to each household to refine aspirations in terms of future relocation to either Silver City or Phosphate Hill and the desirable housing type being on single 900m$^2$ lots or apartment format.

As of November 2024, the Kampong population is 427 of which 147 are children. In 2021 the average Australian household size was 2.5. This indicates that the orderly relocation of the residents could require the identification and protection of suitably zoned land to accommodate up to 170 dwellings on freehold lots or strata apartments.

## 1.6 Accommodation Needs Assessment - 2011

The need for new affordable housing on CI is not new and on-going.
It was comprehensively documented in the *2011 Accommodation Needs Assessment Christmas Island & Cocos (Keeling) Islands* commissioned by the then Department of Regional Australia, Regional Development & Local Government.
The key matters identified in the report were:

1. immediate need for housing with the 20 to 35 age group;
2. unmet demand for old age group;
3. peaks and troughs prices reflecting fluctuations of the local economy;
4. significant pressure on tourism accommodation;
5. low affordability preventing residents to access home ownership;
6. loan accessibly considerably higher than the main land;
7. absence of housing support funding assistance available in WA or the mainland generally;
8. difficulty in attracting private investment on island; and
9. flexibility of housing types needed to respond to changing demand.

The pandemic, the cessation of immigration activities, the increased proportion of non-permanent residents amongst mining staff, the specific increased cost of construction material and logistics estimated to be 2.4 times Perth prices and the general effects of rising costs within the mainland economy have all contributed to exacerbate the pressure on the island housing market and its ageing building stock.

# 2. SITE AND CONTEXT ANALYSIS

## 2.1 Location and broad context

The location and broad context of the Structure Plan site is shown at **figure 7 p.45**.

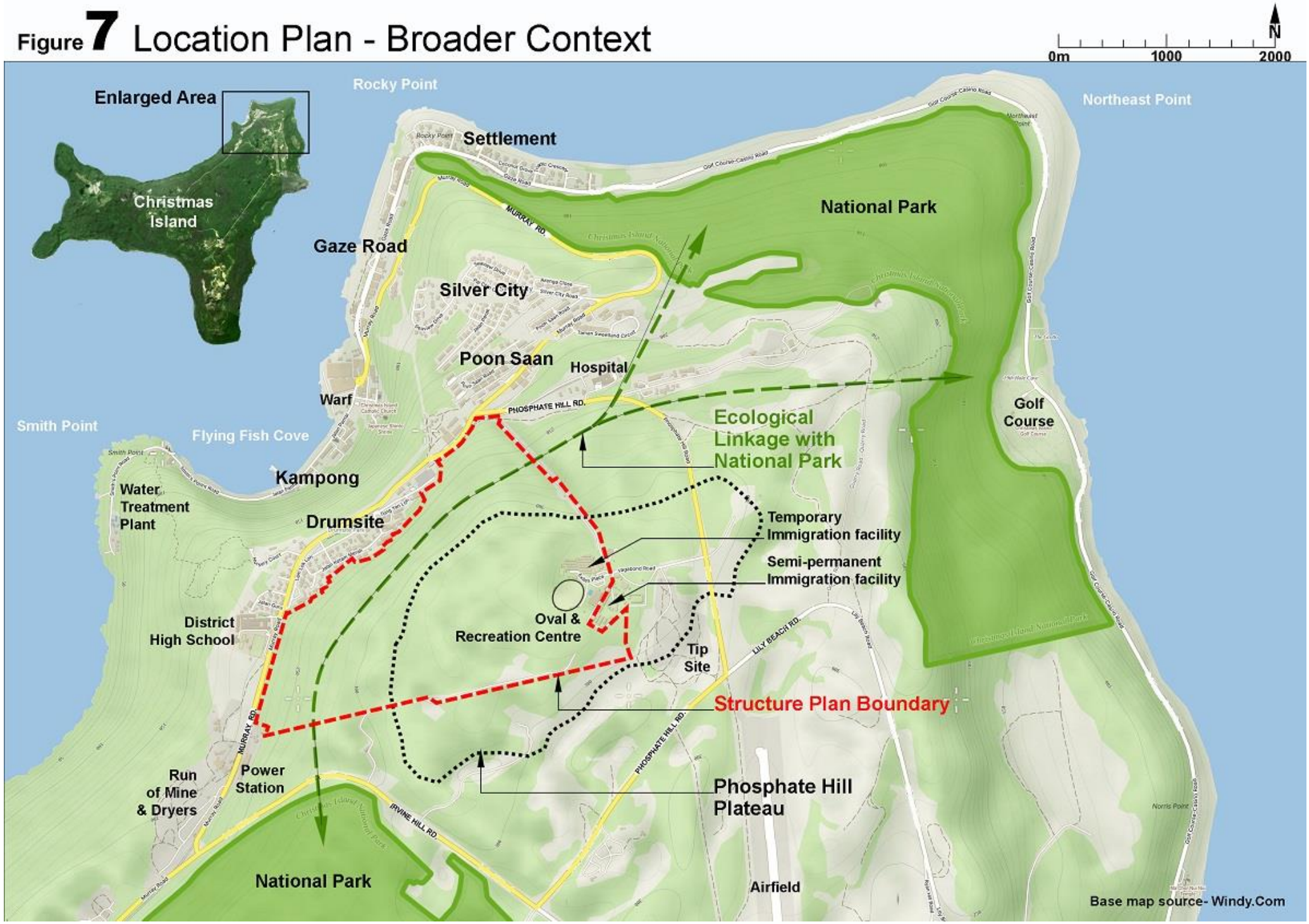
The Structure Plan site is situated immediately east of the Drumsite settlement and the CI District High School whilst it reaches the Oval, the Recreation Center and the tip site at its extreme eastern boundary. The northern boundary of the site abuts the Poon Saan settlement and the southern boundary runs in a west south-west direction from the tip site to the power station/fuel depot sites.

The south-eastern portion of the site lays on the Phosphate Hill plateau where the bulk of the urbanisation can take place cost effectively with its gentle topography and the immediate proximity of the island sports and recreation community facilities and the availability of essential services.

The steeper western portion of the site is well located to allows the creation and ultimate protection of an ecological linkage between the northern and southern sections of the National Park.

The southern portion of the eastern boundary of the site is dominated by three distinct land uses: the tip site and the semi-permanent immigration facility that are excluded from the Structure Plan area and the temporary immigration facility, immediately north of the oval, that is included in the Structure Plan area. The temporary immigration facility area has the potential to be repurposed for community and or education use over time.

# Figure 7 Location Plan - Broader Context



## 2.2 Precinct boundary and surrounding land uses

The detailed features and surrounding land uses leading to the establishment of the Structure Plan boundary is shown at **figure 8 p.47**.

The boundary of the Structure Plan is defined by a succession of discrete segments that are following the cadastre when it exists and are also identified using other recognisable features as follows:

| **Segments** | **Definition** |
|---|---|
| A-B | Phosphate Hill Road Reserve |
| B-C | Hawkes Road cadastral reference as the eastern boundary of a future Road Reserve |
| C-D | Eastern side of the existing passage between the Recreation Centre and the Immigration Facility |
| D-E | Western boundary of the Tip Reserve |
| E-F | Southern side of the existing track connecting the Water Tower at the oval with Irvine Hill Road |
| F-G | Cadastral reference associated with the Radio Frequency System protected area |
| G-H | Projection of the Telecommunication Reserve towards the Fuel Depot cadastral boundary |
| H-J | Fuel Depot cadastral limit |
| J-K | Murray Road Reserve |
| K-L | Eastern edge of the Drumsite cadastral structure |
| L-A | Murray Road Reserve |

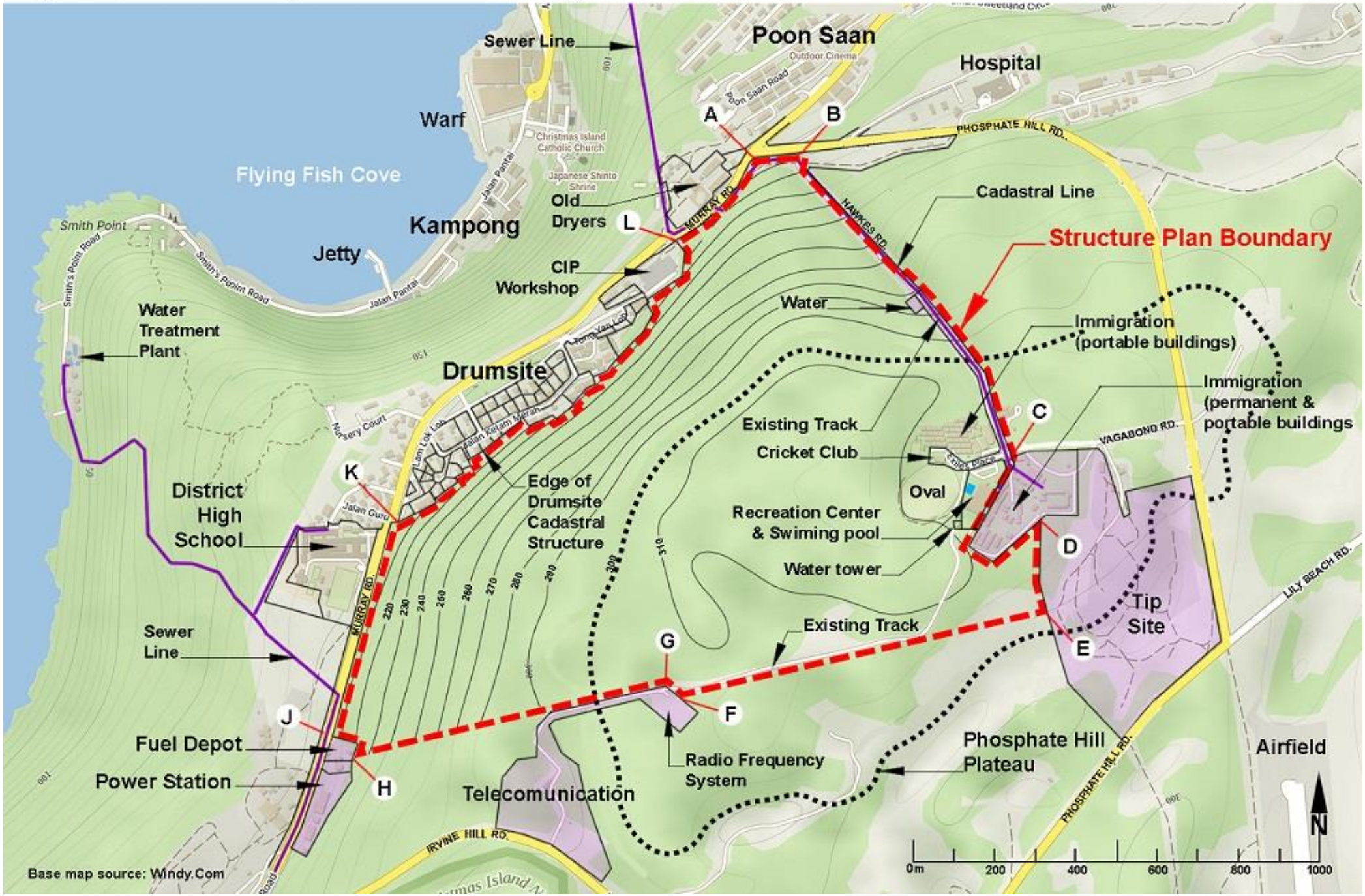
The western edge of the Structure Plan between the Murray Road fuel depot to the south (at point H) and the old Dryers and Poon Saan to the north (at point B) follows the cadastral limits. The District High School is the most dominant facility in the area when considering that the LPS has identified the need for establishing a road and footpath connection from the school to the oval, the recreation centre and the swimming pool.

The southern edge of the Structure Plan area (between points H and E) is tangent to the Telecommunication and Radio Frequency Reserve midway between the Fuel Depot and the Tip site.

Finally, the eastern edge of the Structure Plan area goes around the initial detention centre (between points D and C) then follows the alignment of the track identified as Hawkes Road that ultimately leads to Phosphate Hill Road. This alignment is also the corridor allowing power and sewer to service the detention facilities, the recreation centre and the oval.

Another sewer line exists along Murray Road, passing south of the school and ultimately reaches the water treatment plant at Smith Point.

