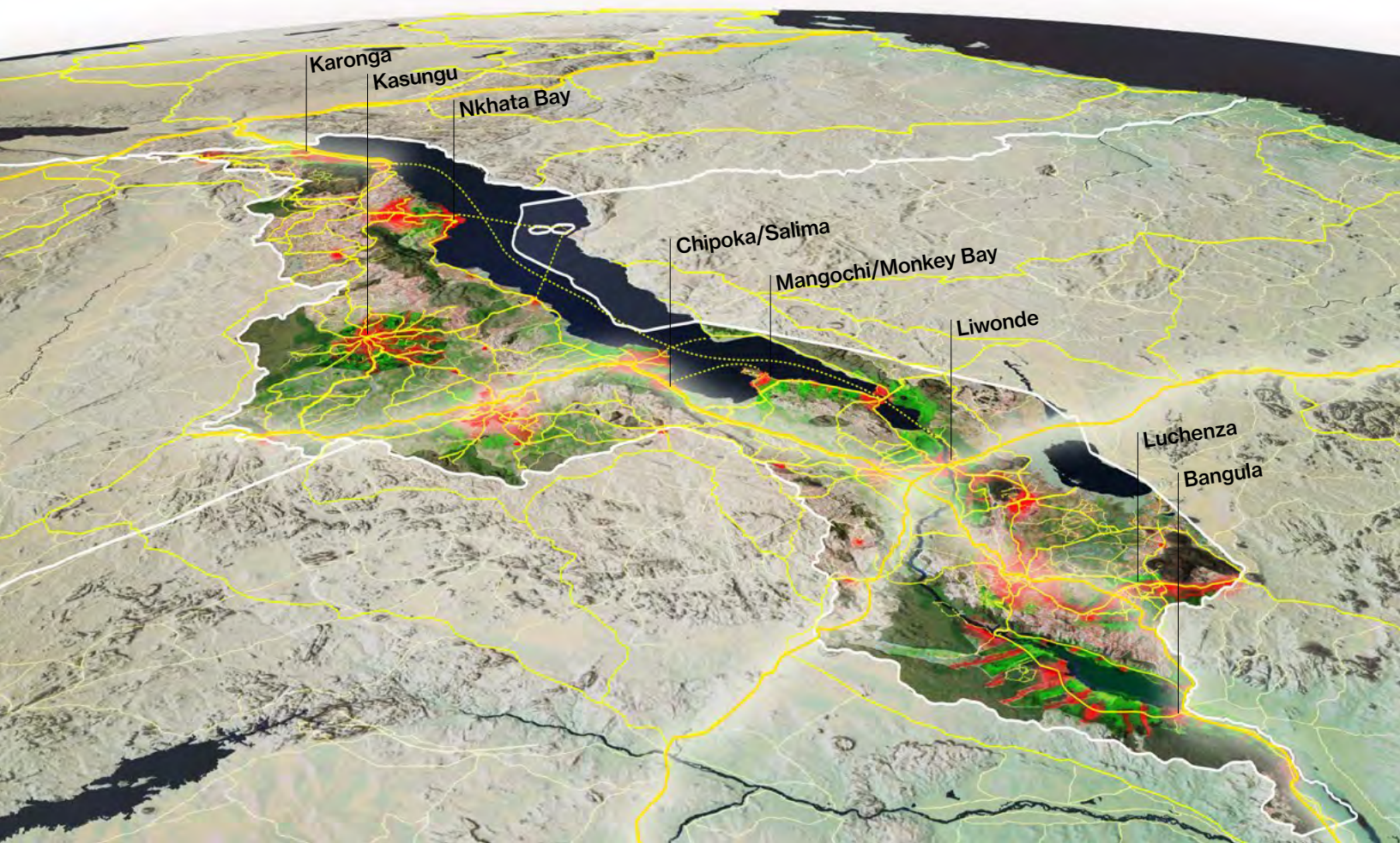
MALAWI SECONDARY CITIES PLAN (MSCP)

A Spatial Guide for Development

In support of

MW2063 MALAWI



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Foreword to the Malawi Secondary Cities Plan

The Malawi Secondary Cities Plan (MSCP) has been developed to provide a spatial foundation for the implementation of the country's Vision, the Malawi 2063 (MW2063); and, by extension, operationalise the Agenda 2063 for Africa and the United Nations New Urban Agenda.

In the MW2063, the voice of Malawians is loud and clear; viz, *'Our country shall have smart, well-planned and serviced secondary cities that are anchored on sustainable economic activities in agriculture, tourism, mining and industry. Urbanization will follow an integrated approach encompassing spatial, economic, social and environmental considerations.'*

The MSCP, therefore, lays out the current spatial configuration, key trends related to land use, opportunities for infrastructural development, and urbanisation scenarios of our country for the next two generations. The plan comes to spearhead a coordinated cross-sectoral planning effort for the management of urbanization processes across the country. Through the identification of cities as anchors for development in their respective regions, the MSCP enables coordinated investments in agriculture, tourism, mining, logistics and commercial opportunities as well as industrial and infrastructural investments, with a long-term agenda in mind, intended to serve the best interests of the current generation while ensuring coordinated sustainability needs for generations to come.

While MW2063 embraces the need for secondary cities, the strong push for development of the cities at the earliest has largely been motivated by the country's political leadership led by His Excellency the President Dr. Lazarus McCarthy Chakwera and his Vice, His Honour Dr. Saulos Klaus Chilima, who, at the time of initiating this agenda, was also the Minister responsible for economic planning and development. The Ministers responsible for physical planning, urban development, local government, and natural resources along with their technical heads, showed unwavering and unprecedented support. Such high-level leadership and commitment is central to the realisation and success of the MSCP.

Malawi has a population of over 17.5 million, with an average annual growth rate of 2.9% which is one of the highest in the region. The population is projected to be over 30 million by 2040, and go over 45 million by 2063. The fertility rate is, however, higher in rural areas than in urban centers. These trends will increasingly put land under pressure as it needs to satisfy both the agrarian and the growing housing and social service needs. The country is also characterised by much better services and more diverse livelihood options in the urban areas than in rural areas which increases the desire of people to migrate to cities. The MSCP is, therefore, meant to create secondary cities that will divert the rural population from concentrating in the country's four primary cities and strengthen the rural-urban linkages. This is intended to ensure that the benefits of urbanisation spread to rural areas, in line with the Urbanisation pillar under MW2063 which seeks to universally improve the quality of life at all levels in the quest for an inclusively wealthy and self-reliant nation.

Being in its early urbanisation stages, Malawi is currently well-positioned to formulate plans, policies and projects to maximize the known benefits of urban agglomeration into the future. The country's main cities and emerging urban areas form the economic backbone of the national economy, with their contribution to the national GDP far larger than their population share hence amplifying the motivation to strengthen their capacity to grow and prosper in a well-planned and coordinated manner.

The envisioned secondary cities will offer opportunities to develop a wide range of economic sectors seen as foundational for national economic development. The MSCP envisages cities and urban areas that are built around a diversity of economic activity to support sustainable growth. Sectors such as tourism, mining, logistics and transport, combined with improved value chain systems of produce, will benefit from enhanced proximity and shared infrastructure, establishing a productive economic and social ecosystem. The cities' economic activities will tie in to existing assets and opportunities that have been well-extrapolated in the MSCP together with their urbanisation potential.

The cities, which will be well-planned through their master plans, will leverage productivity in rural areas with good connectivity and freeing of land meant for agricultural purposes.

The choice of secondary cities, as a priority, was largely based on, *inter alia*, their potential to urbanise, levels of connectivity and the existing opportunities for wealth creation.

The creation of prosperous cities, as espoused under MW2063, is possible and will happen, but with guarded impetus and adherence to meticulous planning.

Signed

Prof. Richard Mkandawire
Chairperson,
National Planning Commission

Signed

Reyneck Matemba
Secretary for Lands

Signed

James Chiusiwa
Secretary for Local Government

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Preparation of the MSCP was inevitably and appropriately a collaborative exercise with high-level political leadership from the State President and his Vice as well as Ministers in the ministries responsible for lands and urban development, local government; and natural resources. Special mention to the Ministry of Lands, especially the Department of Surveys, for the data, technical input and collaboration. Further, the Departments of Physical Planning and Urban Development contributed immensely to the work of coming up with the MSCP. NPC is equally grateful for the cooperation with the Ministry of Economic Planning and Development and Public Sector Reforms, especially on provision of Public Sector Investment Programme (PSIP) data which was instrumental for the development of this plan. Special mention to officials from Ministries of Transport and Public Works and Ministry of Finance for their insights on projects for the MSCP. NPC recognizes the role of the Department of Geography and Earth Sciences at the University of Malawi in the planning, conceptualisation and subsequent deliberations and review of the MSCP.

NPC is highly indebted for the support and guidance by stakeholders and officials from various institutions (State and non-state), including: Public Private Partnerships Commission (PPPC), Export Development Fund (EDF), Malawi Investment and Trade Center (MITC) and United Nations Development Program (UNDP).

The main coordinating team:
Dr. Thomas Munthali, Dr. Joseph Nagoli, Dr. Grace Kumchulesi, Mr. Idrissa Mwale, Mr. Mtamandeni Liabunya, Mr. Maxwell Maida, Ms. Ruth Mkisi, and Commissioner Evance Mwathunga of NPC; Prof. Winford Masanjala, Secretary for economic planning, development; Mr James Chiusiwa, Secretary for local government and his predecessor, Mr Charles Kalemba; Mr Reyneck Matemba, Secretary for lands and his predecessor, Ambassador Bernard Sande; Dr Yanira Ntupanyama, Secretary for natural resources and climate change; Mr Adamson Mkandawire, Chief Presidential Advisor on Rural Transformation and Development.

The core technical assistance team:
Mr. Kobi Ruthenberg (lead), Ms. Garine Boghossian, and Prof. Alexander D'Hooghe of ORG Permanent Modernity.

Members of the projects implementation working group:
Ms. Fosters Sikwese, Malawi Agricultural and Industrial Investment Corporation (MAIIC); Ms. Audrey Mwala, Mr. Charles Msusa and Ms. Judith Mponda, Public Private Partnership Commission (PPPC); Mr. Felix Kadewere, Malawi Investment and Trade Center (MITC); Dr. Milu Muyanga and Dr. Maggie Munthali, MwAPATA Institute; Dr. Friday Njaya, Head of Department of Fisheries and Aquaculture, Ministry of Forestry and Natural Resources; Mr. Noah Nansongole and Mr. Charles Kachelenga, Ministry of Tourism, Wildlife and Culture; Mr. Eliam Kadewele, Export Development Fund (EDF); Captain John Mhango, Department of Marine Transportation; and Dr. Sloans Chimatiro, formerly of MwAPATA Institute.

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Mr. Julius Chisi, Ms. Alice Gwedeza and Mr. Silence Chirwa, Department of Surveys; Ms. Mercy Betty Dube and Mr. Mphatso Kadaluka, Department of Urban Development; Mr. Robins Lukasi, Mr. Gladson Mchoma, Mr. Jailos Lungu, Department of Physical Planning; Ms. Euphemia Bota, Department of Lands; and Mr. Walusungu Kayira, Ministry of Local Government.

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Thomas Chataghalala Munthali, PhD
Director General, National Planning Commission

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EXECUTIVE SUMMARY

Malawi Secondary Cities Plan: A Spatial Guide for Development

In support of 'Malawi 2063'

In the context of development planning, secondary cities are often overlooked. There is a tendency to consider the "urban/rural" division in binary terms; that is, that people inhabit either cities or the countryside. "Secondary (or provincial) cities" fall between these two categories. The working realities of the "secondary city" model is often more nuanced and complex than the theoretical binary one. However, secondary cities play a critical role in the success of both urban and rural economies. Essentially, they perform as 'bridges' in the establishment of infrastructural, operational and cultural feedbacks between either end of the urban/rural spectrum.

In the case of Malawi, the role of secondary cities could be even more catalytic. Unlike most countries, Malawi's main urban centers generally do not appear along coastlines and water bodies. In most countries, these typical settlement structures allow goods and passengers flow to form clusters of habitation and economic intensity. Yet in Malawi, the main urban centers (Lilongwe, Blantyre, Zomba, Mzuzu) have been concentrated near areas with fertile soils, good climatic conditions, and convenient topography for agricultural development.

Consequently, Malawi's main urban settlements have not established deep relationships between larger systems of flow (e.g., goods, water, energy, people) and centers of economic and cultural activity. That is not to say that Malawi's established main cities are not extremely valuable for a wide variety of services and systems, deserving adequate attention and investments, but their performance is greatly hindered by their evident disconnect with the natural and infrastructural assets the country has. Consequently, activation opportunities for such natural and infrastructural assets of national importance fail to fully perform. This is most pronounced in relation to Lake Malawi where both water system infrastructures and water transport related services are largely absent.

To address the enormous disparities in services distribution across the country, the 1987 Malawi National Physical Development Plan (NPDP) defined a hierarchical network of centers according to levels of service provision such as administration, commerce & business, health, education and infrastructure. The primary incentive for creating the hierarchy was efficient service provision for the population as a whole. However, given the agricultural focus of Malawi's economy, the NPDP called for "economic services which are well spread in order to satisfactorily serve the needs of the rural economic sectors". Ultimately, the main mission of the MSCP was to redistribute populations and divert rural-urban migrants away from Blantyre and Lilongwe, towards small- and medium-sized urban centers.

Since 1987, the need for urbanisation has steadily risen given Malawi's high population growth rates (2.9% in 2018). Conservatively, it is expected that the country's population will double over the next two generations, from the current 17.5 million to over 45 million by 2063. Despite that, the rate of population living in urban areas remains persistently low and, at 17%, is among the lowest in the world. The need for urbanisation is further intensified by the pressure on rural smallholder populations to migrate from subsistence farming, as plots of land decline to uneconomic levels. Some 75% of small holder farmers had less than 1ha in 2016 and alternative rural livelihoods remain few. Yet rapid urbanisation has its own associated risks. Unless a high degree of planning and enforcement accompanies these internal migration shifts, urban poverty (i.e., slums) would beckon.
However, although these concerns are genuine and severe, they also highlight an opportunity. If Malawi's urbanisation wave is yet to unfold then critical decisions, as they relate to rural-to-urban migration influx management to the main cities and the establishment of 'Agri-Industrial Secondary Cities' in strategic locations, remain pertinent and relevant.

In an environment where infrastructure offerings are particularly scarce and budgets are highly constrained, it is especially imperative to maximize impact through groupings of investments and by designing multi-purpose infrastructure for a wide variety of beneficiaries and stakeholders.
As an example, investments in irrigation, where potable water or sewage systems are not prevalent, should be leveraged and coordinated to allow for general improvement of water, sanitation and hygiene (WASH) systems servicing the greater population of the area, instead of focusing on one sector (commercial farming in this case). Alternatively, how can an investment in a port facility for multi-modal transport (rail to road to ship) serve both commercial freight handling as well as smaller volumes for local farmers or fisheries.

The Malawi Secondary Cities Plan (MSCP) comes to guide national long-term agendas through spatial planning, proposing a method through which the Malawi 2063 vision would be transformed into actual projects and where, as a matter of priority, these projects should take place, what they should look like, who they will serve, and how they will roll out.

Key MSCP Goals:

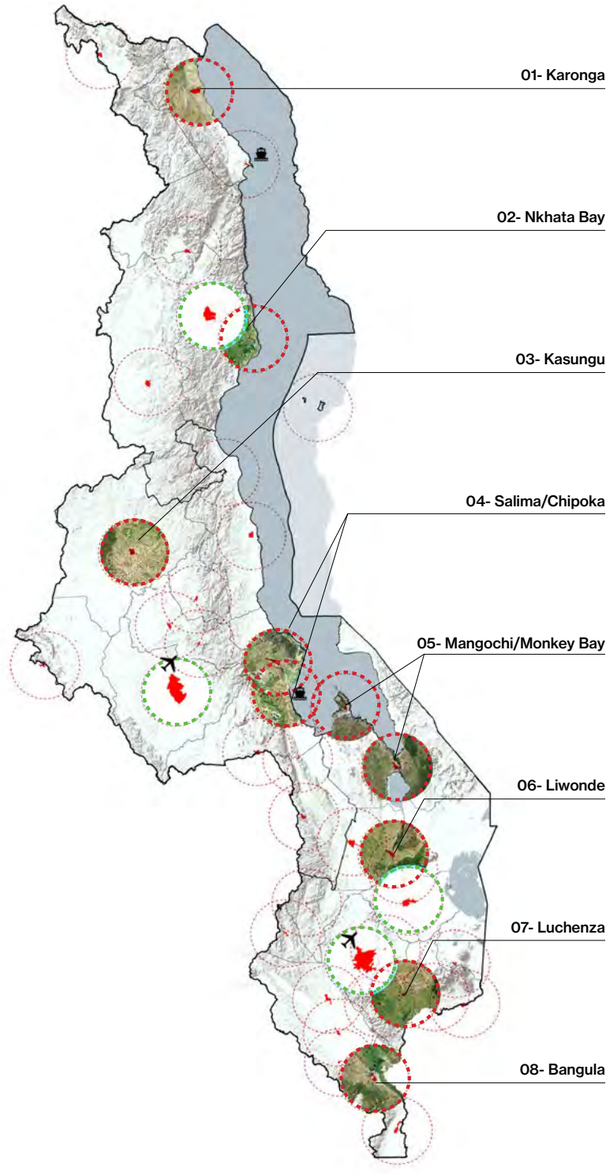
1. Identification of catalytic locations for strategic investments through a data-driven analytical process guided by national agendas
2. Promotion of land use efficiency in locations where land is on high demand
3. Diversification economic growth in rural areas through integrative planning
4. Promotion of a coordinated and comprehensive development through strategic clustering of assets and projects

1. Identification of catalytic locations for strategic investments through a data-driven analytical process guided by national agendas

The MSCP began through a mapping exercise, on a national scale, for assets and opportunities. This mapping cut across a wide variety of sectors and themes (including natural resources, demographic trends, infrastructure systems, economic activity, climate vulnerability and more), in search of critical intersections between systems, where investments could catalyse the pressing processes of urbanisation, industrialisation and environmental restoration. MSCP identifies a set of locations across the country which present great opportunities, especially for transportation infrastructure development; agriculture land suitability; and potential for substantial urbanisation. The findings identified by MSCP derive from an intensive process of consultation with a wide variety of stakeholders.

From a transportation infrastructure development perspective, MSCP has selected locations which correspond to either existing or planned multi-modal ports. The four southernmost locations (Bangula, Luchenza, Liwonde and Chipoka) present opportunities for rail-based ports connecting to the Nacala and Beira corridors, with possible links to inland water-based transport such as Mangochi and Monkey Bay. From the North, both Karonga and Nkhata Bay present opportunities for water transport infrastructure development, (and even rail in the case of Karonga) which could support enhanced connectivity and trade with Tanzania through the TAZARA and Matwara corridors.

Proposed Secondary Cities



Legend

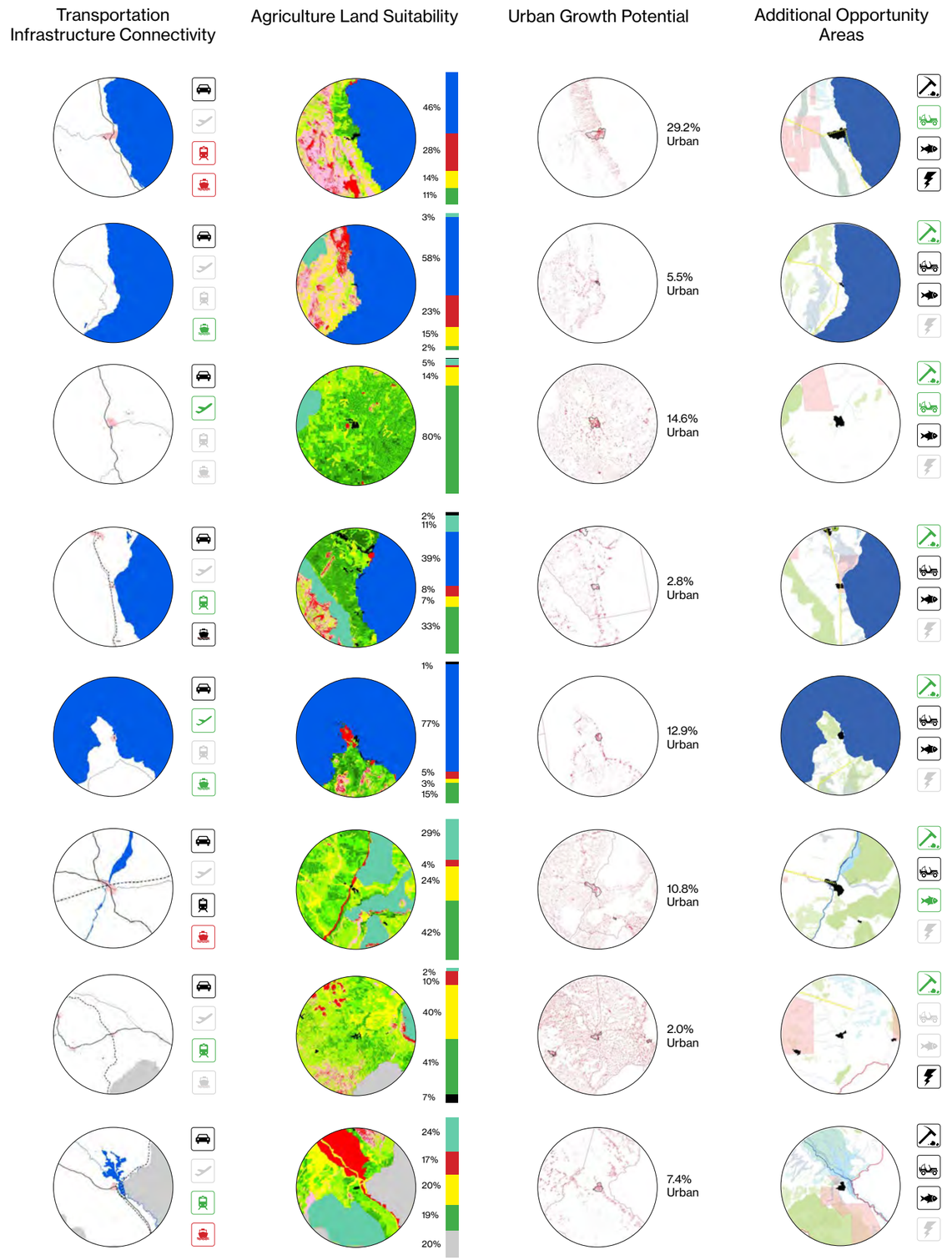
Main roads
Rail lines
Port Facilities

Agriculture Land Suitability
Settlement
Highly Suitable
Medium Suitable
Water body

Transportation Infrastructure
Road
Airport
Rail
Port

Additional Opportunities Areas
Eco-tourism
Fisheries/Aquaculture
Energy Production
Mining Activity

Existing Absent Rehabilitation Proposed



2. Promotion of land use efficiency in locations where land is on high demand

Each of the eight locations is a proposed ‘priority development zone’ for the establishment of a secondary city. A diverse set of projects would be clustered and designed in a manner which maximizes cross-sectoral feedback and benefits. Each zone has an existing town at its heart, with properties that would allow it to grow into a substantial urban center with national importance, attracting populations from the countryside and servicing its proximate rural communities. The urban centers would subsequently be the location for modern infrastructure development, providing adequate energy, water, transportation, and communications infrastructure; benefiting both urban communities as well as the commercial and industrial sectors. Finally, through the development of those secondary urban centers, the surrounding rural communities of small farms would benefit from enhanced market linkages and the soft and hard infrastructures those cities will provide.

A projective render of the port city of Chipoka in Salima District for the year 2063 as an example of one of the eight secondary cities proposed in the MSCP - A view from the lake side, depicting land use adaptations, infrastructural and real estate development for logistics, industrial and commercial programs, well connected to residential districts and recreational amenities. Illustrated in the background are the agricultural communities and commercial farms of TA Ndindi which are designed in an integrated manner with the growing urban core.

1- Industrial and logistics port
2- Fisheries port
3- Commercial and tourism boardwalk and marina
4- Industrial and logistics district
5- Commercial business district (CBD)
6- Existing settlement
7- Residential district
8- Regional gateway

3. Diversification of economic growth opportunities in rural areas through integrative planning

From an agriculture development perspective, all eight locations present highly suitable lands for agriculture and aquaculture development; and a great opportunity with respect to the preservation of fertile lands and the intensification of land uses with long-term resource conservation in mind. Further, the eight locations are all located in great proximity to substantial bodies of water which would allow for the development of irrigation projects, and the WASH sector at large.

A projective render of the port city of Chipoka in Salima District - A view from the city's agricultural periphery, depicting land use adaptations for growing farming communities, agricultural commercialisation and environmental conservation, and their spatial relationships with the industrial urban core at the lake front.

4. Promotion of a coordinated and comprehensive development through strategic clustering of assets and projects

A robust multi-purpose design agenda should be implemented across a minimal set of locations, where clusters of projects can aggregate, emerge, and build sufficient capacity and momentum to catalyze a process of urbanisation and economic development; and key projects serve both as facilitators and as leverage for subsequent investments while reinforcing one another.

On the following spread four types of spaces/projects are highlighted as they hold catalytic potential for integrative urban development. These are industrial districts, small farm communities, urban centers, and recreational amenities. Within each spatial area of focus, a range of infrastructural investments are embedded, including water and sanitation, and energy and transportation amenities, without which none of the projects can be realised and which call for enhanced coordination between related sectors.

Diagram of project clustering across the three Pillars of MW2063, in and around an existing settlement, to develop it as a Secondary City.

“Industrialisation of our economy shall be achieved by increasing investment to establish both traditional and non-traditional manufacturing firms, technological innovations, mining and other services. Manufacturing will be essential in building a resilient, integrated, independent and self-sufficient economy. The growth of industries will thus create more jobs, income and opportunities for our people. Most of all, industrial growth means availability of a ready market for agricultural produce, thus enhancing commercialization.”

Excerpt from MW 2063

“Agriculture productivity and commercialisation will produce and supply raw materials for industrial processing and healthy and nutritious food. The growth of agro-based industries associated with job creation will economically anchor the creation of urban centers. The urban centers that include tourist-based cities will act as off-takers of agricultural produce. This connectivity in agriculture shall ensure an increase in the number of youths engaged in competitive agricultural value chains.”

Excerpt from MW 2063

INDUSTRIALISATION

- Industrial and logistics districts
- Energy Infrastructure
- Water infrastructure
- Mining
- Transport infrastructure

“Urbanisation offers considerable Opportunities for accelerating socio-economic transformation. Our country shall have smart, well-planned and serviced secondary cities that are anchored on sustainable economic activities in agriculture, tourism, mining and industry. Urbanisation will follow an integrated approach encompassing spatial, economic, social and environmental considerations.“

Excerpt from MW 2063

AGRICULTURE

- Wetland restoration
- Small farm communities
- Reforestation
- Natural resource management
- Aquaculture
- Irrigation
- Commercial Farms

URBANISATION

- Multi-modal transit hub
- Port district
- Tourism hub
- Housing development
- Urban and commercial center
- Public space
- Sanitation and waste management

Urban Centers

Perhaps the most essential and catalytic space for the development of a commercially successful and democratic city is its civic core, an infrastructural intersection at the backbone of the Commercial Business District (CBD) of a planned secondary city. These centers are formed around a key multi-modal hub that connects different modes of transport, a main commercial and market space, civic and cultural institutions, as well as mixed-use commercial spaces which could include offices and urban hospitality offerings.