# Figure 8 Boundary Definition and Adjacent Features



# 3. OPPORTUNITIES AND CONSTRAINTS ANALYSIS

## 3.1 Physical attributes

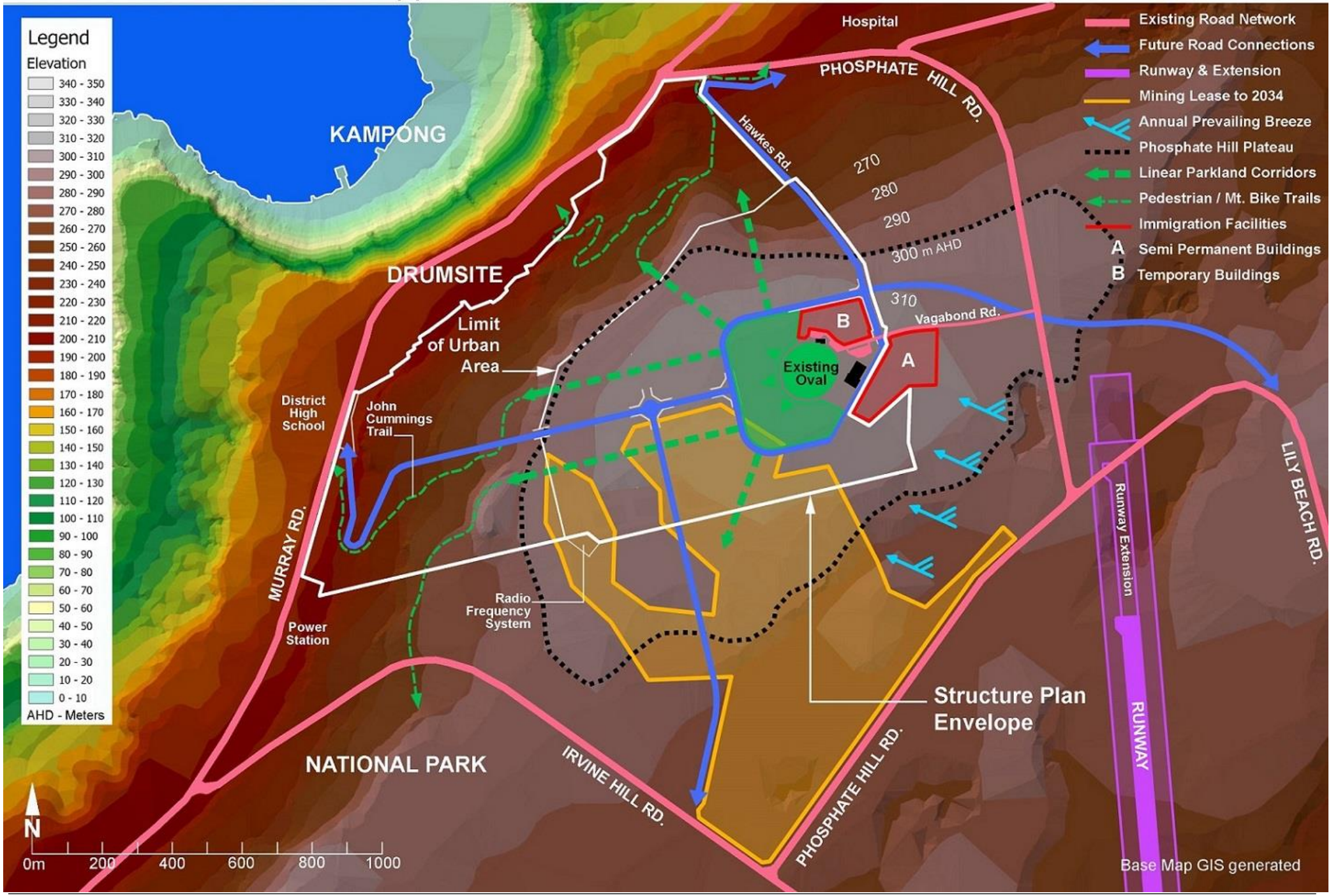
The Structure Plan site key physical attributes, constraints, opportunities and major vehicular movements are depicted at **Figure 9 p.49**. The key constraints attributed to the site are:

a) The average slope of 26%, with an approximate width of 450m, running continuously alongside Murray Road and the Drumsite settlement;
b) The lack of vehicular accessibility only possible through Vagabond Road on the east side as the sole sealed road into the site;
c) The uninterrupted vegetation cover, apart from the oval, being a mixture of re-growth landscape due to historic mining and the original forest;
d) A portion of the mining lease active until 2034 located on the southern boundary and representing approximately 11% of the site area;
e) The presence of the immigration working camp made of non-permanent buildings situated north of the oval/cricket club;
f) The lack of legal access to the Watercorp operated water tower south of the oval; and
g) The relatively modest impact of the 500m tip site operational buffer.

The appealing aspects and/or opportunities associated with the site are:

a) The semi flat areas in the form of the Phosphate Hill plateau at 300m AHD and above. This is of particular importance to achieve cost effectiveness for residential, commercial and community-oriented developments. As a consequence, the near totality of the urbanised area is to be established on the plateau.
b) The relative proximity to the existing water, power and sewer infrastructures currently servicing the recreation centre, the two immigration facilities (shown as A and B at figure 3) and the cricket club and associated oval. This will be beneficial to expedite the development of the first stage of the Structure Plan with a special focus on the delivery of social and affordable housing.
c) The possibility to immediately establish a new sports field westward of the oval without the need to create from day one purposely designed new amenities given the proximity of the adjacent recreation centre.
d) The ability to capitalise on the elevated topography to capture the wind dominated by the east to southeast trade flow for much of the year, with some increased variability seen in the wet season. By all accounts the ambient atmosphere on the plateau is noticeably more comfortable than at all the lower settlements on the island. This opens the possibility of designing naturally cooled buildings, minimise the need to rely exclusively on mechanical air conditioning and also enable the installation of individual (5kw) or collective (85kw) vertical axis wind turbines essential at night and during the monsoon months as supplement to the generation of solar electricity.
e) The road network surrounding the site with Murray Road, Phosphate Hill Road and Irvine Hill Road. This allows a westward vehicular and pedestrian connection to the district high school, a road link northward to the hospital via the existing Hawkes Road alignment, a southward road link towards Irvine hill road and the airport beyond and, in the longer term, a direct road connection eastward to Lily Beach should the extension of the runway is ultimately prosecuted.

Figure 9 Constraints and Opportunities



## 3.2 Environment

Details of the local environment, including climate, soils, vegetation, topography, total water cycle, landscape features, key views, and local character (where relevant) are provided in the Environmental Assessment Report at **Appendix 2**. The summary of constraints and opportunities relating to climate, topography, vegetation, fauna flora and heritage are as follows:

### Climate

The Christmas Island near equatorial monsoon climate requires special consideration of peak flow conditions and 1:100-year rainfall average return intervals (ARI).

### Topography

The proposed environmental conservation area includes steep slopes which limit space available for development and constrain road and infrastructure locations. The Phosphate Hill plateau is more favourable for urban development. It also provides opportunities for installation of vertical axial wind turbines (as per **Figure 16 p.70**), which widely suspected to have fewer environmental impacts. Post implementation monitoring of impacts is advised (being mindful of bird and bat impacts as there are many threatened birds on the island and one bat is already extinct). Naturally the hilltop position provides security against rising sea levels and the risks of rockfalls.

### Fauna

Several fauna, which are listed as Matters of National Environmental Significance, occur within the Structure Plan Area, which may require management. Red crabs are abundant in the Structure Plan Area and provision needs to be made for their annual migration. Robber crabs are common on the island and are protected, and are at risk from vehicle traffic and clearing activities. Installation of nest boxes for Golden Bosun birds throughout the Structure Plan area would be worthwhile. Culverts are proposed at strategic locations to facilitate red-crab movements during their annual migration.

At the road detail design and or construction stage, the SOCI will consult with the National Park staff to ensure the design, and location of impact mitigation infrastructure for red crab migration is adequately provided.

### Flora/Vegetation

The rainforest includes tall trees to 50 m height which may present a tree-fall risk during high winds or when the soil is saturated during high rainfall events. Where possible taller retained trees will be separated from housing by roads. The rapid regrow rate of tropical vegetation requires continual management of vegetation boundaries and trails.

Green corridors with retained rainforest trees will improve visual amenity, reduce wind speeds, provide an ecological connection for forest birds and shelter for red crabs moving up and down hill during the migration. The proposed Future Environmental Conservation Area will add to the Christmas Island National Park, provide connectivity between currently disconnected National Park sections in perpetuity, and provide protection for Abbott's Booby nest trees.

### Heritage

The possibility exists to provide street and or Public Open Space plantings of Mango and Avocado to reflect the Island's history of food insecurity and the added opportunity to bolster the survival of the critically endangered Christmas Island Flying Fox species.

The construction of a pedestrian and bicycle trail linking the temple, the tavern and the store at Drumsite with the urbanised Structure Plan area would benefit the community.

## 3.3 Land tenure

This section describes the various land parcels within the Structure Plan area. Their location and land status is depicted at **figure 10 p.53**. The totality of the Structure Plan area is within the Crown Land portfolio.

Approximately 80% of the 139.003Ha Structure Plan area is a portion of Unencumbered Crown Land (PIN 1358679) and 14% is a portion of Crown Land Lot 610 on Deposited Plan 44641 that broadly aligns with the mining lease to Phosphate Resources Limited due to expire in 2034. The remaining 6% is made of small parcels (refer to items 3 to 9 at **figure 10 p.53**) that will interact and or participate in the implementation of the Structure Plan as follows:

**3 -** Crown Reserve – lot 558 on Deposited Plan 44641 – Situated at the northern tip of Hawkes Road this Reserve accommodates the sole water tank supplying Poon Saan and Silver City. The lot is to be expanded under the Structure Plan to ensure it can adequately accommodate future demand in these two settlements in the long term.

**4 -** Public Road Reserve – Hawkes Road – The Reserve provides the legal access to lot 558 above. It is currently an unsealed track that links Exiles Place/Vagabond Rd. to Phosphate Hill Road to the north. The objective, in the medium to long term, is to prolong the Reserve to Phosphate Hill Road as shown at **figure 10 p.53**.

**5 -** Lot 607 on Deposited Plan 44641 (Land Record 3174/702) is occupied by the Recreation Centre (refer to item 7 below).

**6 -** Future Public Road Reserve – A 14m wide Public Road Reserve is required to provide legal access to the Water Reserve. This will provide access conformity to the Water Reserve and ultimately improve vehicular movements and connectivity within the Structure Plan. The narrow width of the Reserve will minimise any impact on the adjacent Immigration facility to the east.

**7 -** The Crown Reserve (Lot 512 on Deposited Plan 220518) is allocated for the supply of Water to the Airport and all buildings along Vagabond Road and Exiles Place and Vagabond Road. The Reserve is to be expended to established, when required, two ground tanks to ultimately accommodate the additional demand generated by the Structure Plan. To this end a small undeveloped portion of Lot 607 (Recreation Centre) along the southern boundary is to be incorporated into the Water Reserve together with a portion of Unencumbered Crown Land (PIN 1358679).

**8 -** Lot 513 on Deposited Plan 220518 (Land Record 3112/348) covers the sports ground and the land north of the Cricket Club. A very small portion of that lot is to also be incorporated to the Water Reserve as per item 7 above.



## 3.4 Pathway to land subdivision

The implementation of the Structure Plan relies on the ability to subdivide the land and create freehold titles to accommodate residential and commercial land uses. The SOCI is willing to facilitate this process for the clearing of land and the creation of titles to occur.

Following advice from the DITRDCSA, the SOCI applied to obtain Crown Land in freehold through DPLH's Crown Land Enquiry Form (CLEF) on the 12 December 2024. DPLH manages land administration in the IOT on the DITRDCSA's behalf through a Service Delivery Agreement. The land sought through the CLEF is the northern portion of the Structure Plan that

can be physically urbanised as depicted at **figure 10 p.53**. This will provide sufficient land to accommodate residential and commercial demand on the island for at least the next decade.

The SOCI seeks to be granted ownership of the referenced Crown Land parcel through an Off-Market concessional sale to facilitate the construction of Social and Affordable housing projects, reduce youth housing stress, advance the resilience of its at-risk Kampong community at Flying Fish Cove by securing land and housing opportunities away from the coastal area and ultimately prepare the transition of the island economy beyond immigration and mining.