A transit-oriented development,
A case study from Brasil.
Photo Credit: Mariana Gil/EMBARQ Brasil.

Industrial Districts

Industrial and logistics zones are at the core of the Industrialisation Pillar of MW2063. Such spaces support and serve district-wide industrial activities, including lake ports, rail stations, different processing and packaging facilities, storage facilities, research and design, and skills training. Surrounding critical industrial infrastructure, the plans allow for a balanced and inclusive transition from spaces of production and intense economic activity to domestic spaces of residence and quality urban living.

A Logistics Zone Development,
A case study from Georgia Port.
Photo Credit: Georgia Port Authority.

Recreactional Spaces

Within the Urbanisation Pillar, MW2063 highlights the critical importance of an integrative approach to recreational amenities and tourism attractions. These are leisure and entertainment spaces both for locals and tourists, domestic and international. For cities along Lake Malawi, the plans feature public beaches, passenger ferry terminals, marinas and water sport centers, aquariums, as well as hospitality offerings. Inland cities would feature their nature reserves, forested mountains, and urban parks, to name a few.

A harbor boardwalk,
Fontvieille, Monaco.
Photo Credit: Selestina, Flickr.

Small Farm Communities

Providing spaces for small farm residential development not only provides such communities with access to necessary infrastructural needs, but also guarantees that land will be used efficiently as demand for farm land grows countrywide. Further, an inclusive growth strategy for secondary cities in areas which are currently primarily agricultural, calls for attention to anticipated processes of land use change over time, which requires highly flexible forms of subdivision.

A view of Moshav Nahalal,
A case study from Israel.
Photo Credit: Zeev Stein.

1. BACKGROUND

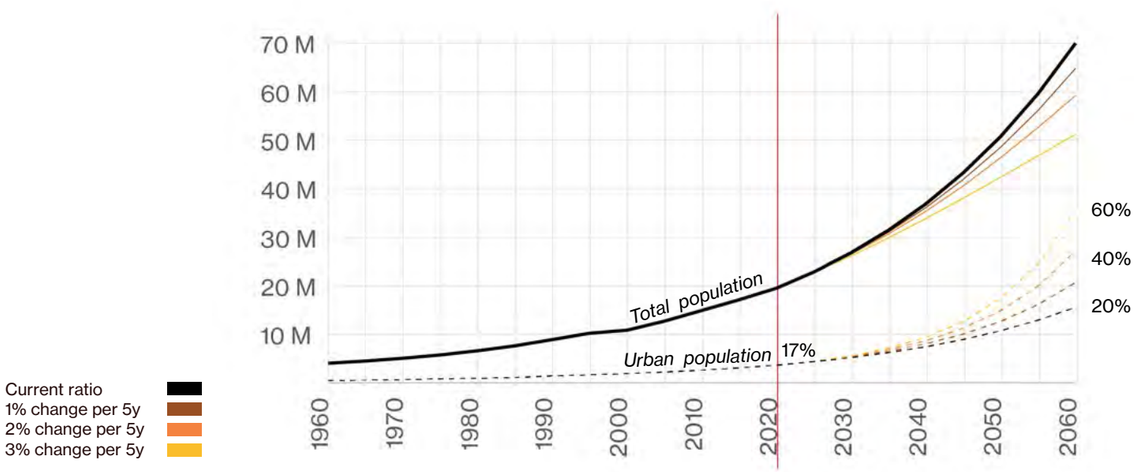
An Overview on Malawi's State of Urbanisation

Malawi is experiencing two pressing trends related to land use planning which are in urgent need of harmonisation: on the one hand, diminishing agricultural land sizes of rapidly growing populations of rural farmers; while on the other hand, cities are expected to require vast amounts of land, especially in areas where land is most suitable for agriculture. The inherent conflict between both pressures, calls for a unified view and understanding of both trends, with a hypothesis that a key solution lies in spatial management and efficient land use practices. This line of inquiry leads to an understanding that both land-related pressures could well benefit from compatible investments in infrastructure integration in city regions, as water sys
energy systems are
urban spectrum.

To provide a more accurate and elaborate background on the nature of those trends as they are understood at the moment, hereby a brief overview on key statistical and spatial trends Malawi is undergoing.

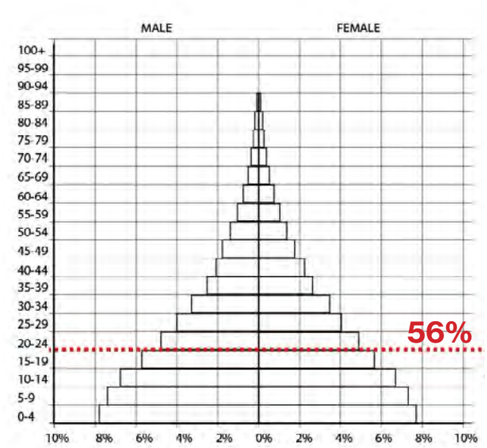
High population growth rates

Malawi has a population of over 17.5 million, with an average annual growth rate of 2.9% (NSO 2018). The population is projected to pass 30 million by 2040, and go over 45 million by 2063 (UNDESA 2019), expecting to more than double the current population in the next 40 years. This growth rate is among



Population growth projections presenting urban ratio variances

Data source: UN DESA Population Division 2019



Malawi population pyramid 2019, total population at 18,628,748

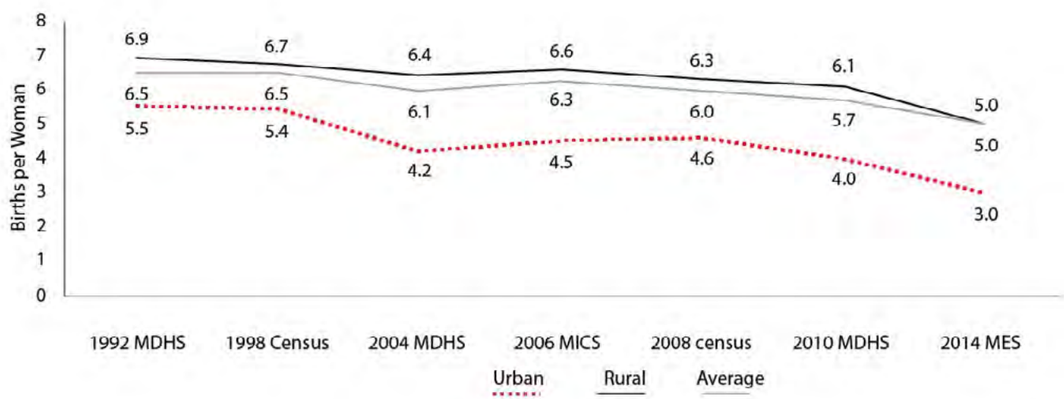
Data source: population pyramid.net

Youthful age pyramids

Those high growth rates render incredibly youthful age pyramids, where the majority of Malawians (56% in 2019) are currently under 19 years of age. This has severe impact on economic dependability ratios with increased burden on employment and livelihood metrics.

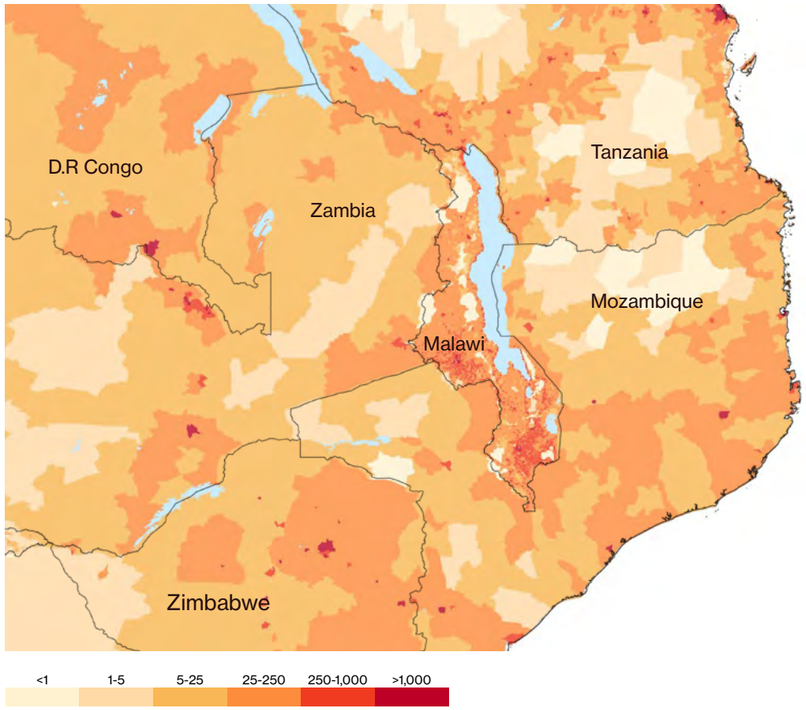
Fertility rates are not equal between rural and urban areas

Although from a long-term view Malawian fertility rates are declining, it is necessary to distinguish between fertility rates in urban areas (moderate) vs rural areas (high). These high fertility rates are projected to result in extreme population growth in rural Malawi, where the large majority of the population are peasant farmers and sources of livelihood are very limited. The options for mitigating those ratios lay in family planning policies (health, education, financial incentives), as well as policies which promote rural to urban migration and urbanisation of the countryside.



Trends in total fertility rates

Source: NSO 2009;2015



Regional population density 2010 - persons per sqkm

Data sources: Center for International Earth Science Information Network - CIESIN - Columbia University. 2016. Gridded Population of the World, Version 4 (GPWv4): Population Density. Palisades, NY: NASA Socioeconomic Data and Applications Center (SEDAC).

	Pop (2020)	Land Area (sqkm)	People per sqkm	Urban Population %	Population growth rate	Urbanisation Rate	Annual Urbanisation rate
MAL	21,196,629	94,080	225.3	17.40%	3.30%	4.19%	0.89%
MOZ	30,098,197	786,380	38.3	37.10%	2.62%	4.35%	1.73%
TAN	58,552,845	885,800	66.1	35.20%	2.71%	5.22%	2.51%
ZAM	17,426,623	743,398	23.4	44.60%	2.89%	4.23%	1.34%
ZIM	14,546,314	386,847	37.6	32.20%	1.87%	2.19%	0.32%

Key population projections and land statistics for Malawi and its neighbors

Data source: CIA Factbook, Density map by Andy Nelson, University of Leeds

Low urbanisation rates

Malawi is at an early stage of urbanisation (around 17.4% of total population resided in urban areas as of 2020) and with urban population growth rates at 4.19%. This is lower than urban growth rates in the region, with Zambia at 4.23%, Mozambique at 4.35% and Tanzania at 5.22%. Rural to urban migration is currently the main contributor for urbanisation. At current population growth rates, under a status quo scenario, Malawi's urban population share will remain below 20% until 2040.[1]

National assets development

Malawi has many assets worth noting, which embodies great promise and hope for the future of the country and the prosperity of its population. Malawi has an abundance of natural resources and fertile land, a great lake which is incredibly underutilised, positive climatic conditions and a rather well-developed transportation infrastructure network of roads, air, rail and lake ports.

Urbanisation could present great opportunities

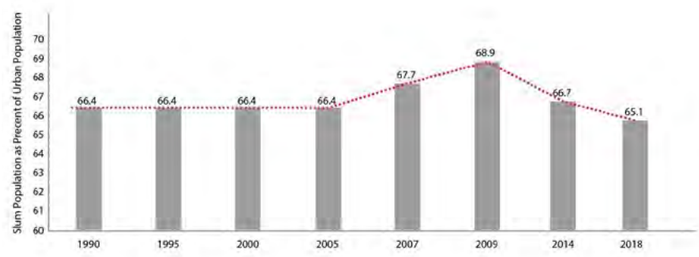
As it is still in early urbanisation stages, Malawi is well-positioned to formulate plans, policies and projects to maximize the known benefits of urban agglomeration into the future. Recent economic indicators provide signs of positive structural change, with the share of agriculture to GDP and employment falling and that of more productive sectors, such as industry and services, increasing, especially in urban areas.[2]

The risks of unplanned urbanisation

Urbanisation processes hold substantial risks, especially if they occur rapidly and without proper planning and spatial consideration. Malawian cities are likely to experience increased slumming and territorial expansion with lack of sufficient effective tools for population growth control, influx management and land resources management. In Malawi, policies have tended to be wary of urbanisation and its potentially adverse impacts, mainly the urbanisation of poverty. Since Malawi is predominantly rural, national development policies have mostly focused on the development of rural areas. With lack of proper attention to Malawi's urban areas, slum development has become the dominant form of urban development with about 2/3 of its urban population.

Competing pressures on land

Rapid urban growth will be mostly taking place at the fringes of expanding cities as they merge with their hinterlands to accommodate for natural growth and in-migration. These are likely to occur in areas that are at a daily commute distance (up to 1.5 hour) from established urban cores. The transition zone between urban and rural conditions will be critical to manage in a manner that preempts ecological and land stresses through strategic open land conservation and investments in public right of way for future infrastructure. In Malawi, the immediate pressure on land is already experienced around the two main cities of Lilongwe and Blantyre. Further, because of the topographical form of the country and its relatively small size, it is anticipated that the two main urban plateaus will rapidly populate and densify. This projected population concentration around Lilongwe and Blantyre is especially problematic due to the fact that these are identified as the most productive arable lands in the country which would likely experience immense pressure for agriculture uses.



Proportion of urban population living in slum condition in Malawi

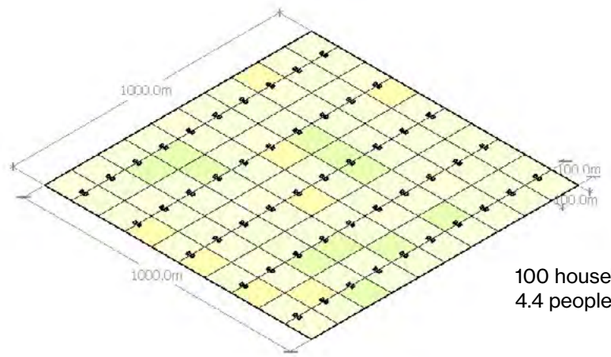
Source: UN Habitat 2012

Population living in slums is the proportion of the urban population living in slum households. A slum household is defined as a group of individuals living under the same roof lacking one or more of the following conditions: access to improved water, access to improved sanitation, sufficient living area, housing durability, and security of tenure, as adopted in the Millennium Development Goal Target 7.D. The successor, the Sustainable Development Goal 11.1.1, considers inadequate housing (housing affordability) to complement the above definition of slums/informal settlements.

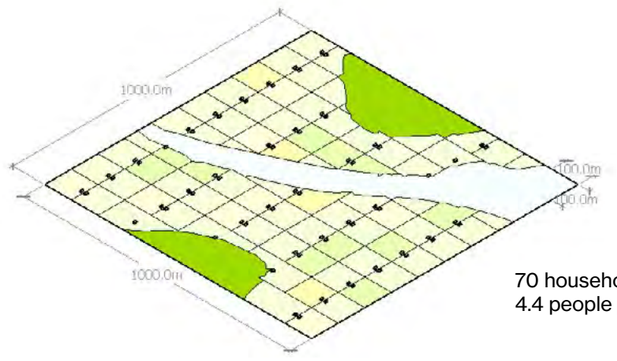
Source: United Nations Human Settlements Programme (UN Habitat)

Urban growth requires space

Even at best scenarios, when cities are well serviced by modern infrastructure and spatial policies, as population in cities grow so does the settlement footprint. On average, city footprints are expected to triple as population counts double[4]. This matter has great implications on land use efficiency planning in Malawi. As of 2020, 0.8% of total land captured the country's urban population (at 3,386,002 people representing 17.7% of the population). Assuming urbanisation and population growth trends maintain, Malawi should expect by 2040 that 2.9% of total land will be used by cities (with about 7 million urban dwellers), and up to 12% of total land by 2063 (for an urban population of about 19.6 million). To be clear, maintaining current urbanization trends will not suffice as land pressure on the rural areas will increase exponentially. Therefore, these figures should be seen as highly conservative in respect to Malawi's urban footprints.



100 households per sqkm
4.4 people per ha = 4.4 per ha



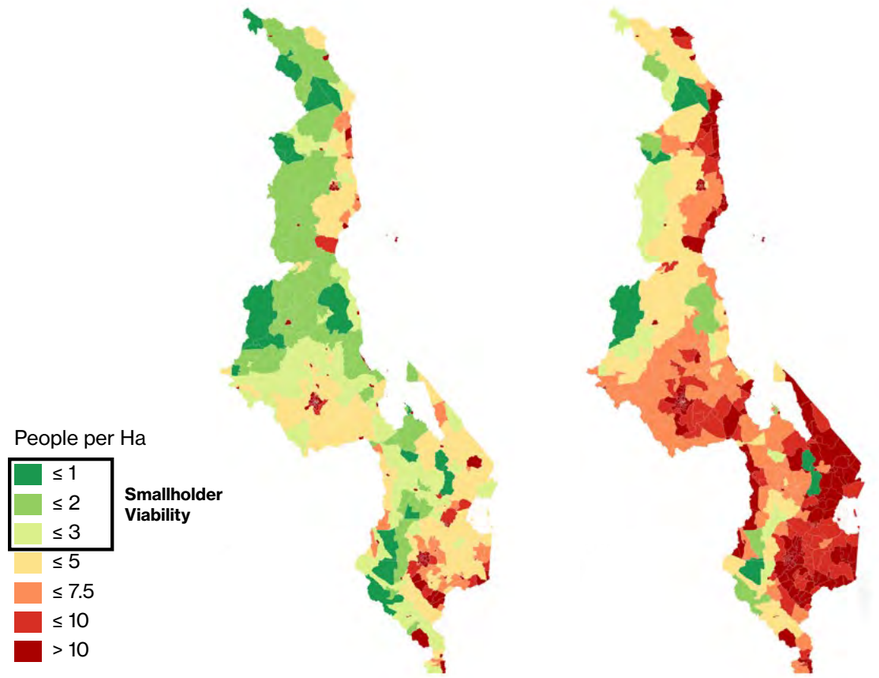
70 households per sqkm
4.4 people per ha = 3.08 per ha

People per ha density ratio calculation
Theoretical maximum density where every household has 1 hectare, where;
National household family average is 4.4 (2018 census)
With regional variances, North (4.8), Central (4.4), South (4.3)
If taking into account non-arable areas at 30% (for forest, water bodies, roads buildings, etc.) *(Estimated to be 50% on national scale)*

4.4 x 0.7 = 3.08 with regularly layed out land subdivision

Unsustainable farm sizes in the long term

Assuming an average household size of 5 persons (NSO 2018), a 500 persons/km2 translates to 5 people per ha of land. This roughly means unsustainable agricultural intensification kicks in when population densities exceed one household per hectare. By this metric, and by considering available suitable land for agriculture, population density projections show that about 12% of the land in rural Malawi has already reached the 5 persons/ha population density threshold; and about 42% of the population is trapped in areas where sustainable intensification is not feasible for the long run. It is projected that over 90% of the population will be residing in areas with population densities exceeding the 5 persons per hectare threshold in 2048.



Population per hectare 2018 - based on arable land area

Population per hectare 2048 - based on arable land area

[1] Malawi Urbanization Review (April 2016). "Leveraging Urbanization for National Growth and Development", GSURR, Africa, World Bank.
[2] Malawi Economic Monitor (May 2017). "Harnessing the Urban Economy", World Bank Office Malawi.
[3] Malawi Urbanization Review (April 2016). "Leveraging Urbanization for National Growth and Development", GSURR, Africa, World Bank.
[4] Angel, Shlomo, Alejandro M. Blei, Daniel L. Civco, and Jason Parent (2012). Atlas of urban expansion. Cambridge, Lincoln Institute of Land Policy.

2. SCENARIO PLANNING

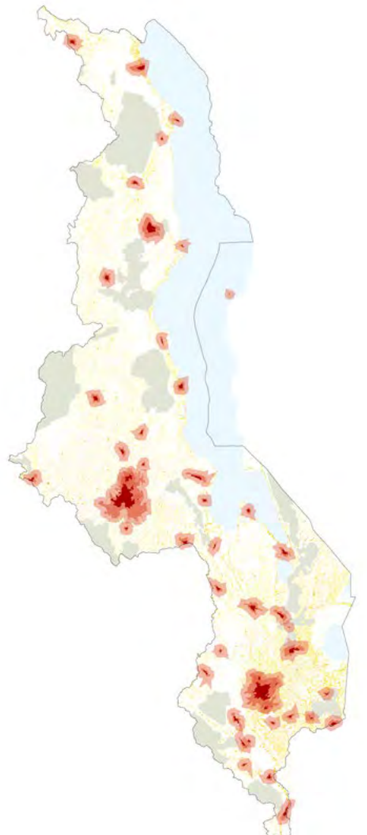
A Comprehensive Approach to Spatial Planning and Urban Development

Many critical questions about the future of the Malawian economy and the sources of livelihood of its population arise following the background provided above. Where should Malawi settle the additional 15 million citizens expected in the next generation? What will those Malawians do for work? Where will they source their food from?

It is deemed that Malawi's population requires a national shift towards new patterns of settlements that must be driven by land use efficiency and economic diversification and productivity. Urban and rural areas require carefully devised land and population management plans to help guide public policies and critical investments in transportation, water and energy infrastructures as well as the corresponding private investments in commercial enterprises to catalyze a process of industrialisation and modernisation across the country.

By conservatively projecting current population growth trends to the year 2063, it becomes clear that the current 0.8% of land inhabiting the 17% of urban population today will need to expand up to 2.9% of land by 2040, to accommodate for an estimated 23% of the population, and further up to 12% of the country's land by 2063 where an expected 42% of the population will be living in cities. This rough analysis applies a rule of thumb formulated at the Marron institute for urban expansion at NYU, estimating a city to triple in footprint while its population doubles in numbers.

The subsequent question should be then, how should Malawi distribute these massive quantities of anticipated populations, and their corresponding urban footprints? Can Malawi continue to rely on the current established cities to absorb such an enormous growth – from the current 3 million urban dwellers up to 20 million urban dwellers by 2063. The evident conclusion is negative, especially considering current pressures from informal development. Alternatively, Malawi could consider establishing alternative locations where a large amount of population would settle around established nodes of economic activity, and by that offset some of the pressure.



As a rule of thumb:
When population counts double, settlement footprints triple*

- **2020 urban land accounts for 0.8% of total land, urban population 2,971,650 (17% of total)**
- **2040 urban land shall account for 2.9% of total land, urban population 7,065,263 (23% of total)**
- **2063 urban land shall account for 12.0% of total land, urban population 19,608,639 (42% of total)**

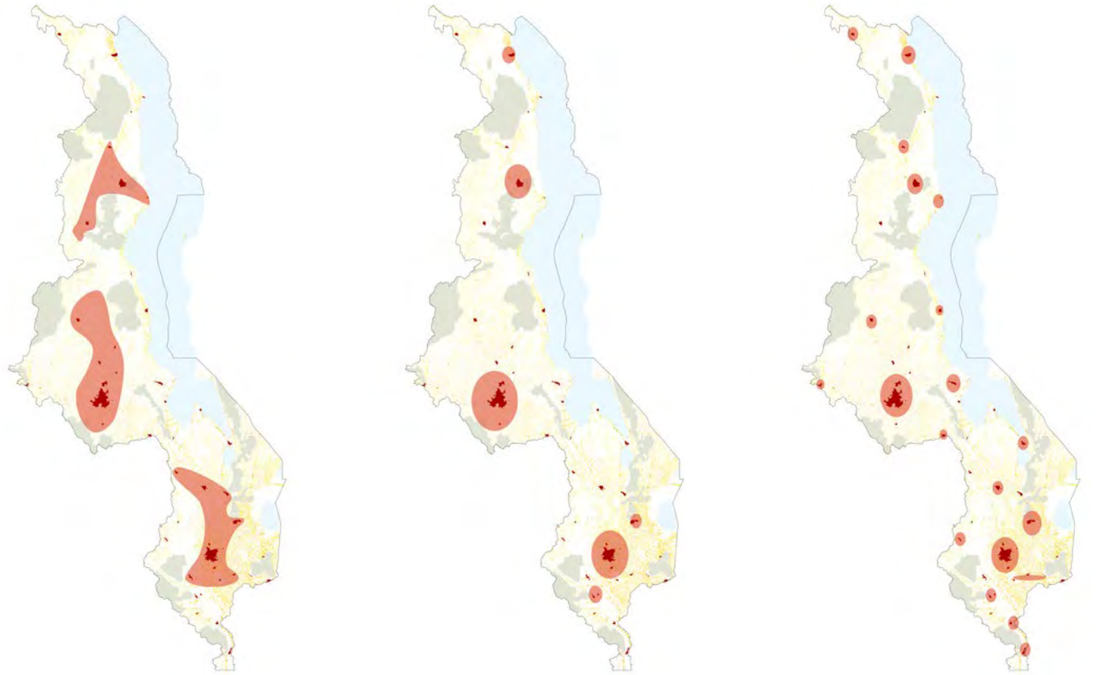
** Angel, Shlomo, Alejandro M. Blei, Daniel L. Civco, and Jason Parent. Atlas of urban expansion. Cambridge, MA: Lincoln Institute of Land Policy, 2012.*

Year	2020	2040	2063
Urban Population	2,971,650	7,065,263	19,608,639
Total population countrywide	17,563,749	31,317,322	47,097,970
% Urban population	17%	23%	42%
Urban Area (ha)	76,140	271,541	1,130,436
% of total land	0.8%	2.9%	12.0%
Total land (ha)	9,455,183	9,455,183	9,455,183

Data sources: World Population Review; Land Cover 2010 RCMRD

Three urbanisation scenarios for Malawi in 2063 - Considering a total population of 47 million citizens with 42% urban population, amounting to 20 million urban residents and 27 million rural residents.

MSCP comes to promote policies and investments that would enable the compact scenario.