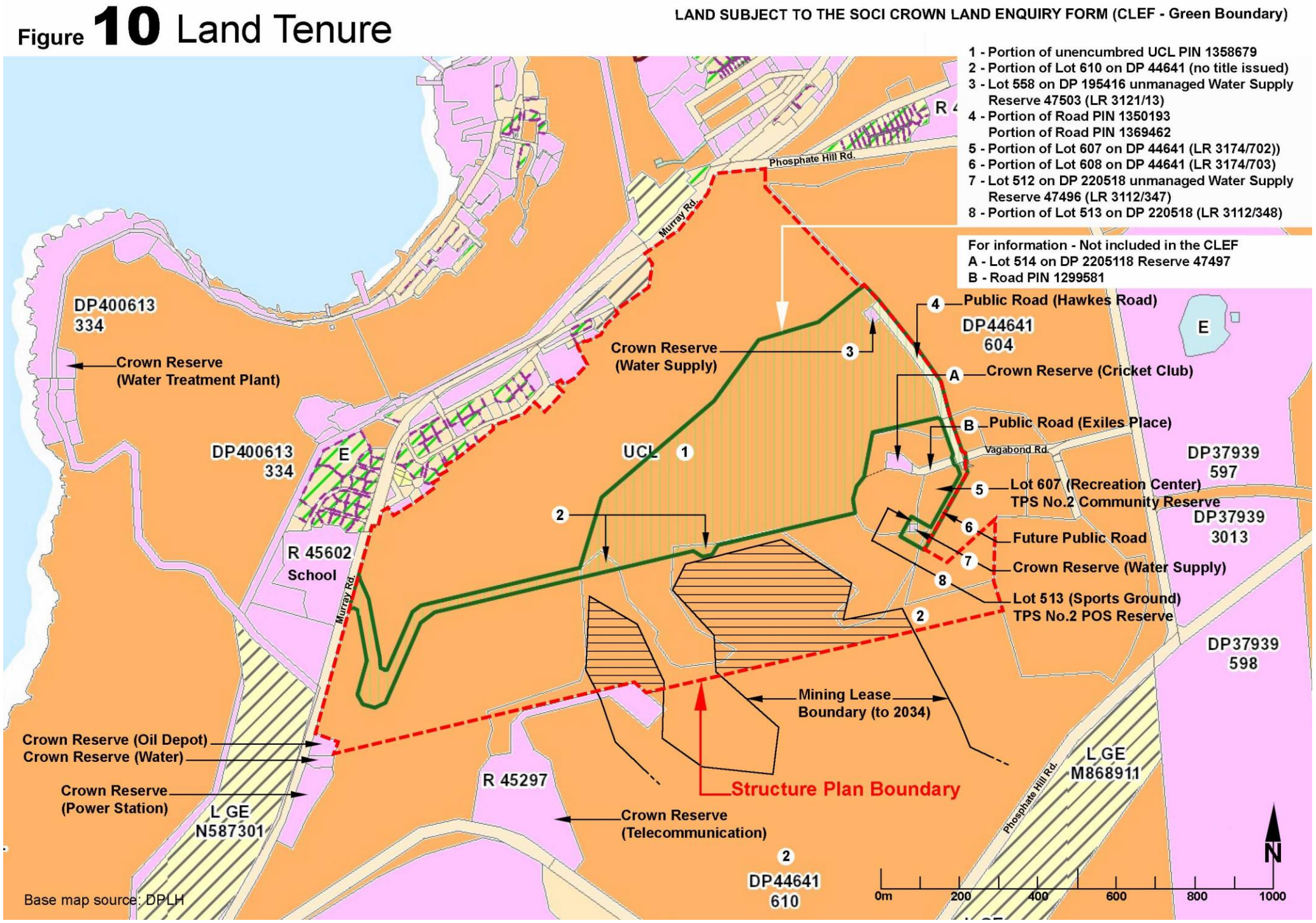
The community benefits identified by the SOCI in order to obtain a Concessional Sale are:

- The construction of new public housing to replace the current stock earmarked for demolition;
- The construction of social and affordable housing to relieve housing stress experienced by the island's 18 to 40 age group;
- Following the requirements of the Minister for Home Affairs *2020 Australian Disaster Resilience Handbook*, to reserve land and facilitate the ultimate relocation and resilience of the Flying Fish Cove Kampong community (427 adults of which 147 are children) at risk from sea level rises, cyclonic storm surge induced inundations and landslides/rockfalls caused by heavy monsoon rains.
- To cater for the housing needs of its growing senior citizens population; and
- To prepare the transition of the island economy beyond immigration and mining.

The adherence to the land uses depicted in the Structure Plans and the provision for a quota of affordable housing to be provided in the residential zones of the Structure Plans could be included as a component of the security of purpose conditions and enforced through mandatory requirements under the Shire Local Planning Scheme.

The SOCI seeks the early security of tenure for all land parcels depicted at **figure 10 p.53** given the SOCI's willingness to facilitate the process of land clearing and the creation of titles to progressively implement the Structure Plan.

# Figure 10 Land Tenure



# 4. STAKEHOLDER AND COMMUNITY ENGAGEMENT

Stakeholder and community engagement at the initiative of the SOCI dealing with matters having direct association with the Structure Plan area has been on-going since 2019. This sustained engagement was conducted through a range of activities including but not limited to:

- Debates at public meeting;
- Regular presentations and dialogue with Shire Councillors;
- Regular briefings and feedback from DITRDCSA staff on island and in Canberra;
- Presentations to CIP staff on island and PRL staff in Perth;
- One on one consultation with independent local businesses;
- Neighbourhood workshops with residents for each settlement;
- Issuing of questionnaires;
- Consultation with water and power providers and
- Briefing sessions with the Administrator.

## 4.1 Christmas Island Strategic Assessment (CISA) – 2019/2023

A whole of island Strategic Assessment under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC) was initiated in February 2019 through and Agreement between the Federal Minister for the External Territories and the Minister for the Environment.

From the outset the SOCI sought to ensure the CISA land use plan was to coincide with future land use planning associated with the review of the Shire LPS and capable of accommodating a permanent population of 5000 residents in order to maintain a sustainable economic output on the Island post-mining and be aligned with the population target of the SOCI 2015 LPS in force.

In effect the CISA Land Use Plan would match the land uses depicted in a new draft Local Planning Strategy then already under preparation.

As part of that process, it was agreed the life of the CISA Plan was to be set at 30 years. The CISA was paused in June 2023 by the Australian Government *"while significant policy and law reforms are ongoing".*

This change of direction has highlighted three matters:

a) proponents are now to initiate their own referrals under the EPBC act instead of relying on a whole of island strategic assessment.
b) the need for the SOCI, moving forward, to capture acceptable elements of the CISA land use plan to minimise environmental impacts and
c) the merit to prepare the Structure Plans at Phosphate Hill and Silver City, inclusive of environmental referrals, to facilitate new developments whilst reactivating the CLEF process as catalyst to attract investment and pivot the island economy.

## 4.2 Land Use Planning for Disaster Resilient Communities – 2020 Handbook

Another purpose of the Structure Plan is to provide, when the time comes, land use choices at Phosphate Hill to assist with the orderly relocation of the Flying Fish Cove Kampong community at risk from sea level rise, storm surges and rock falls. Published by the Australian Institute for Disaster Resilience and the Commonwealth Department of Home Affairs, the *2020 Land Use Planning Handbook* provides guidance on national principles and practices relevant to communities at risk and the role land use planning can play for promoting disaster resilient communities. The SOCI, following the Handbook process, has facilitated workshops with the Kampong Community in 2020 and 2021.

The vulnerability of the Kampong area is identified in the SoCI 2015 Local Planning Strategy that specifically advocates at page 46: *"Develop a long-term residential transition plan (20-30 years) for the Kampong towards safer existing and new urban areas"*

The SOCI resolved at its 22 September 2020 Ordinary Council Meeting to initiate a formal dialogue with the Kampong residents to collaboratively explore a future sustainable planning and social approach in response to on-going climate change induced risks at Flying Fish Cove. The SOCI subsequently facilitate two workshops where relocation possibilities at Phosphate Hill, Silver City and Taman Sweetland were explored with sustained interest from the community (refer to **figure 11 p.57**).

As part of the HSP-S1 program, the SOCI has presented the Phosphate Hill and Silver City proposed initial drafts of the Structure Plans at public meetings at the Kampong on the 7 and 14 November 2024 to further gauge the community's sentiments and expectations associated with these more detailed plans noting that as of November 2024, the Kampong population was 427 of which 147 were children.

Considering the 2021 average Australian household size of 2.5 indicates that the orderly relocation of the residents could require the identification and protection of suitably zoned land to accommodate up to 170 dwellings on freehold lots, in strata apartments or social housing apartments.

The main issues raised during these sessions were:

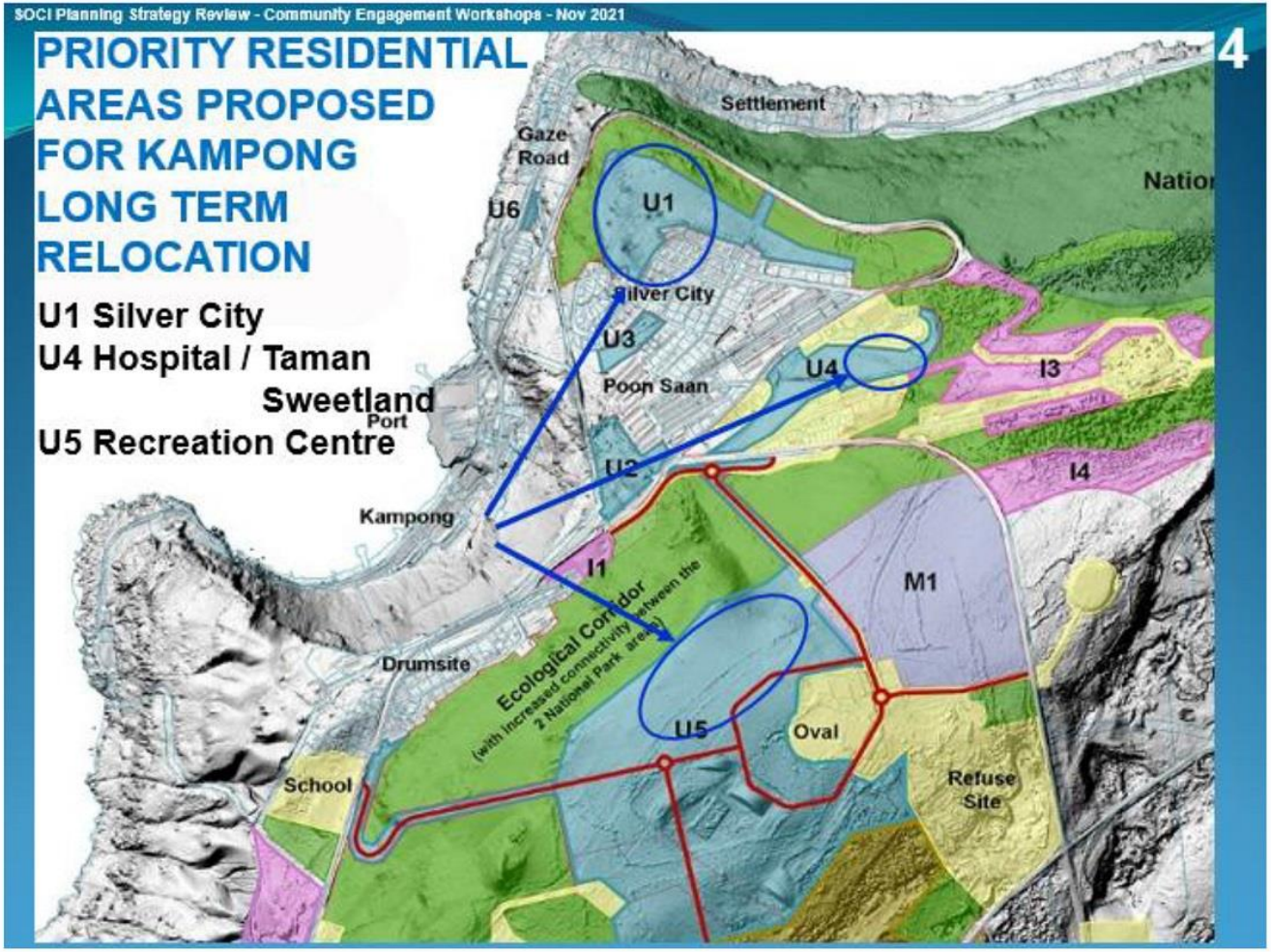
- confirmation of SOCI's role to assist the community in identifying, reserving and or allocating land for future relocation;
- expectation that a formal process involving collaboration between the SOCI and the DITRDCSA to release land be sustained;
- the SOCI and the DITRDCSA agree that a formal community owned evacuation plan need be establish rapidly and not wait for catastrophic event to occur without it;
- residents may only move when they have to, some may take the opportunity to do it early;
- the need to identified quantitative aspirations in terms of future relocation to either Silver City or Phosphate Hill;
- preference for housing on large single 900m2 lots to cater for children, boat, veggie garden and ancillary dwelling for ageing family members;
- apartment format should also be considered to address generational circumstance, affordability and like for like in terms of relocation;
- expectation that, beyond relocation, land use at Flying Fish Cove would not allow hospitality or residential accommodation;
- future land development and housing projects should provide employ local people in priority;

- expectation the relocation of prayer facilities be considered and land be identified for it at Phosphate Hill;
- realisation that relocation cannot provide same views and access to the beach whilst Silver City can offer views;
- the Phosphate Hill and Silver City Structure Plans, once endorsed, represent the immediate necessary first step to concretely advance the ultimate resilience of the Flying Fish Cove community; and
- that the Commonwealth needed to play a significant role in any relocation planning concerning the welfare of residents, with their informed consent.