***Status Quo* - Sprawled scenario**

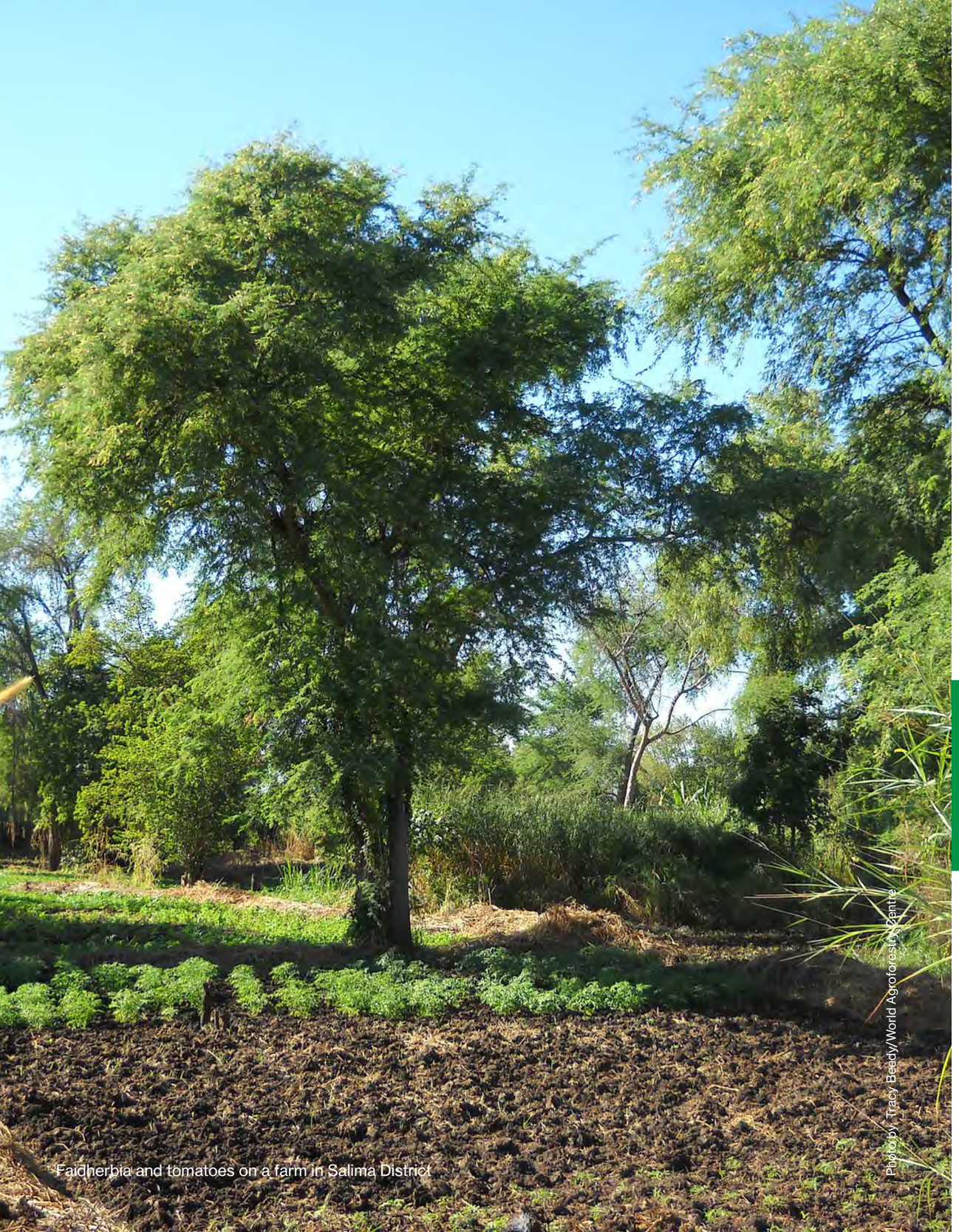
Conurbations with connections to regional infrastructure form sprawled continuous settlements. Lilongwe and Blantyre have populations of 7M to 10M each. These are likely to experience extreme levels of urban poverty (slums) at their peripheries and will consume the large majority of arable land across the Lilongwe and Blantyre plateaus, and by that greatly stress the agricultural sector across the country.

Moderate scenario

Moderate growth rates for Lilongwe and Blantyre (around 5M inhabitants each) could be encouraged through the establishment of a series of secondary cities designed around critical national infrastructure (2M - 3M inhabitants) such as Salima/ Chipoka, Mzuzu/Nkhata-Bay, and Liwonde/Zomba.

Compact scenario

Lilongwe, Blantyre and Mzuzu are managed at around 3M each. Mid-sized secondary cities of around 1M inhabitants each are planned around intersections of infrastructure and natural resources to form well distributed and balanced settlement patterns. Karonga, Liwonde, Salima, Kasungu, Mangochi and Bangula are just a few locations in which large amounts of populations would settle, to both sustain local urban economies as well as service the adjacent rural communities benefiting from the preservation of quality arable lands at the main plateaus and across the country.



Faidherbia and tomatoes on a farm in Salima District

Photo by Tracy Beedy/World Agroforestry Centre

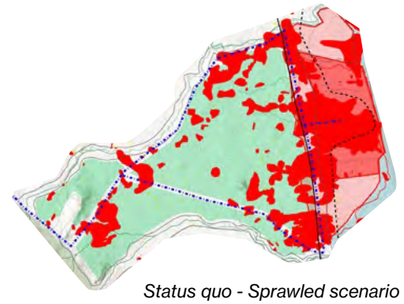
Local scale growth scenario analysis

Similar to national scale population growth trends and their spatial footprint constraints and implications, it is critical to analyze and model such processes on a local scale. Between both scales of analysis, the MSCP aims to deduce policies and plans for the management of both urban and rural populations. On a local level, the scenarios being considered are quite similar to those on national scale, but with greater detail and accuracy. Below is an example of a population growth analysis that was done for the areas of TA Ndindi and Chipoka urban in Salima district. A number of parameters are taken into consideration when modeling such projections, including anticipated population amounts (varies according to degree of desired urbanisation), population density ratios (varying between urban and rural families), and projected people in each household.

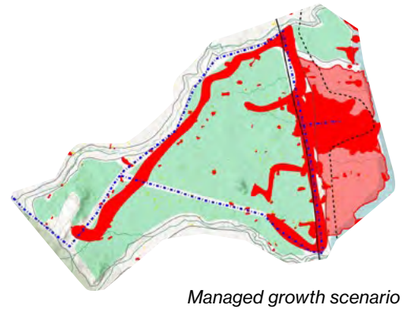
Lastly, the MSCP studies the ratio of population settling in this area in relation to land available for each household. The table presents under the *status quo* scenario that each household will have about 0.3ha of farm land by the year 2063, while on the other scenarios it will grow up to 0.5ha and 1.1 accordingly. This has to do with local ability to structure population settlement footprints along infrastructure provisions (road, eater, sanitation, etc.), and by that linking rural and urban livelihoods with economic and social structures.

Population 2020 = 12,615
Chipoka Urban and TA Ndindi (partial)

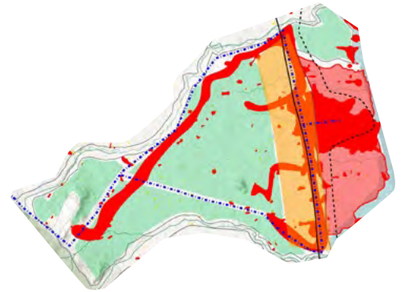
Population 2063 = 73,994 0.3ha per rural household
status quo - scenario 1
Population 2063 = 73,994 0.5ha per rural household
Managed Growth - scenario 2
Population 2063 = 124,300 1.1ha per rural household
Controlled growth - scenario 3



Status quo - Sprawled scenario



Managed growth scenario



Controlled growth scenario

Compact urban footprint *Urban boundary*
Peri-urban zone *Agricultural land*

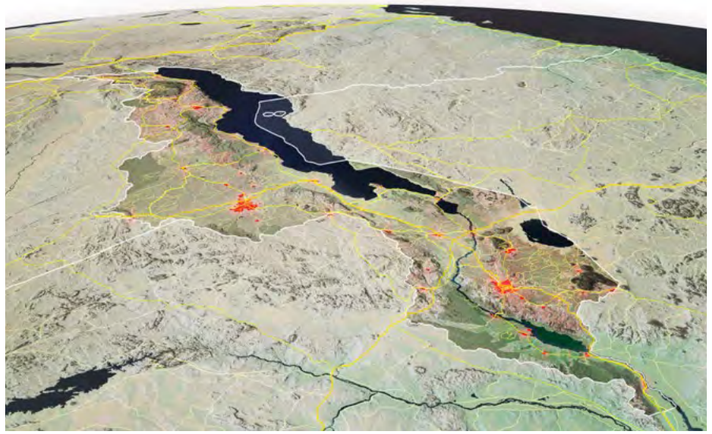
	Status quo - Sprawled scenario			Managed growth scenario			Controlled growth scenario		
Growth Rate 104.2	*2020*	*2040*	*2063*	*2020*	*2040*	*2063*	*2020*	*2040*	*2063*
Urban Jurisdiction Footprint	1,124			1,124			1,124		
Population	6,395	14,561	37,510	6,395	14,561	37,510	6,395	56,200	112,400
# of Families	1,453	3,309	8,525	1,453	3,309	8,525	1,453	12,443	25,545
Settlement Footprint (Ha)	458	728	1,875	1,124	1,124	1,124	1,124	1,124	1,124
Urban Density	20	20	20	5.69	12.95	33.37	5.69	50	100
Chipoka Rural									
Growth Rate 104.2									
Population	6,220	14,163	36,484	6,220	14,163	36,484	6,220	11,900	11,900
# of Families	1,414	3,218	8,292	1,414	3,218	8,292	1,414	2,705	2,705
Settlements Footprint (Ha)	311	708	1,824	311	785	785	595	595	595
Rural Density	20	20	20	20	18	46	20	20	20
Ag Land/Family	3.1	1.2	0.3	3.1	1.2	0.5	3.1	1.1	1.1

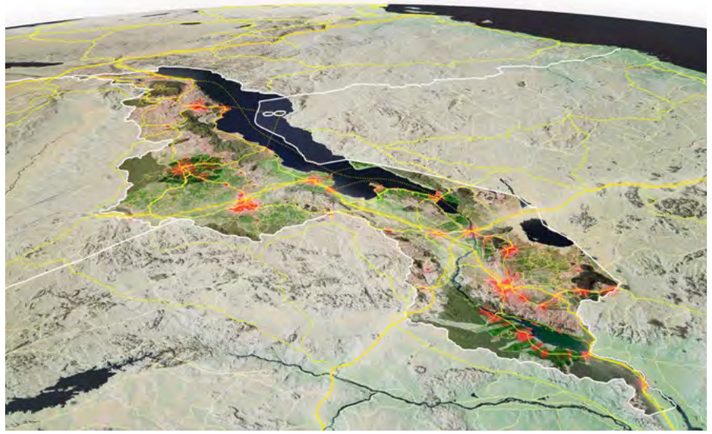
3. PROPOSITION

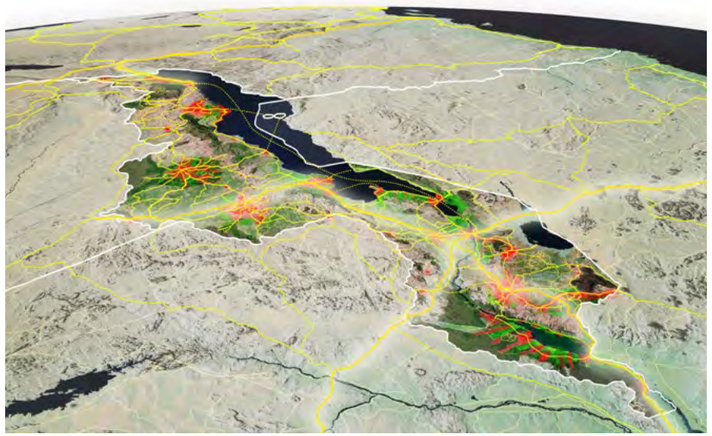
The Case for Secondary Cities Development in Malawi

Secondary cities are often overlooked in the context of development planning. Considering the common interpretations of the urban/rural binary (i.e. that people inhabit either cities or the countryside), secondary cities fall in between categories where realities are often more nuanced and complex. Consequently, development agendas often tend to focus on: (a) the various pressures urban areas face, which call for massive investments in infrastructure and service provision; or (b) the mirrored realities of rural communities and smallholder farmers, where due to the more dispersed nature of their agricultural practices, support is naturally often decentralised. The MSCP highlights the critical role secondary cities should play in establishing infrastructural, operational, and cultural feedbacks between both ends of the urban/rural binary.

These cities could play multiple roles in respect to both the urban and the rural economies.
The essence of the MSCP is not to write a manifesto of sorts, with a comprehensive disciplinary ideology for the design of secondary cities. But rather the approach is opportunistic, in the sense that there is emphasis on the analysis of local conditions through a wide variety of sources across disciplines and sectors, and suspending judgment in respect to modes of action, as they relate to interventions through investments or policies.
Therefore, this Chapter provides a perspective on the status of urban settlements in Malawi in the year 2020, and the various challenges and opportunities each one of them presents, as it relates to processes of urbanisation, industrialisation and agriculture commercialisation.







2020

Lilongwe, Blantyre are clearly visible situated on both plateaus inhabitting more than half of the country's urban population (9% of total population), while the large majority of the population (83% of total) inhabit the country's rural areas in fairly dispersed footprint around the two main cities.

2040

Eight Agri-Industrial Secondary Cities are developed across the country in strategic locations where natural and infrastructural assets are connected to both urban and rural populations in their respective areas.

2063

Urbanisation levels across the country are largely balanced, where the eight secondary cities managed to absorb the pressures of migration away from Lilongwe and Blantyre while activating and linking rural communities to urban economies and diverse sources of livelihood.

Urbanisation in Malawi

The study of urbanisation in Malawi has, to some extent, been neglected due to the overwhelming predominance and importance of the agricultural sector, and the interest generated by aspects of its political life. Pre-independence Malawi did not urbanse rapidly due to colonial powers and their distributed land practices. Post-independence urbanisation rates in Malawi rose slowly, while significant urban policies took place in attempt to decentralise population and older political power structures, such as transferring the capital city from Zomba to Lilongwe, and the development of specific programs and policies directed towards smaller centers at the lower end of the urban hierarchy.[1] Such policies, as apparent from the following quote, have struggled to fully establish a clear urbanisation agenda from rather early stages, while a dual tension appeared, both for population control in the countryside as an agricultural economic engine, and for the establishment of urban centers for reasons which were largely cultural or symbolic.

"Until recently, Malawi has suffered from the "primate city syndrome" with one moderately large urban center (Blantyre) nearly ten times as big as the next largest town. This trend is now being reversed with the siting of the New Capital City at Lilongwe in the Central Region and with the creation of new urban growth point such Liwonde. The new industrial location policy, which requires all new "footloose" industries to be sited in Lilongwe, is also helping to bring about a more even distribution of urban population. This will have beneficial effects on rural areas, in that it will provide them with easier access to urban facilities. With a large number of small urban centers spread around the country, the contrast between urban and rural living conditions will become less pronounced. However, it will still be necessary to avoid making town life too attractive if disruptive rural emigration is to be avoided"[2].

While the historical development of settlements in Malawi has been rarely studied, nor the reason for the location and patterns of existing settlements, there are apparent spatial relationships between institutional and physical assets which over time guided habitat formations and locational decisions, such as: the establishment of early Christian missions, locations of administrative centers (colonial and thereafter); the establishment of nature reserves and national parks, areas where soil suitability for agriculture is higher; lake-shore and mountainous areas where there are topographical constraints, availability of year round water sources; and, transportation infrastructure which provides access and linkages even beyond Malawi's national borders[3].

Unlike most countries where key urban centers generally appear along its coastlines and water bodies, where flows of goods and passengers form clusters of habitation and economic intensity, in the case of Malawi, the main urban centers have largely been concentrated near areas with good soils, climate and convenient topography for the purpose of agriculture cultivation, and kept shy from establishing deep relationships between larger systems of flow (of freight, water, energy, people) and centers of economic and cultural activity. That is not to say that the main settlements which have been established in Malawi are not extremely valuable for a wide variety of services and systems, but that their performance is hampered by their evident disconnect with the physical and infrastructural assets the country has to offer.

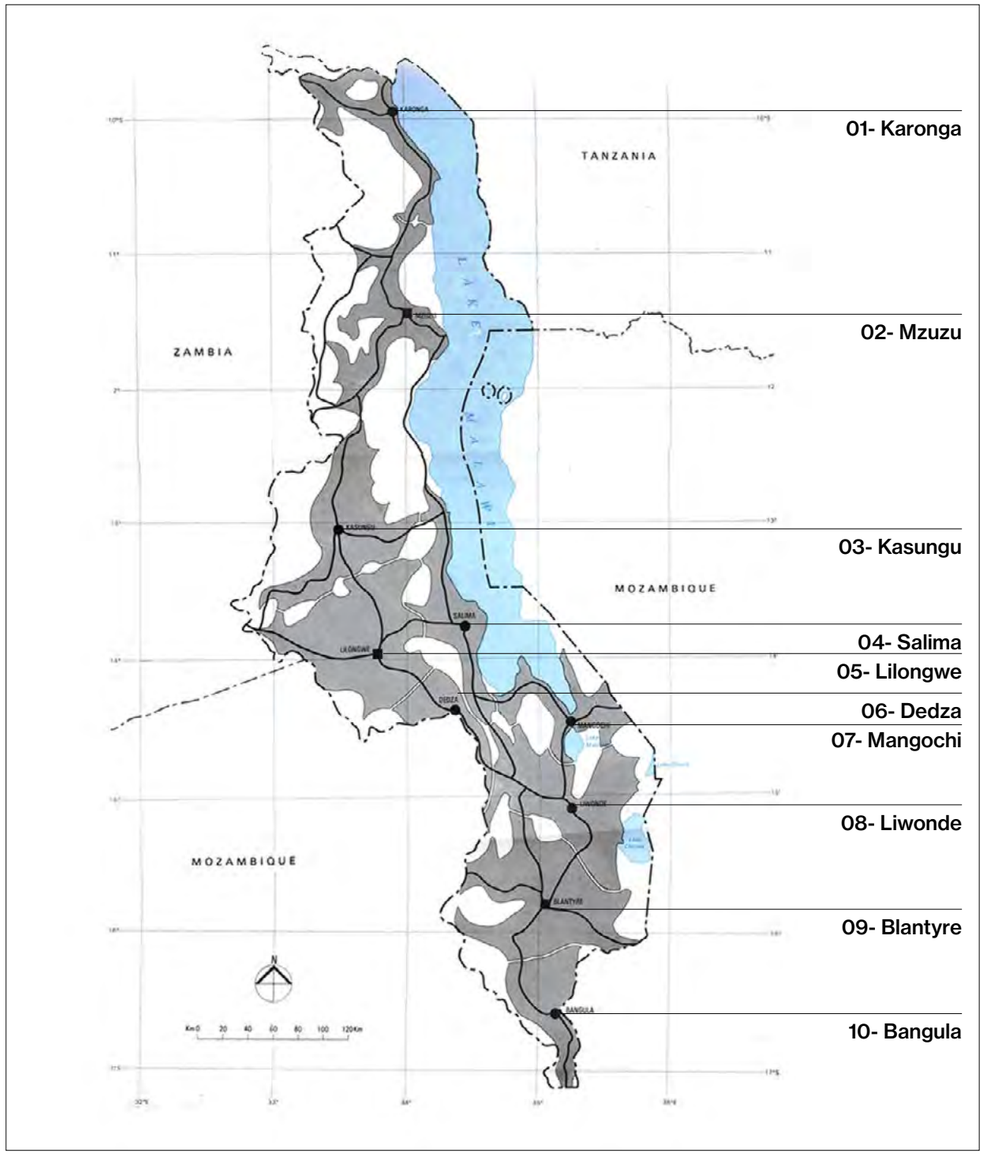
Hierarchical definitions of urban settlements

As part of this work and building on the 1987 National Physical Development Plan, an emerging national urbanisation agenda has been developed, which calls for (a) the further reinforcement of the four key established urban centers (Lilongwe, Mzuzu, Zomba and Blantyre), combined with (b) an urgent need to decentralise the rapidly growing rural population of the country into smaller cities, or secondary cities.

These secondary cities would provide the populations in the countryside urban services (administrative, commercial, health, educational, etc.), as well as reinforce infrastructural and industrial activities that support modernisation processes of the agricultural and industrial sectors. Such a strategy requires a thorough understanding of the existing status of settlements across the country and their prospects of becoming secondary cities, serving a larger population within a 25 km radius and beyond.

A hierarchy of settlement directly relates to various urban service provisions, infrastructural systems configurations, land use and zoning, all of which have spatial implications. The resulting physical consequences significantly affect the social, economic, and political realities within any given country. Since the geographic distribution of policies and financing is a crucial aspect of its development process, physical planning intelligence (which includes data collection and analysis) should be emphasized. In the case of Malawi, it seems that the full spectrum of the hierarchy has not been applied since 1987.

To address the enormous disparities in distribution of services in the country, the 1987 National Physical Development Plan (NPDP) set up a hierarchical network of centers, according to levels of service provision such as administration, commerce and business, health, education and infrastructure. In addition to having an efficient service provision for the population as incentive for creating the hierarchy, the NPDP argued that given the agriculture-based economic structure of Malawi, it calls for "economic services which are well spread in order to satisfactorily serve the needs of the rural economic sectors". NPDP further stipulates that such an effort requires an understanding of the network of linkages and services among the different centers. Ultimately, the aim was to redistribute populations diverting rural-urban migrants away from Blantyre and Lilongwe, towards small and medium sized urban centers.



Proposed national regional and sub-regional centers with influence areas for 2000
Source: National Development Physical Plan 1987

National centers
Lilongwe (political-administrative)
Blantyre (commercial-industrial)

Regional centers
Mzuzu

Sub-regional centers
Karonga
Kasungu
Salima
Mangochi
Liwonde
Dedza
Bangula

District / Main market Centers
Chitipa, Rumphi, Euthini, Nkhata Bay, Mazimba, Nkhotakota, Mponela, Mchinji, Monkey Bay, Zomba, Ntaja, Mwanza, Mulanje, Ntcheu, Phalombe, Ntchisi, Dowa, Chikwawa, Thyolo, Nsanje, Chiradzulu, Machinga

The NPDP qualified 187 centers (or alternatively settlements) to be included in this effort of hierarchical ranking, which led to their classification in six levels: (i) national, (ii) regional, (iii) sub-regional, (iv) district/ main market centers, (v) rural centers, and (vi) villages.

District centers development program (1980s)

The Program was fundamentally aimed at developing urban centers below the level of Blantyre and Lilongwe; and had two main missions: (a) to decentralise urban development in a manner that supports Malawi's overall economic development; and (b) to develop and define the role of spatial linkages within the urban network. It was assumed that decentralisation would not generate the positive rural-urban relationships necessary for the development of both rural and urban sectors if there was no strong spatial linkages between the units of the urban network.

For the purpose of defining urbanization, the MSCP adopts Prof. John Friedmann's definition (1973) as two inter-related processes: "(i) The geographical concentration of population and non-agricultural activities in urban environments, and (ii) the geographic diffusion of urban values, behavior, organizations and institutions." Considering this definition to the context of Malawi and through the lens of the National Spatial Planning Program, a question is raised as to which settlements have the most potential to become substantial secondary cities and facilitate a process of national urbanisation?

[1] Deborah Potts (1986). "Urbanization in Malawi". Doctoral thesis, University of London.
[2] Malawi Economic Planning and Development Division (1971). "Malawi, Statement of Development Policies 1971 – 1980".
[3] Malawi Ministry of Lands and Urban Development, Department of Physical Planning (1987). "Malawi National Physical Development Plan".

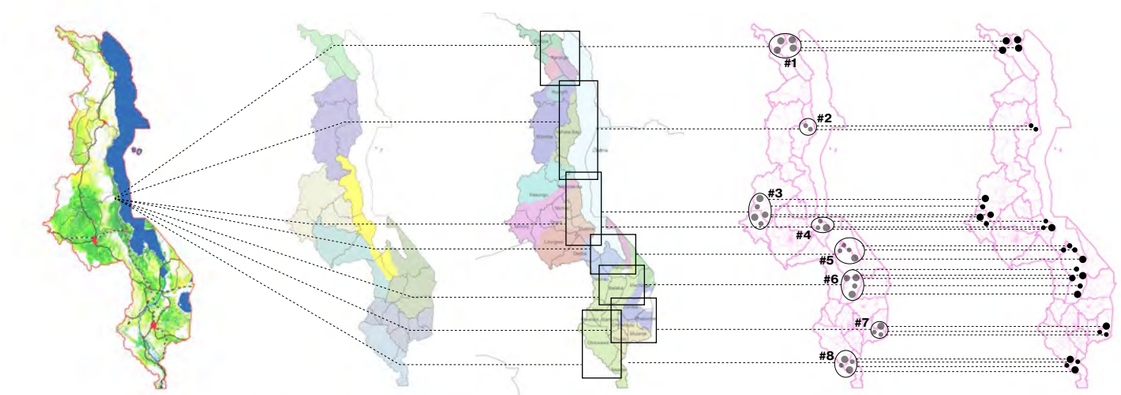
4. SETTLEMENT CATALOGUE

Multi-scalar Spatial Analysis

The process of spatial analysis includes two essential phases of investigation, the first being the establishment of a baseline scenario in which current assets, plans and policies are classified and laid out. The second phase of analysis comes from the act of clustering assets and projects by proximity and/or theme, in a manner which allows for subsequent propositions to form. These clusters emerge from the identification of possible links and feedbacks where infrastructure investments and land development requirements become apparent. Those links are designed to reflect the shared interests of both public and private sector stakeholders, and by that provide a balanced framework for medium and long-term sustainable development and investments.

At the core of this analytical process is the application of multi-scalar design thinking. The plans presented in the MSCP aim to bridge scales of analysis and policy from national and regional scales, from watershed and district scale, down to the project level, and back again. This agenda of alignment between top-down and bottom-up realities, comes to the fore not only through the intentional positioning of investment clusters towards the development of secondary cities, but is further embedded in the actual implementation strategies of each cluster of investments, whether through phasing, financing, or partnership curation.

The baseline exercise of survey and analysis included both the collection and classification of existing data sets provided by a wide variety of sources, as well as through a series of consultations and interviews with a wide variety of stakeholders. Overlaying different layers of data allowed the identification of critical intersections of opportunities and highlighting of areas of particular importance in relation to the program's agenda.



National planning

Setting values and targets to meet goals

Regional planning

Differentiating regions by common geographic characteristics

District planning

Operationalization district level leadership for large scale impact with local opportunities

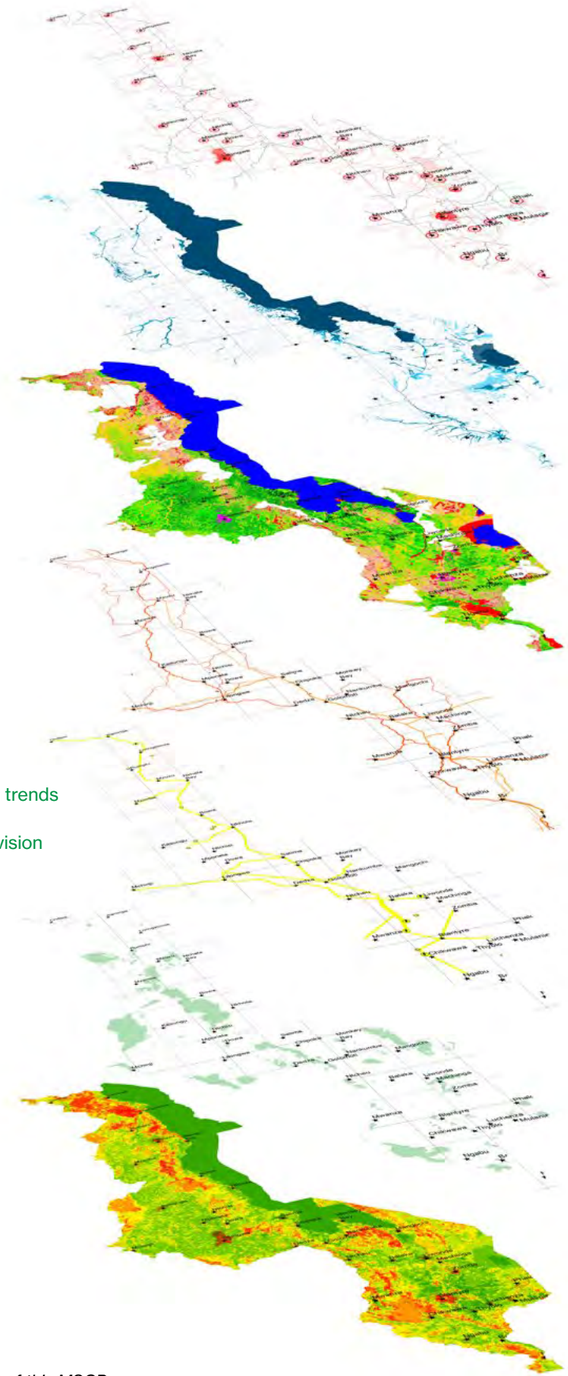
Cluster planning

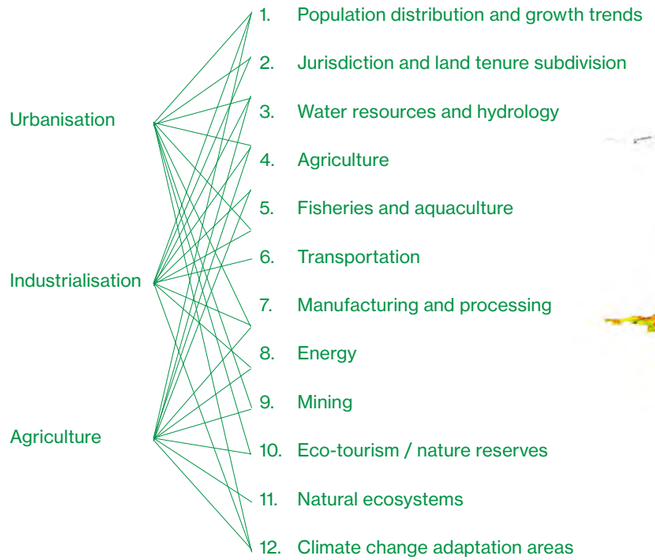
Master planning at a cluster level of coordinated groupings of projects with ppp concepts