# Figure 11 Kampong Relocation Priority Areas

## 1.2 Confirmation of proposed relocation areas

The following drawing was presented for discussion at the Kampong 17 November 2021 Community Engagement Workshop




**2020 SOCI proposed CI Strategic Assessment (CISA) Land Use Plan**

Three future residential areas deemed suitable for the orderly and progressive relocation of the Kampong residents have been identified by the Shire for the following reasons:

Area **U1** - North of Silver City can provide built form density similar to the Kampong with equal/superior sweeping ocean views.

Area **U4** – Between Taman Sweetland and the Hospital could accommodate Independent Living Units and Age Care.

Area **U5** – In close proximity to the Recreation Centre, outside the mining lease and on flat land. This area can accommodate low density residential on large blocks.

**The representatives of the Kampong community support the Shire in securing part of these 3 Unallocated Crown Land assets for the exclusive purpose of the progressive relocation of the Kampong Residents over time.**

## 4.3 Phosphate Resources Limited

Meetings and presentations to PRL and CIP staff have been conducted from November 2024 onward to gauge the effect the Structure Planning may have from a strategic perspective vis a vis the future of the island economy or the potential impact on the mine operation.

PRL's main comments about the Structure Plan are as follows:

- support the SOCI having secured funding HSP Stream 1 funding;
- consider the creation of the Structure Plan as long overdue;
- acknowledge the SOCI CLEF submission did not include mining lease land;
- acknowledge the importance of the initiative to reduce housing shortage and improve island amenity in the near future;
- emphasise the longer-term benefit of encouraging investment into the island; and
- suggest that at the appropriate time, the company may explore investment opportunities once the land is subdivided.

In addition, PRL has provided pro bono valuable geophysical information to the DWA engineering team in the form of historic borehole data and the known location of major fractures in the limestone formation within the Structure Plan area.

## 4.4 Christmas Island Housing Needs Assessment

The SOCI engaged the Christmas Island Women's Association (CIWA) to lead community consultation efforts and provide insight in assessing the most suitable mix of housing and tenure types to meet the island's housing needs. It was also tasked with reviewing and consolidating the literature on housing stress and housing demand on island.

This noticeably complex assessment (refer to **Appendix 6**) focused on the housing journey of Christmas Island families from the perspective of women, the suitability of housing designs for new developments and options for construction. On this basis the CIWA consulted its 150-person membership from September to December 2024 and conducted a further 20 in-person interviews with women of between 60 to 90 minutes each in the language of the interviewee's choice.

The exercise uncovered lived experiences of women across different generations, cultural backgrounds, time periods and household sizes thus reinforcing this anecdotal common thread: *"If you solve women's problems, you solve societies' problems. If you solve men's problems, women still have problems".*

Terms frequently used in the findings are:

- **Underhoused Household** being long term current Christmas Island residents who are unable to meet the criteria for a home loan and are currently excluded from public housing eligibility;
- **Public Housing** owned and managed on Christmas Island by the DITRDCSA with guidance for eligibility criteria from the WA Dept. of Communities;
- **Social Housing** or rental housing that is owned and/or managed by not-for-profit organisations and generally allocated to lower income households on either income-linked or "affordable" rents in accordance with eligibility and prioritisation policies of each State/Territory or Community Housing Provider;
- **Community Housing Provider** (CHP) is a registered organisation under their State or Territory legislation that delivers affordable housing options for the community through either creating rentals within affordability limits or disposal of homes at below market prices to a select demographic and
- **Affordable Housing** is offered for sale at below the market price in the area, typically by a CHP although historically the Commonwealth as well.

The key findings/recommendations identified by the CIWA with direct and or indirect influence in the Structure Planning process are:

a) reaffirmation the SOCI's March 2022 Christmas Island Housing Stress Survey and subsequent community groups and individuals feedback that the WA benchmarks for entry onto the Christmas Island public housing waitlist have resulted in the creation of an 'underhoused' demographic given the requirement to have 30% of the purchase price in cash to be considered for a loan through the island's sole banking provider;

b) there are sufficient 'underhoused' persons on the island of varying ages to fill at least 24 homes if it were to be made available for them to enter social housing through a CHP, or through amendment to the existing public housing criteria;

c) Islanders do not have access to programs and schemes available through the Housing Australia organisation where tenure to

approved land may allow CHPs and other stakeholders to build housing stock on Christmas Island;

d) Housing Australia's six support vehicles are the Affordable Bond Housing Aggregator, the National Housing Infrastructure Facility, the Housing Australia Future Fund, National Housing Accord Facility, Capacity Building and Home Guarantee Scheme;

e) noting the Commonwealth's successful mirroring of the WA Government's 2024 Short Term Rental Accommodation Initiatives which has seen short-stay accommodation stock move back into the long-term market;

f) the proposed Phosphate Hill and Silver City Structure Plan locations as being equally desirable for social and affordable housing developments and noted that Silver City had in-fill potential;

g) the total residential needs for the 2026 to 2030 period is 62 homes representing 16 underhoused single, 12 underhoused couple, 16 incoming young adults (18-24), 12 incoming households (25-39) and 6 seniors (65+);

h) recommending the 24-unit public housing Kampong block set for retirement be replaced with 16 two-bedroom units and 8 three-bedroom units in the Structure Plan areas;

i) using the waitlist for public housing to gauge housing demand presents a distorted view because the benchmarks to enter public housing stock does not permit the working 'underhoused' to register to apply for housing;

j) noting that Flying Fish Cove is a foot-friendly environment with proximity to grocery retail and a significant place of worship. New residential areas in the Structure Plans should incorporate public and social space to encourage interaction between neighbours and especially the elderly;

k) it is essential that pathways be capable of wheelchair and pram access and the design of new social housing areas need not contain fencing security lighting and cameras as a priority;

l) ensure the aging population has access to housing stock that is suitable for elderly to be able to live independently with features such as ramp access and wider door frame should their current homes not continue to be suitable;

m) SOCI and DITRDCSA to research and resolve banking, insurance and geographic limitations in order to assist people seeking to participate in the Christmas Island residential housing market;

n) the CIWA membership and the wider community note the unlikelihood of raising 30% cash deposit whilst paying rent and where the 'bank of mum and dad' phenomena in assisting children to secure accommodation is also mirroring the mainland trend;

o) 20% of CIWA women interviewees had either drained their superannuation completely or sold their own homes to provide one child or several children the means to make up a deposit to enter the private housing market thus resulting for some to living in public housing in their advanced age;

p) the SOCI to seek clarification from the DITRDCSA as to which WA State Government funding could be mirrored from the WA Community Housing Provider sector and applied the IOTs and to subsequently seek to fund a CHP to create a feasibility study on service delivery for Christmas Island;

q) CHPs can provide the governance structure to deliver social/affordable housing programs to residents should they be able to access the according funds to do so from the Commonwealth and

r) women could not obtain viably a home without a partner or significant family assistance in the private market. A non-private market housing pool which allowed women to pursue career development on island was essential to retain unmarried women on the island pursuing a career and also play a role in providing long-term tenure for families and retired elderly.

# 5. DESIGN RESPONSE

The Stage 1A precinct masterplan, developed for this green field canvas, illustrates the design outcomes consistent with the *State Planning Policy 7.2* taking into account the intent and objectives of the precinct six design elements namely Urban Ecology, Urban Structure, Public Realm, Movement, Land Use and Built Form.

## 5.1 Urban ecology

The overall ecological framework of the Structure Plan is depicted on the Urban Ecology Plan at **Figure 4 p.20**. The precinct masterplan (refer **Figure 12 p.63**) proposes to support and protect segments of the ecological systems through the preservation of features of the forest within the dedicated linear POS network acting as ecological connectors between the urbanised areas and the large proposed environmental conservation zone on the western flank of the Structure Plan.

The POS network fans out from the playing fields, situated in the highest area of the Phosphate Hill plateau, towards the lower conservation zone thus facilitating the management of stormwater through the establishment of discreet shallow basins.

The retention of major trees found within the POS network will provide early shade within the public real. The ecological connectors may also act as red crab migration corridors when they seek to reach the ocean to spawn at the start of the monsoon cycle.

The influence of energy demand and carbon emission reduction plays an important role in the design of the precinct. A feasibility study (refer to **Appendix 5**) has been carried out on the energy benefit of installing Vertical Axis Wind Turbines (VAWT) (refer to **Figure 16 p.70**). This is a complementary measure to the systematic deployment of roof solar arrays (refer to **Figures 13 p.64 - 14 p.68 - 15 p.69**) and considered essential at Christmas Island experiencing sustained cloud cover during the monsoon months. The feasibility study has demonstrated the technical and economic viability of deploying a hybrid energy system at Christmas Island to support the Housing Support Program – Stream 1.

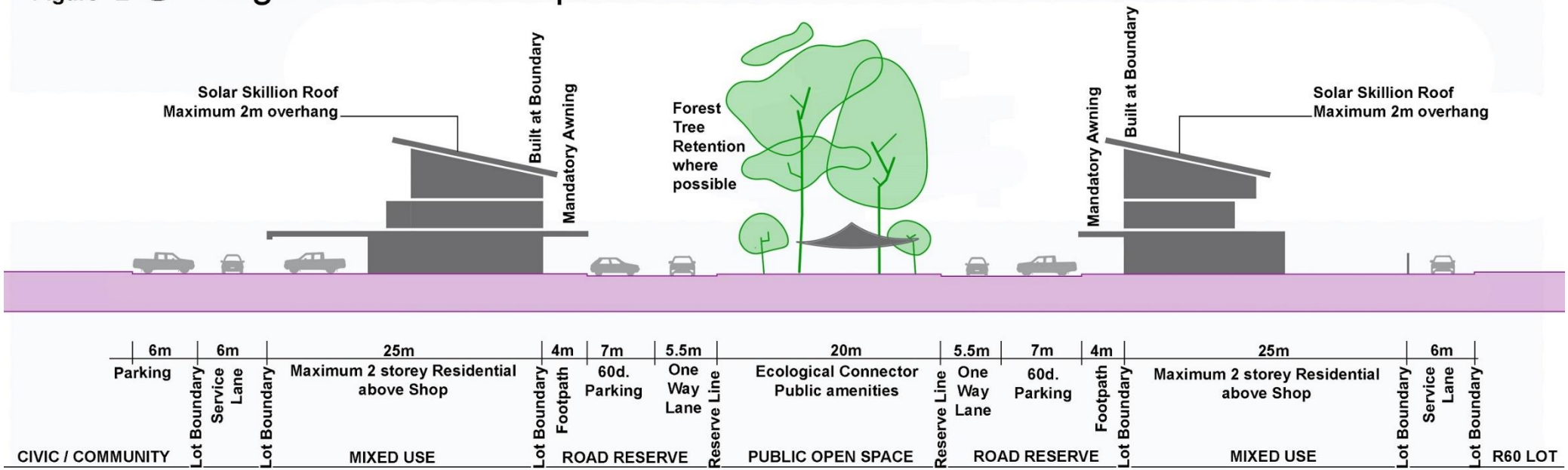
The findings clearly highlight the economic benefits of diversifying energy sources and optimizing system design particularly through strategic VAWT placement within the POS zone.

Community batteries may be inserted in the built form at appropriate locations together with electric vehicle charging points.

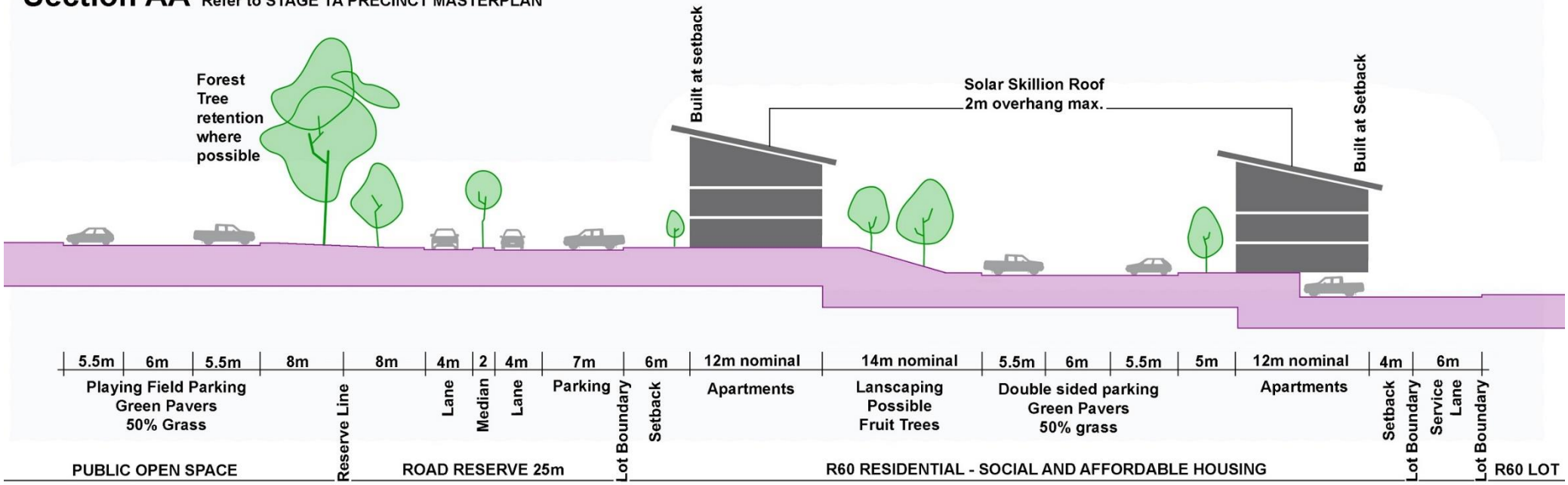
The SOCI may consider trial to encourage the separation of kitchen waste or wet waste at source with dedicate wet waste collection points within the precinct in order to facilitate an easier and more systematic recycling process of dry waste at the tip site.

# Figure 12 Stage 1A Precinct Masterplan

# Figure 13 Stage 1A - Streetscape Sections




## Section AA Refer to STAGE 1A PRECINCT MASTERPLAN




## Section BB Refer to STAGE 1A PRECINCT MASTERPLAN

## 5.2 Urban structure

The pattern of lots and large blocks, streets, buildings an open space have been calibrated taking into consideration the topography to ensure maximum road gradient not exceeding 10%, the establishment of buildings to run parallel to the contours in the steeper areas and the ability to retain portions of remnant vegetation within the POS structure. The combination of well interconnected streets intersecting with the ecological connectors and their cycle ways result in a legible structure with a unique sense of place designed to facilitate movements and assist wayfinding.

The guiding principles governing the R60 Residential and Mixed-Use buildings are to:

- limit building length to 30m to allow maximum access to natural light and encourage natural ventilation as sustainable alternative to air conditioning;
- limit building height to 3 storey maximum to align with community expectation and avoid installation of lifts requiring maintenance and repairs from mainland specialists;
- set buildings on prescribed alignments at the periphery of the lots to address streets and or public open spaces; and
- obtain resulting semi enclosed courtyards interconnected to each other with dedicated pedestrian and universal access pathways.

The supply of large R17.5 lots averaging 835m$^2$ reflects the community preference for housing on large lots to cater for children's needs, allow the parking of boats as frequent and common requirement for islanders, provide opportunity for nurture veggie garden and fruit trees and build ancillary dwelling for ageing family members and maintain family cohesiveness.

## 5.3 Public realm

The public realm is characterised by a leafy environment due to the street trees allowances combined with the intended retention of existing trees within the linear POS network. This is designed to maintain a strong urban tree canopy as a feature of local identity, enhance the quality of views from the R60 dwellings or Mixed Use developments, promote community health and wellbeing and ultimately generate a cooler environment throughout the precinct.

The precinct masterplan design has taken into account a key finding of the CIWA's housing need assessment noting that *"Flying Fish Cove is a foot-friendly environment with proximity to grocery retail and a significant place of worship. New residential areas in the Structure Plans should incorporate public and social space to encourage interaction between neighbours and especially the elderly".*

To this end consideration has been given to integrate a Civic and Community area in the mist of the residential and commercial fabric to promote the foot-friendly environment sought by the community and create the seamless pedestrian transition between the semi-private residential courtyards, the retail areas and the public realm itself.

## 5.4 Movement

Movement issues are island specific with no real comparison to mainland circumstances. The movement network is designed to accommodate the 5000 permanent residents target and the Road Reserve hierarchy displayed at **figure 3 p.18** is responsive to that objective. The Stage 1A movement network is designed to feed seamlessly with this overall vision.

Public transport on Christmas Island is limited to a handful of buses driving children on school days from each neighbourhood to and from the CIDHS.

These buses are also used from time-to-time for special events, community groups or tourism. The precinct masterplan provides for two pick up bays along the neighbourhood connector between the Shop Houses and the playing field. There is little prospect for activating a public transport Scheme on CI in the short to medium term.

The usage of private vehicles, once the privilege of a few in the past, is now the common mode of transport on the island with most adults driving their own car. The carpark demand in the residential areas is expected to be relatively high. The masterplan illustrates desirable private parking arrangements within residential allotments.

Public parking inside the Road Reserves at right angle along the street verges is supported by the SOCI. It is common practice in many parts of the island settled areas and the most efficient and cost-effective layout. Generous parking with environmentally friendly green pavers, is also planned on the edge of the playing fields POS to cater for high demand during sports and other whole of island evening and or weekend community events. The layout allows for dual usage given the ability to meet parking demand generated by the commercial and retail businesses activities across the road during weekdays. Like with all settled areas on the island a 50km/h speed limit is expected to apply within the Structure Plan area.

The legibility of the Structure Plan Street network is illustrated with the road reserve hierarchy at **figure 3 p.18**.

The use of electric bikes and electric mountain bikes is a fast-growing mode of transport for tourist visitors and locals alike. The precinct masterplan is also planning for dual pedestrian and cycling path on all ecological connectors leading to future trails across the environmental conservation zone trough to the Drumsite neighbourhood. These trails are illustrated as opportunities at **Figure 9 p.49**.

## 5.5 Land use

The precinct masterplan offers a mix of compatible uses to encourage vibrant, diverse, interactive and safe place. The Stage 1A specific land use diversity represents a benchmark intended to be further duplicated throughout the Structure Plan itself.

Co-locating the R60 and Mixed Use zones adjacent to the active recreation POS has the following benefits:

- many residents will have views onto the POS
- residents and children in particular will have direct access to the playing fields after school
- the POS carpark can be used by the patrons of the commercial areas during day time when the playing fields are not used by the clubs

The retail, office and employment activities benefit from the movement network being directly accessible by vehicles via the neighbourhood connector and immediately adjacent to the ecological connectors with cycling and pedestrian shared use pathways.

The Stage 1A land use mix with its housing types, community and civic allotment, commercial and business uses as well as the central POS are expected to encourage community diversity, social interaction and ultimately walking and cycling.

The traditional shop houses with all retail functions at ground level will help achieve vibrancy, facilitate social interaction and create a safe environment with natural surveillance.

## 5.6 Built form

The built form responds to the physical and cultural characteristics of the precinct as follows:

- the central POS with its playing fields is the dominant feature, all residential and commercial facades are expected to address it;
- the traditional South-east Asian retail and commercial morphology is echoed in the shop houses;
- efficient solar energy capture to contribute to CO2 emission reduction is facilitated with the mandatory skillion roof required on all buildings;
- apartment buildings are to not exceed 30 m in length to maximise the capture of the prevailing breeze and reduce air conditioning demand;
- buildings are to be built at the 6m setback line from the Road Reserves, 4m from the laneways and zero setback for the shop houses to contribute to the intended identity of the precinct.

The single detached houses of the R17.5 zone, the upper floor residences in the shop houses, the R80 residential component of the mixed use lot and the multiple dwellings of the R60 lots will all contribute to the diversity of the built form.

The building height control for the precinct and more generally the Structure Plan area is set at a maximum 4 storeys including the ground floor. Buildings above 4 floors, expected to be provided with lift infrastructure under the Building Code of Australia, are not considered suitable given the island has only a twice a week air service and the reliance on mainland entities to provide emergency assistance and maintenance services.

The SOCI, who will have front end responsibility for the development of Stage 1A, will only consider a maximum of 3 storeys to align with the rest of the island and deliver cost effectiveness and ultimately housing affordability.

Requiring buildings to be established at the street set back line with frequent separation between buildings is designed to improve solar access and create a succession of interconnected courtyard across the precinct. Each courtyard will be provided with at grade community facility for social functions, storage of batteries and inverters, gardening equipment room and waste recovery bin enclosure(s).

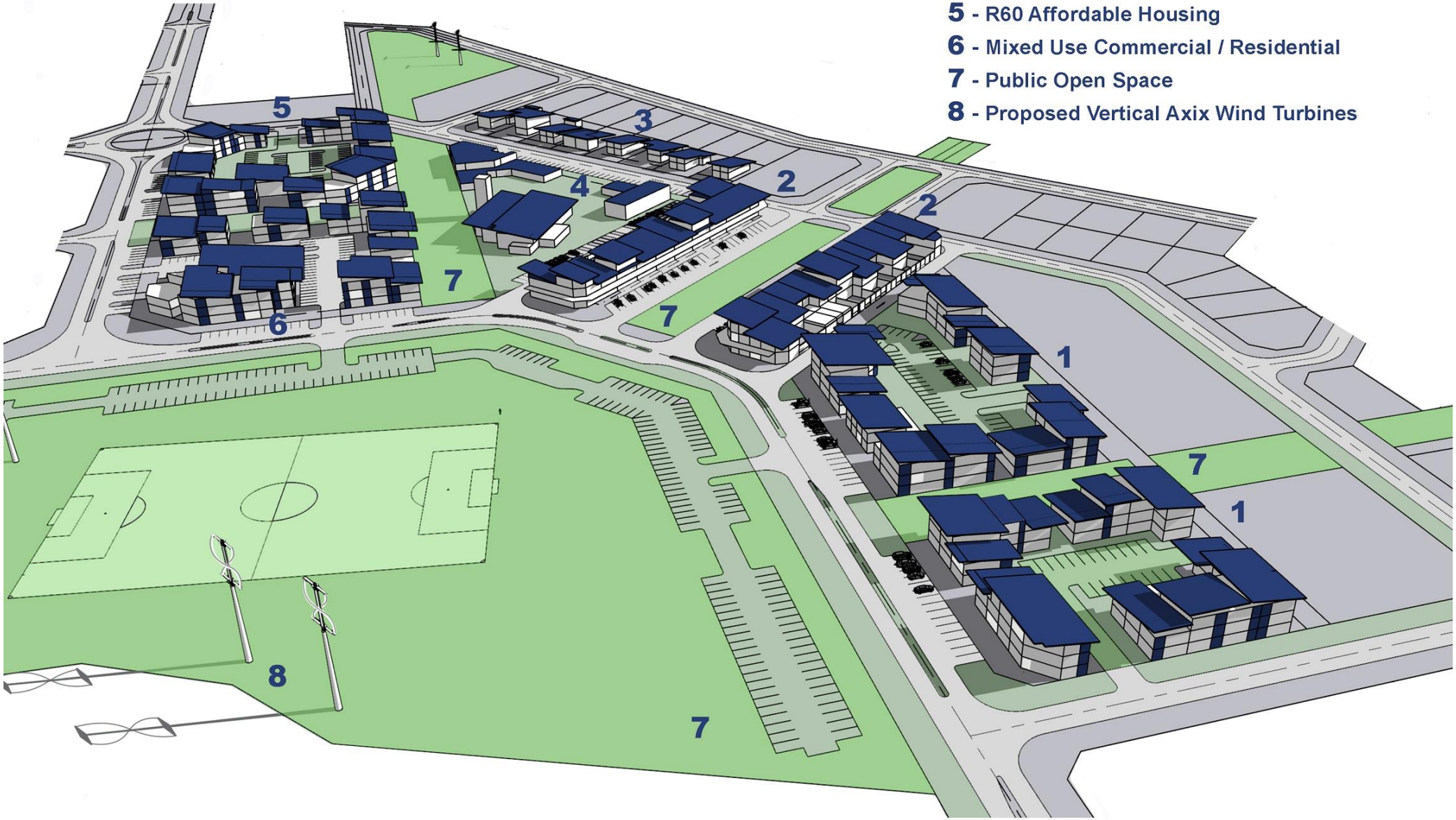
The skillion roof requirement applicable to every building is essential to achieve greater solar energy capture. This is also possible through the enforcement of requiring a minimum of 1/3 of east, north and west façade areas to be utilised for the installation of vertical solar arrays as illustrated at **figures 14 p. 68 & 15 p. 69**.

The courtyards, with sufficient landscape area, can also provide play area for toddlers, space to grow fruit trees and vegetables.