Project design

Detailed design and implementation of projects with near term schedules

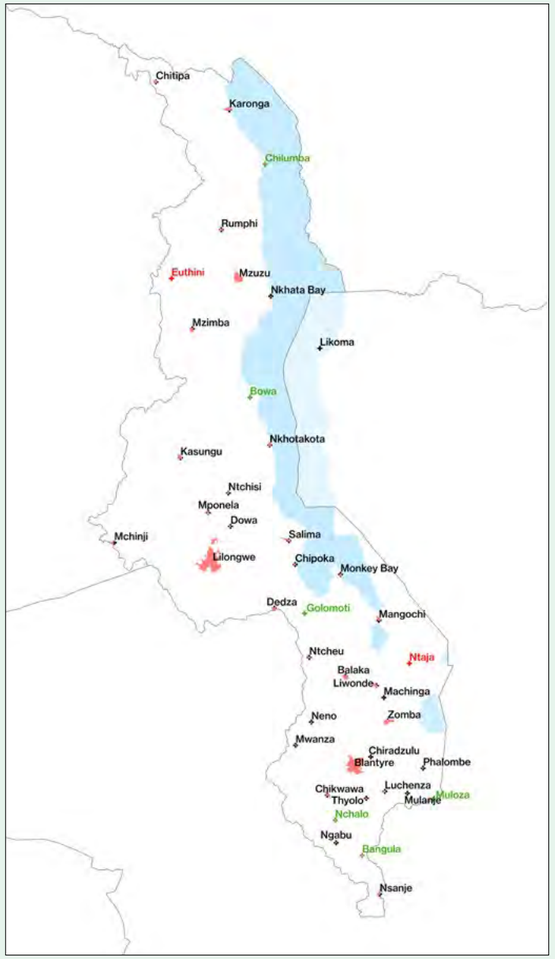
As this work comes to support the MW2063, the MSCP makes a deliberate effort to tailor the mapping themes undertaken to the three thematic Pillars of **Urbanisation, Industrialisation and Agricultural Productivity and Commercialisation** established by the MW2063. Consequently, each Pillar was expanded into several related sub-themes which have been mapped and analysed at varying scales. As illustrated by the diagram below, each Pillar does not relate exclusively to a sub-theme, or vice versa – meaning that there is a high degree of interaction and feedback between systems and across themes, which is precisely the point in this exercise. For example, energy sector projects are not limited to either Pillar as they provide power for cities, farms, and factories. For a full account of the data sources used in this analysis and the lists of projects and assets taken into consideration in this analysis please refer to *Appendix II* - Assets and Planned Opportunities.



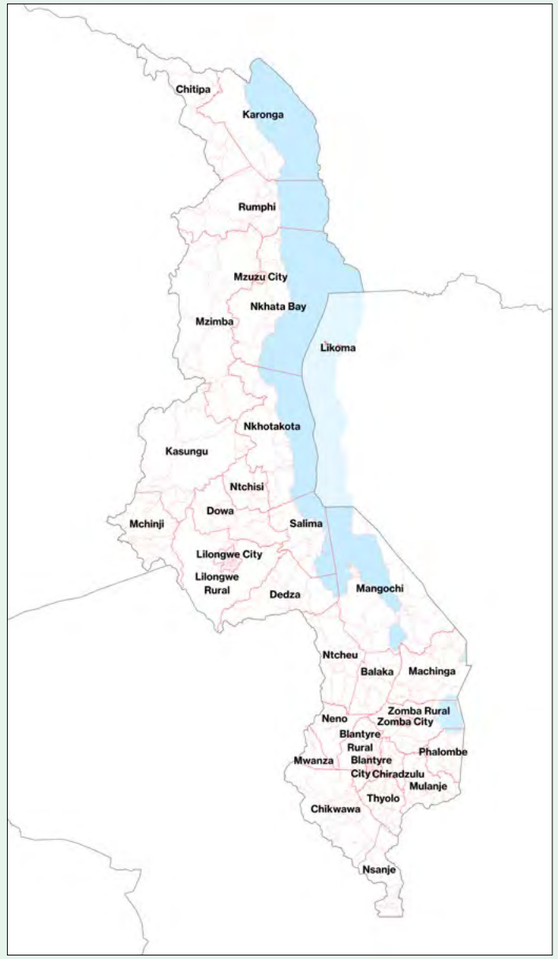


Data sources: for a detailed account of all sources, please refer to the back of this MSCP.

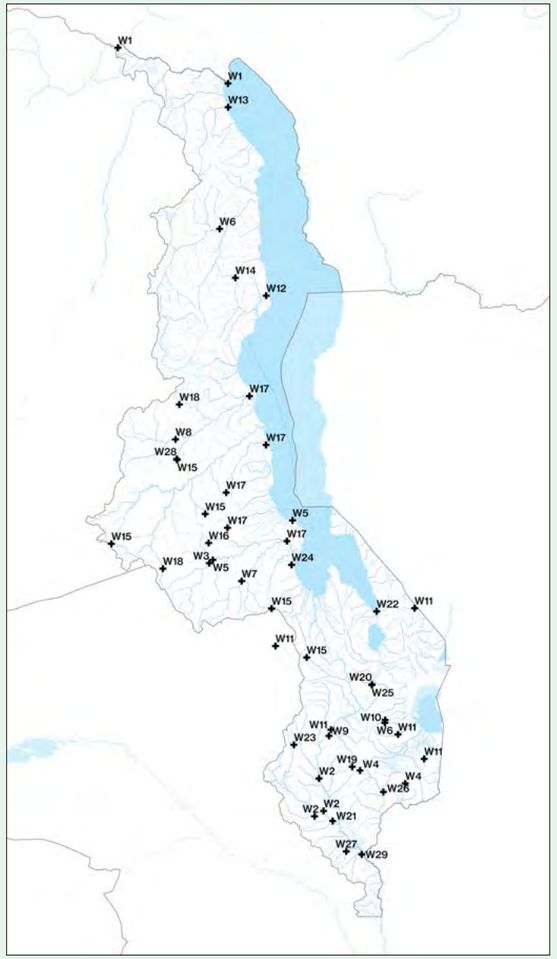
National assets and opportunities mapping



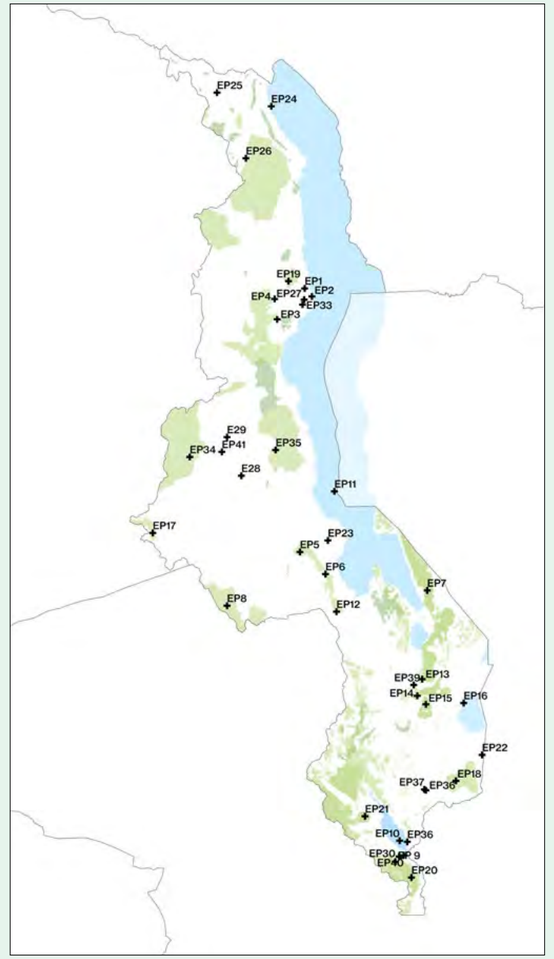
1 Population growth centers



2 Jurisdiction



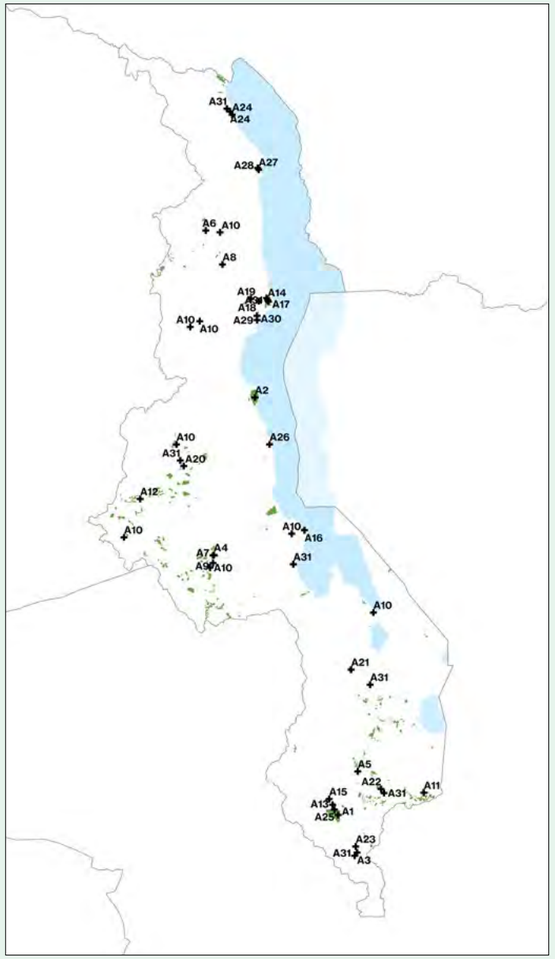
3 Water systems



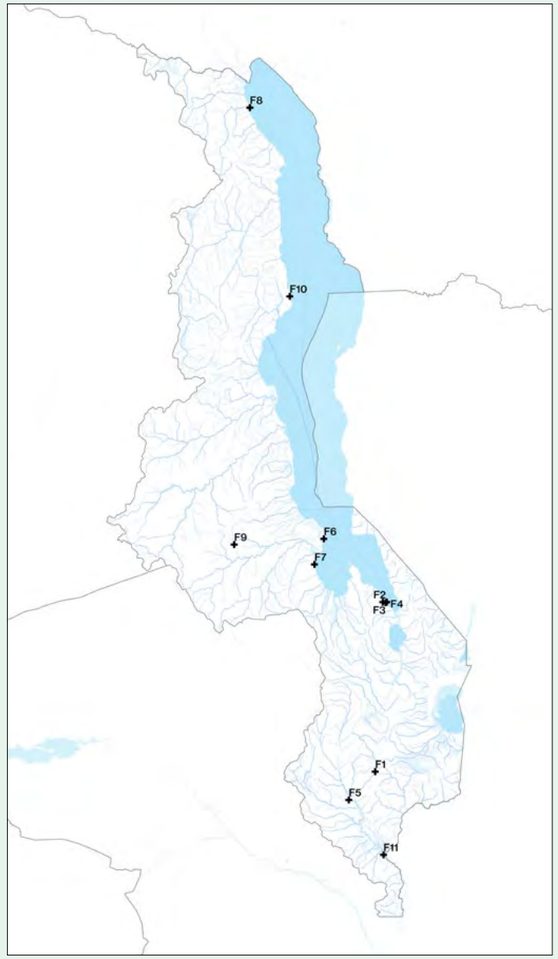
4 Natural ecosystems

Data sources: For a detailed account of all sources, please refer to the back of this MSCP.