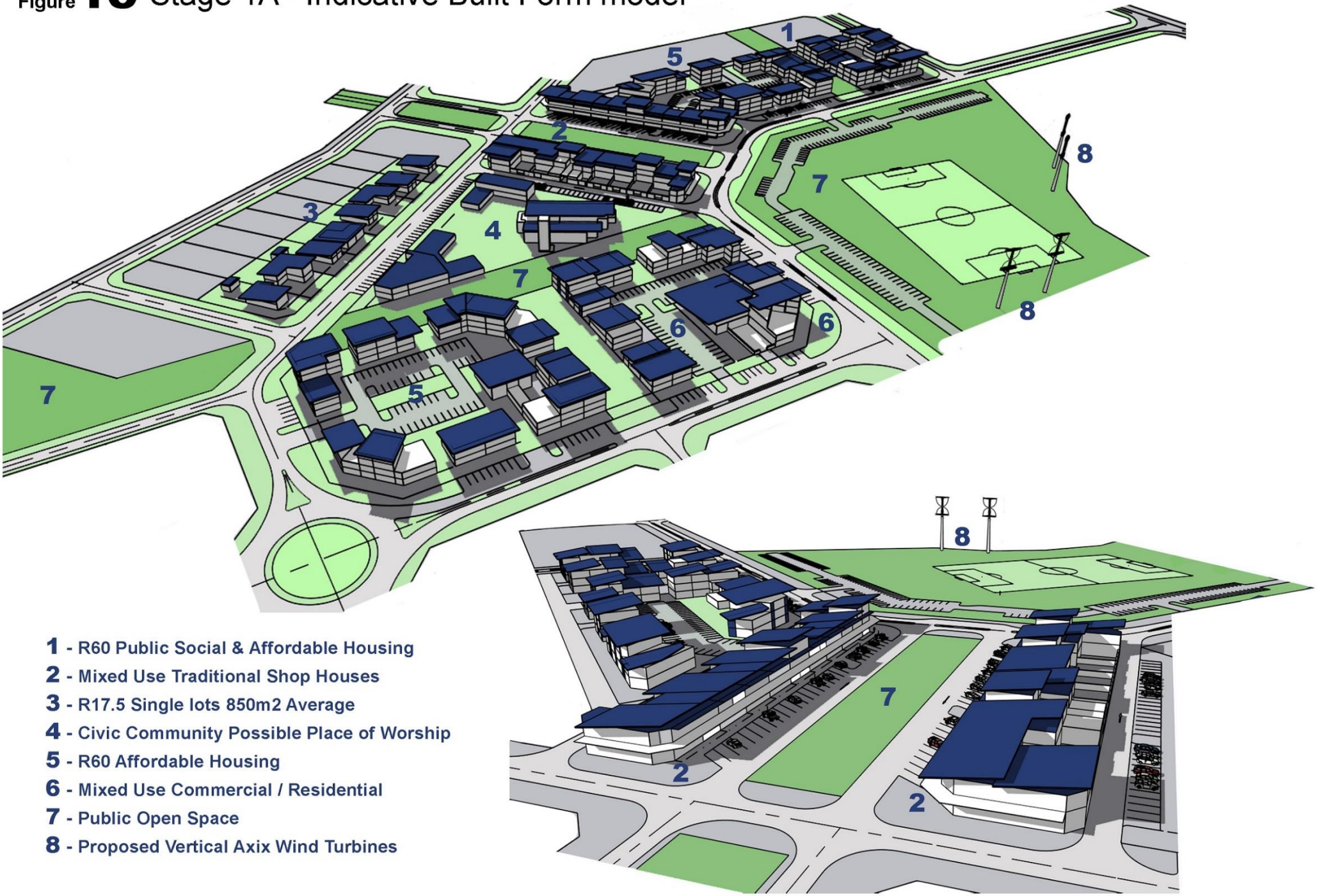
To emphasise the expected natural feel, carpark areas are to be paved with green prefabricated pavers to reduce ambient heat around the buildings, accelerate natural drainage and minimise cost associated with the import of gravel and asphalt.

## Figure 14 Stage 1A - Indicative Built Form model

**1** - R60 Public Social & Affordable Housing
**2** - Mixed Use Traditional Shop Houses
**3** - R17.5 Single lots 850m2 Average
**4** - Civic Community Possible Place of Worship
**5** - R60 Affordable Housing
**6** - Mixed Use Commercial / Residential
**7** - Public Open Space
**8** - Proposed Vertical Axix Wind Turbines



## Figure 15 Stage 1A - Indicative Built Form model




**1** - R60 Public Social & Affordable Housing
**2** - Mixed Use Traditional Shop Houses
**3** - R17.5 Single lots 850m2 Average
**4** - Civic Community Possible Place of Worship
**5** - R60 Affordable Housing
**6** - Mixed Use Commercial / Residential
**7** - Public Open Space
**8** - Proposed Vertical Axix Wind Turbines

## Figure 16 Vertical Axis Wind Turbine initiative

Flinders University

VAWT-ENERGY

**Pilot Project funded by DITRDCSA**
**Telecommunications Disaster Resilience Innovation**

**Program:**

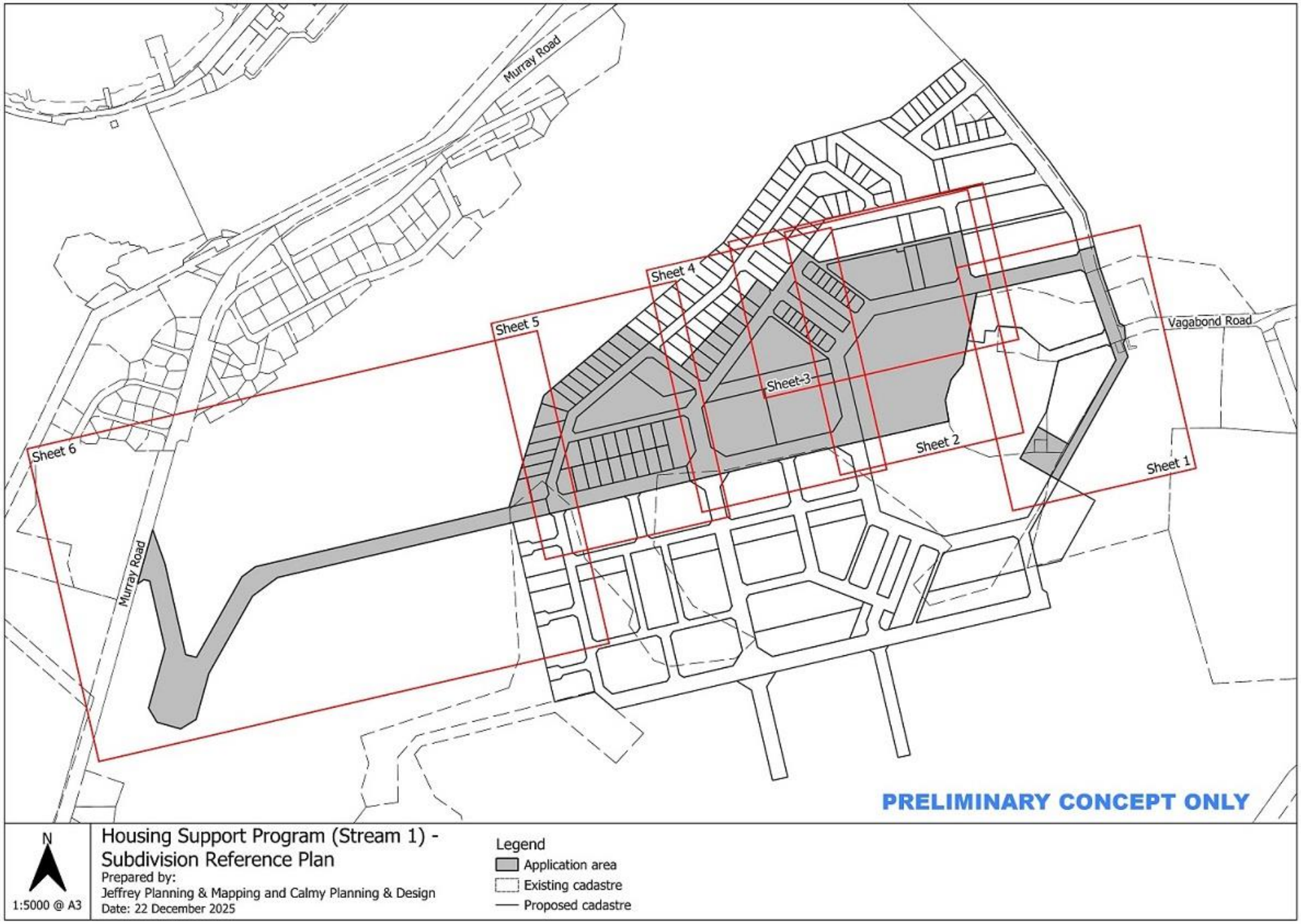
- Design and Modelling at Flinders University
- Assembly at the University's Factory of the Future (former Mitsubishi Plant)
- Field Deployment occured April 2025

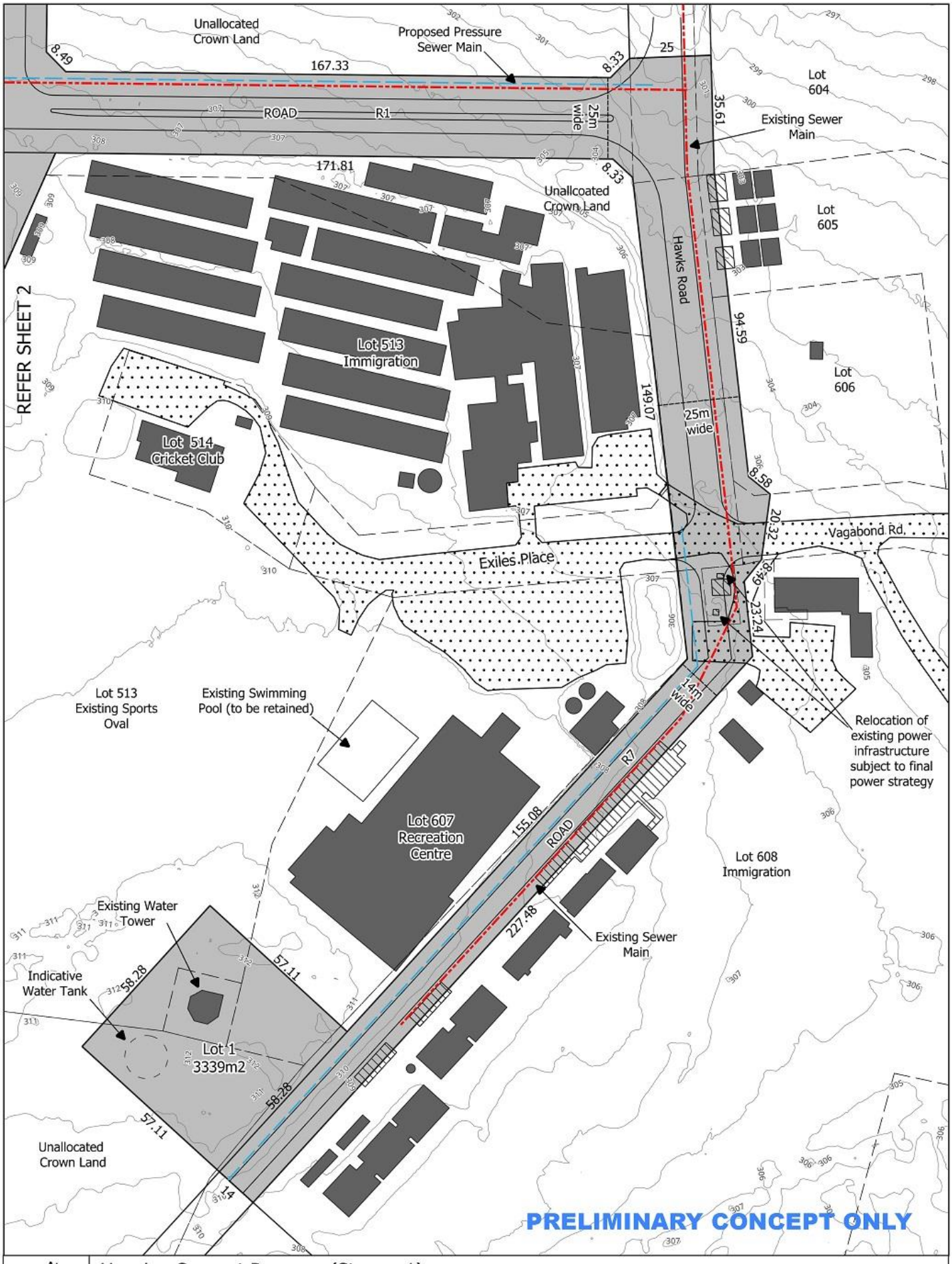
**Turbine Characteristics:**

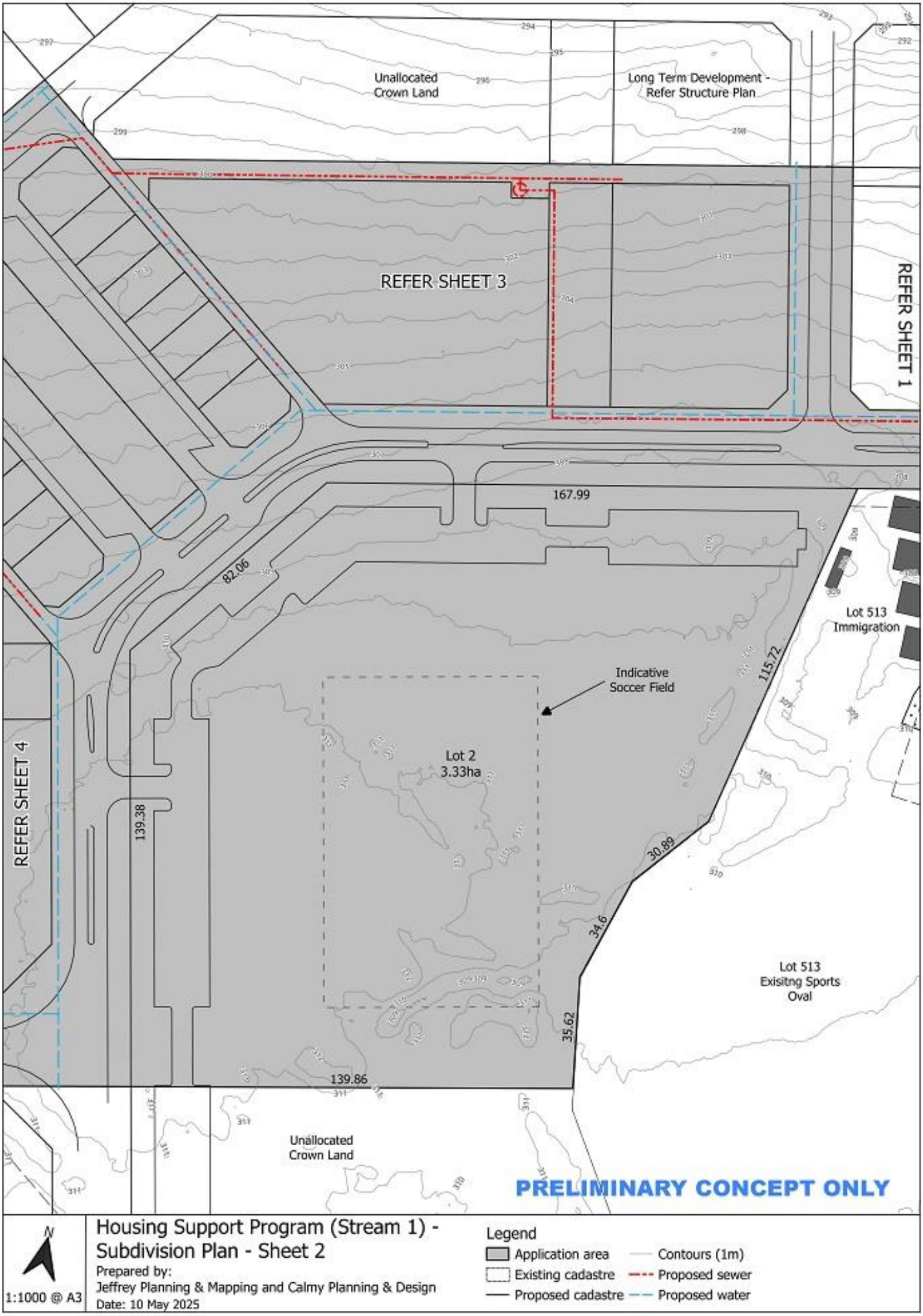
- Total weight 580 Kg
- Turbine in Steel Column base
- Blades in carbon & glass composites
- Installed Power 80 kW

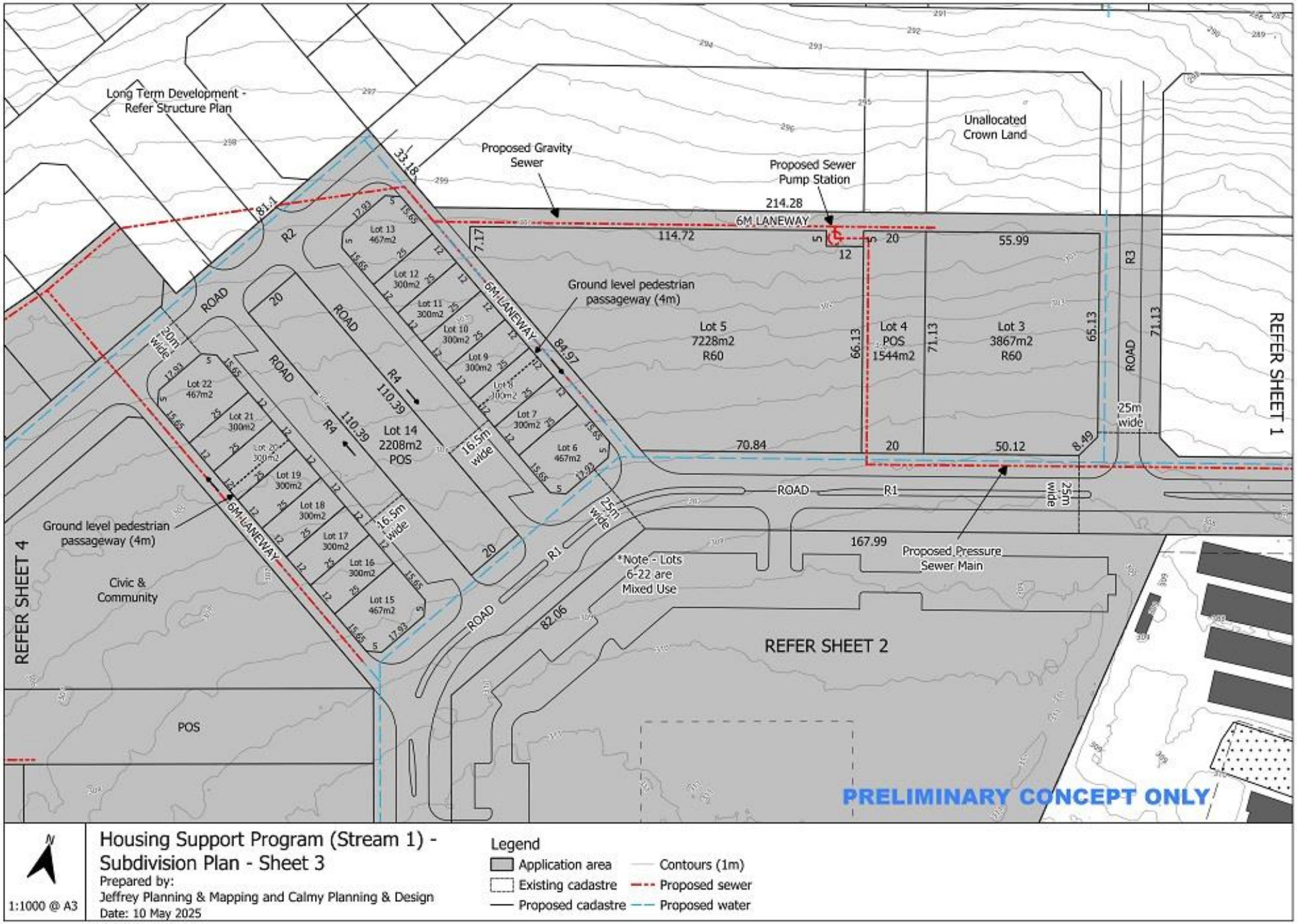
# TECHNICAL APPENDICES

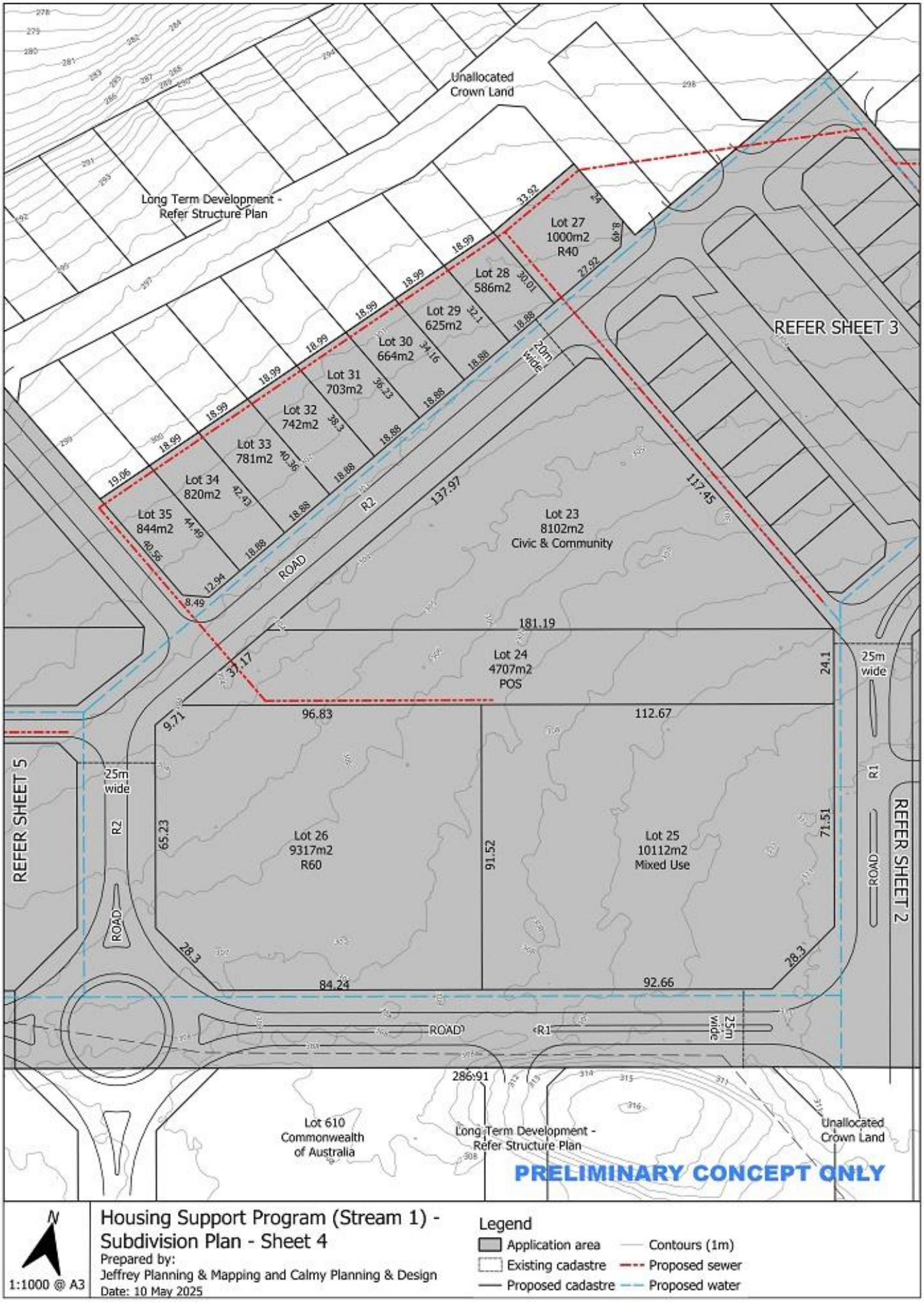
# APPENDIX 1 – Stages 1A and 1B Preliminary Concept Subdivision

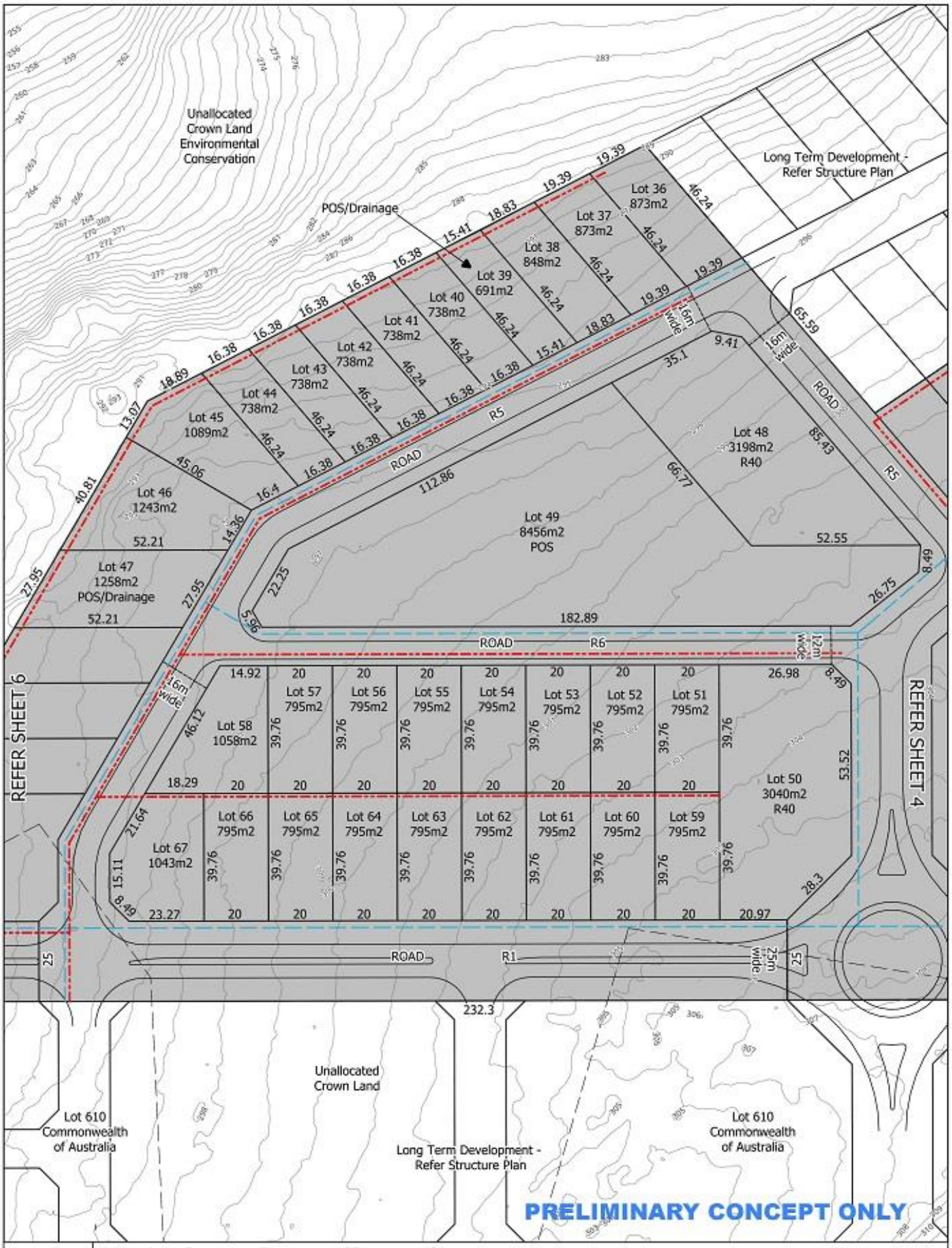


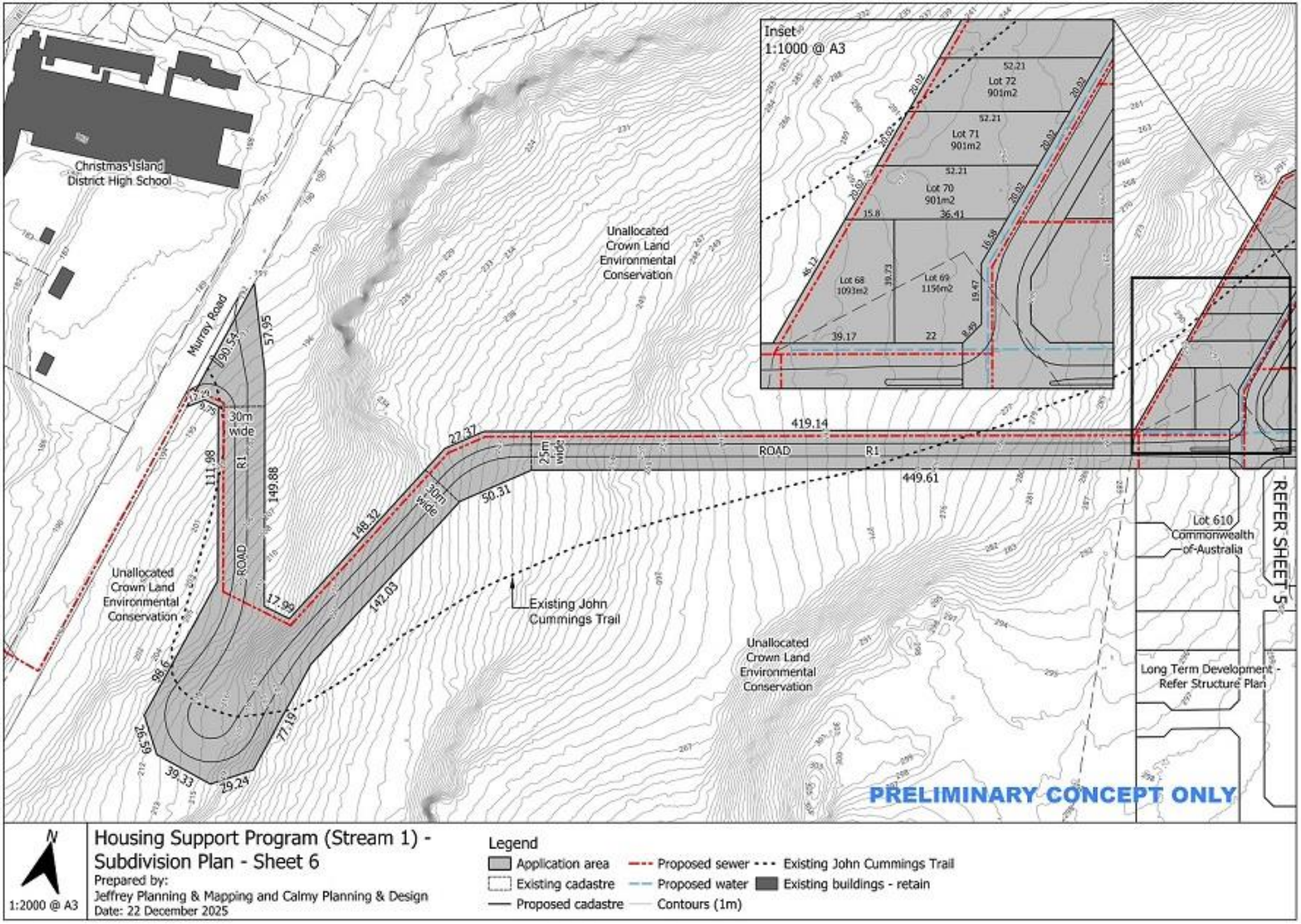

Unallocated Crown Land
Proposed Pressure Sewer Main
8.49
167.33
8.33
25
ROAD
R1
25m wide
35.61
Existing Sewer Main
Lot 604
171.81
Unallcoated Crown Land
Lot 605
Hawks Road
94.59
REFER SHEET 2
Lot 513 Immigration
Lot 606
149.07
25m wide
Lot 514 Cricket Club
8.58
20.32
Vagabond Rd.
Exiles Place
23.24
Lot 513 Existing Sports Oval
Existing Swimming Pool (to be retained)
14m wide
R7
Relocation of existing power infrastructure subject to final power strategy
Lot 607 Recreation Centre
155.08
ROAD
Lot 608 Immigration
Existing Water Tower
227.48
Existing Sewer Main
Indicative Water Tank
58.28
57.11
Lot 1 3339m2
58.28
57.11
Unallocated Crown Land
14
PRELIMINARY CONCEPT ONLY
N
1:1000 @ A3
Housing Support Program (Stream 1) - Subdivision Plan - Sheet 1
Prepared by:
Jeffrey Planning & Mapping and Calmy Planning & Design
Date: 22 May 2025
Legend
Application area
Existing cadastre
Proposed cadastre
Contours (1m)
Proposed sewer
Proposed water
Existing building - demolish
Existing building - retain
Existing road


Unallocated
Crown Land
Long Term Development -
Refer Structure Plan
REFER SHEET 3
REFER SHEET 1
167.99
82.06
Lot 513
Immigration
Indicative
Soccer Field
115.72
REFER SHEET 4
Lot 2
3.33ha
139.38
30.89
34.6
Lot 513
Exisitng Sports
Oval
35.62
139.86
Unallocated
Crown Land
PRELIMINARY CONCEPT ONLY
N
1:1000 @ A3
Housing Support Program (Stream 1) -
Subdivision Plan - Sheet 2
Prepared by:
Jeffrey Planning & Mapping and Calmy Planning & Design
Date: 10 May 2025
Legend
Application area
Existing cadastre
Proposed cadastre
Contours (1m)
Proposed sewer
Proposed water


Long Term Development - Refer Structure Plan
Proposed Gravity Sewer
Proposed Sewer Pump Station
Unallocated Crown Land
214.28
6M LANEWAY
114.72
55.99
Ground level pedestrian passageway (4m)
Lot 5
7228m2
R60
Lot 4
POS
1544m2
Lot 3
3867m2
R60
Lot 14
2208m2
POS
Lot 13 467m2
Lot 12 300m2
Lot 11 300m2
Lot 10 300m2
Lot 9 300m2
Lot 8 300m2
Lot 7 300m2
Lot 6 467m2
Lot 22 467m2
Lot 21 300m2
Lot 20 300m2
Lot 19 300m2
Lot 18 300m2
Lot 17 300m2
Lot 16 300m2
Lot 15 467m2
ROAD
R1
R2
R3
R4
110.39
84.97
70.84
50.12
167.99
82.06
81.1
33.18
7.17
66.13
71.13
65.13
8.49
20m wide
16.5m wide
25m wide
*Note - Lots 6-22 are Mixed Use
Proposed Pressure Sewer Main
Civic & Community
POS
REFER SHEET 1
REFER SHEET 2
REFER SHEET 4
PRELIMINARY CONCEPT ONLY
N
1:1000 @ A3
Housing Support Program (Stream 1) - Subdivision Plan - Sheet 3
Prepared by:
Jeffrey Planning & Mapping and Calmy Planning & Design
Date: 10 May 2025
Legend
Application area
Existing cadastre
Proposed cadastre
Contours (1m)
Proposed sewer
Proposed water


Unallocated Crown Land
Long Term Development - Refer Structure Plan
Lot 27 1000m2 R40
Lot 28 586m2
Lot 29 625m2
Lot 30 664m2
Lot 31 703m2
Lot 32 742m2
Lot 33 781m2
Lot 34 820m2
Lot 35 844m2
20m wide
REFER SHEET 3
R2
137.97
117.45
Lot 23 8102m2 Civic & Community
ROAD
181.19
Lot 24 4707m2 POS
25m wide
24.1
37.17
9.71
96.83
112.67
REFER SHEET 5
REFER SHEET 2
Lot 26 9317m2 R60
Lot 25 10112m2 Mixed Use
65.23
91.52
71.51
R1
28.3
84.24
92.66
286.91
Lot 610 Commonwealth of Australia
Long Term Development - Refer Structure Plan
Unallocated Crown Land
PRELIMINARY CONCEPT ONLY
N
1:1000 @ A3
Housing Support Program (Stream 1) - Subdivision Plan - Sheet 4
Prepared by:
Jeffrey Planning & Mapping and Calmy Planning & Design
Date: 10 May 2025
Legend
Application area
Existing cadastre
Proposed cadastre
Contours (1m)
Proposed sewer
Proposed water


Unallocated Crown Land Environmental Conservation
Long Term Development - Refer Structure Plan
POS/Drainage
Lot 36 873m2
Lot 37 873m2
Lot 38 848m2
Lot 39 691m2
Lot 40 738m2
Lot 41 738m2
Lot 42 738m2
Lot 43 738m2
Lot 44 738m2
Lot 45 1089m2
Lot 46 1243m2
Lot 47 1258m2 POS/Drainage
Lot 48 3198m2 R40
Lot 49 8456m2 POS
ROAD
R5
R6
R1
16m wide
12m wide
25m wide
Lot 57 795m2
Lot 56 795m2
Lot 55 795m2
Lot 54 795m2
Lot 53 795m2
Lot 52 795m2
Lot 51 795m2
Lot 58 1058m2
Lot 66 795m2
Lot 65 795m2
Lot 64 795m2
Lot 63 795m2
Lot 62 795m2
Lot 61 795m2
Lot 60 795m2
Lot 59 795m2
Lot 67 1043m2
Lot 50 3040m2 R40
REFER SHEET 6
REFER SHEET 4
Unallocated Crown Land
Lot 610 Commonwealth of Australia
Long Term Development - Refer Structure Plan
PRELIMINARY CONCEPT ONLY
N
1:1000 @ A3
Housing Support Program (Stream 1) - Subdivision Plan - Sheet 5
Prepared by:
Jeffrey Planning & Mapping and Calmy Planning & Design
Date: 10 May 2025
Legend
Application area
Existing cadastre
Proposed cadastre
Contours (1m)
Proposed sewer
Proposed water


Inset
1:1000 @ A3
Christmas Island District High School
Murray Road
Unallocated Crown Land Environmental Conservation
Lot 72 901m2
Lot 71 901m2
Lot 70 901m2
Lot 68 1093m2
Lot 69 1156m2
30m wide
25m wide
ROAD
R1
419.14
449.61
Existing John Cummings Trail
Lot 610 Commonwealth of Australia
REFER SHEET 5
Long Term Development - Refer Structure Plan
PRELIMINARY CONCEPT ONLY
N
1:2000 @ A3
Housing Support Program (Stream 1) - Subdivision Plan - Sheet 6
Prepared by:
Jeffrey Planning & Mapping and Calmy Planning & Design
Date: 22 December 2025
Legend
Application area
Existing cadastre
Proposed cadastre
Proposed sewer
Proposed water
Contours (1m)
Existing John Cummings Trail
Existing buildings - retain