National assets and opportunities mapping



5 Agriculture



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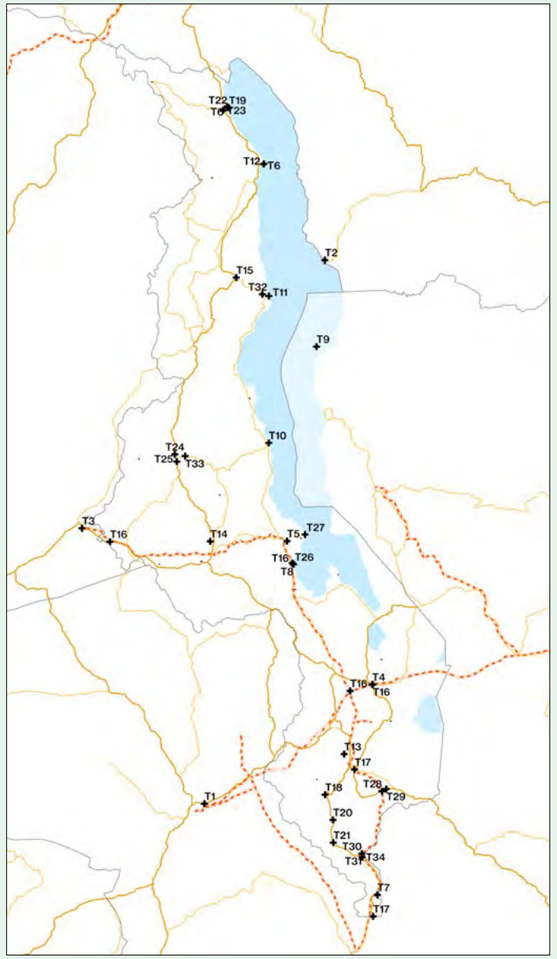
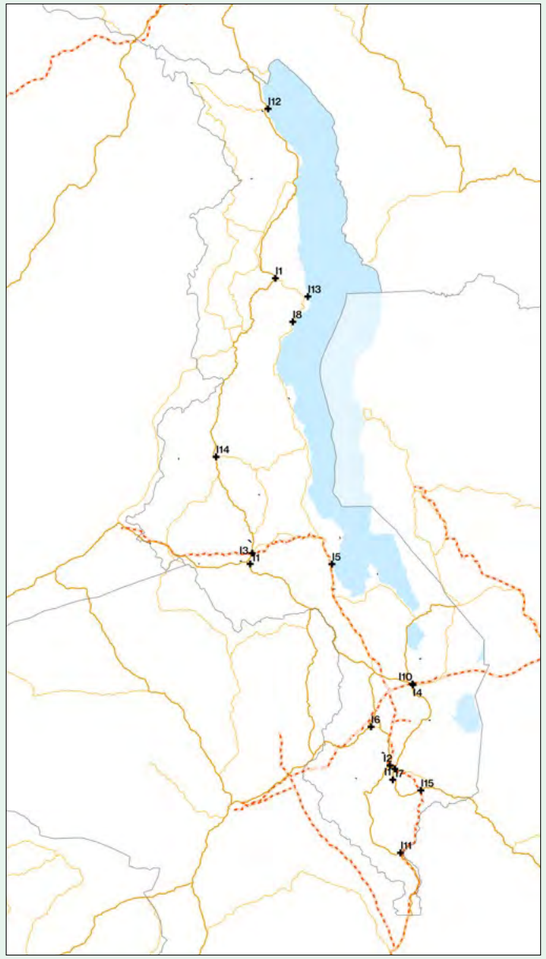


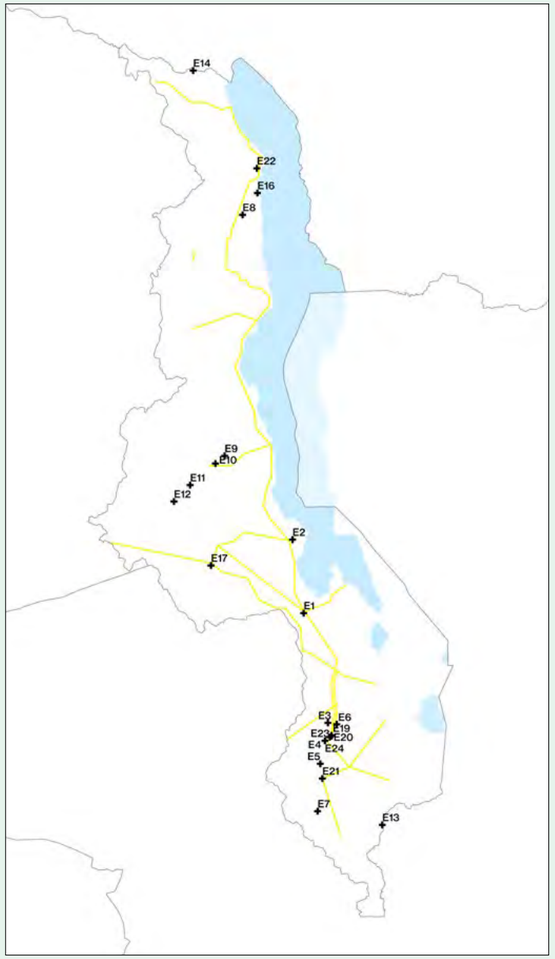
7 Transportation



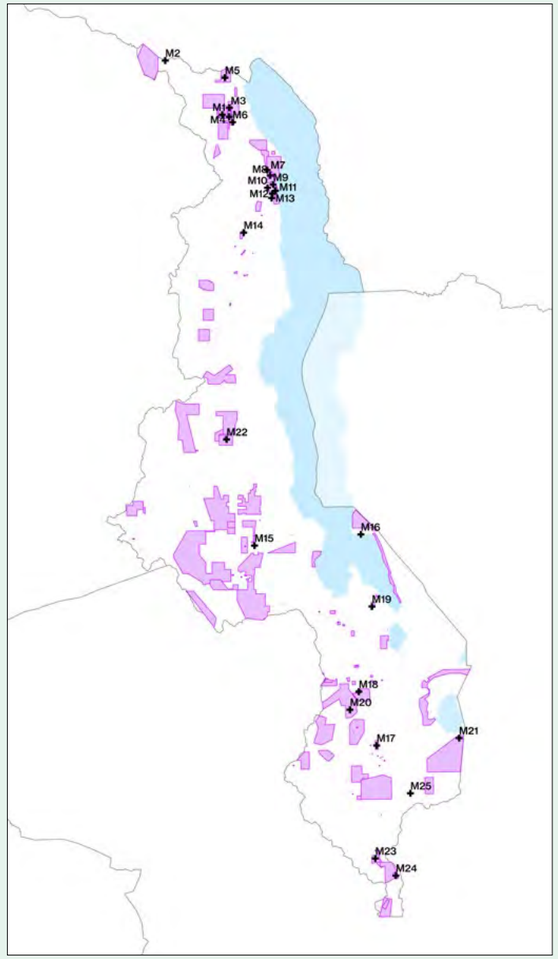
8 Industry

Data sources: For a detailed account of all sources, please refer to the back of this MSCP.

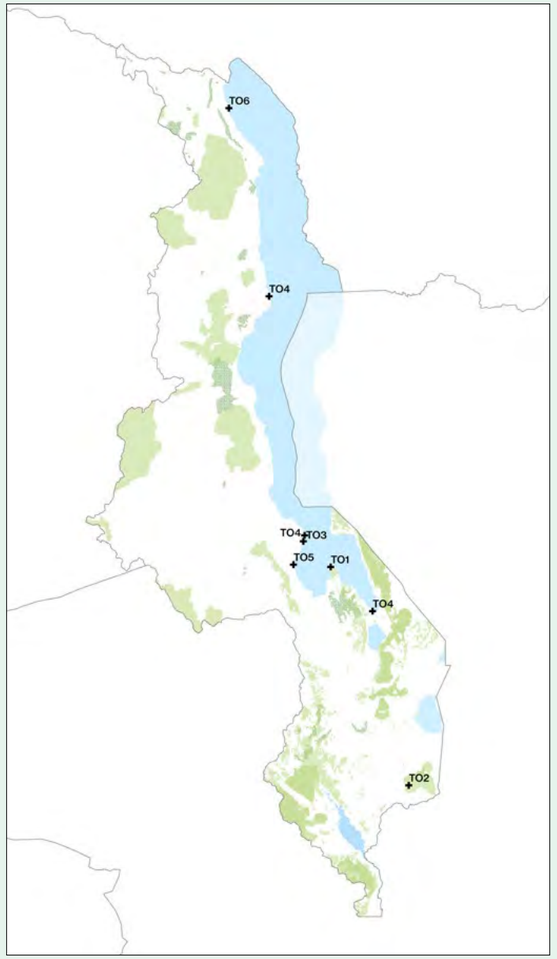
National assets and opportunities mapping



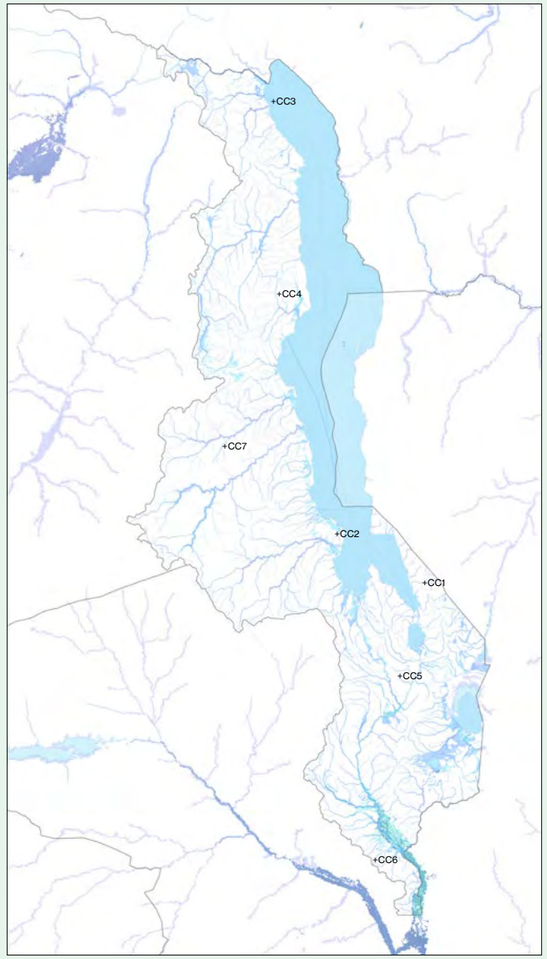
9 Energy



10 Mining



11 Tourism



12 Climate change

Data sources: For a detailed account of all sources, please refer to the back of this MSCP.

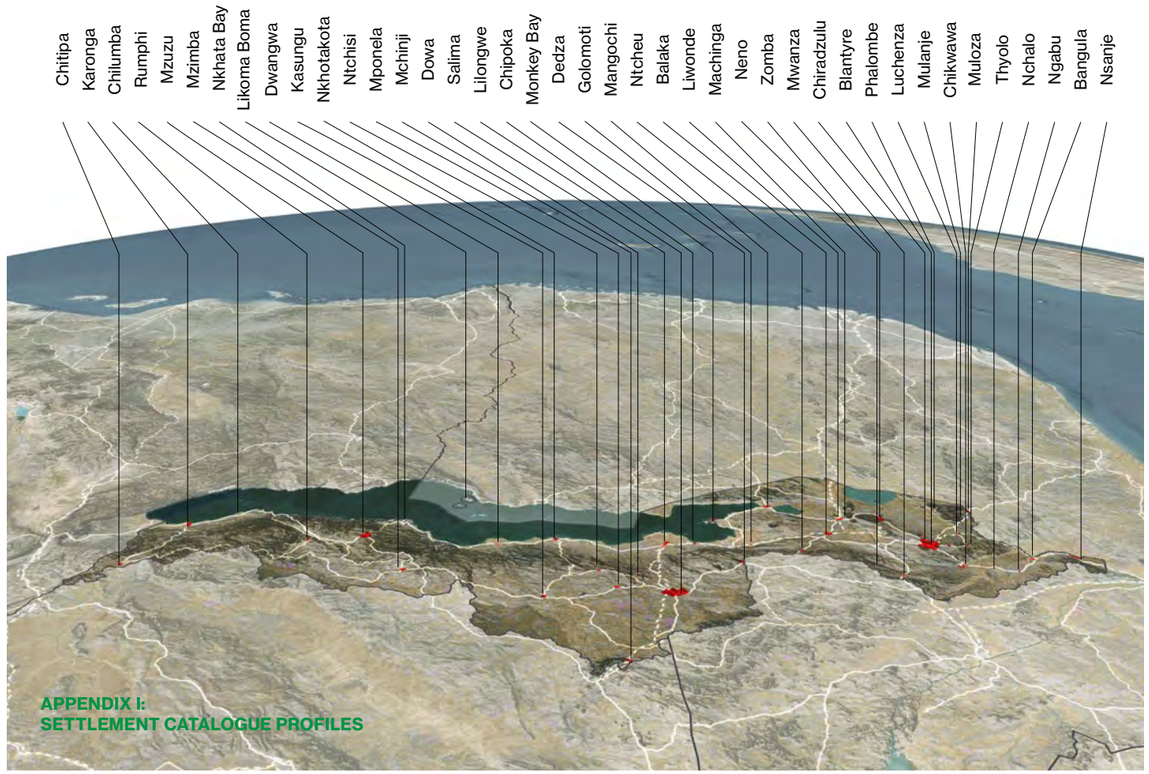
Defining and analysing urban settlements

To zoom in further into project clustering level, as described above, a baseline scenario data library was classified, through the prism of potential urban development of secondary cities. Yet, the definition of whether a settlement or a larger area and its population should be classified as urban can be rather problematic. Factors such as minimum population thresholds, minimum levels of population density, and the area of the urban labor market are often used in developed countries. However, none of them addresses the question of a functional difference between urban and rural areas, the occupational structures as well as the provision of services. Further, it is not appropriate to use an occupational classification in isolation, since in some African countries such as Malawi, agricultural employment and "urban" categorisation are not mutually exclusive.

In her dissertation titled *Urbanization in Malawi* (1986), Deborah Potts notes that there is a lack of consistency in the definition of which centers are defined as "urban". This has led to problems associated with international comparison of urbanisation levels and growth rates. For instance, the majority of places designated as "urban" in the 1966 census had populations of under 1,000 and most of the rest were under 2,000. Further, while 51 places were assigned an urban status in 1966, a somewhat tighter set of criteria led to only 32 being defined in 1977. For instance, in 1966, urban areas were defined as all townships, district centers, and centers "having installations such as a Police Post, a Works Camp or a Post Office, in addition to trading stores and market". Although this would go some way to exclude fundamentally rural settlements (many of these villages have a much larger population than the smaller urban centers), it is clearly not a strict definition, and would easily allow settlements with populations almost entirely engaged in agricultural production to be included as "urban". Furthermore, Potts noted the boundary changes that occurred throughout the years as these censuses were being generated. These boundary changes (which occurred during the same time as Lilongwe was being developed as the new national capital) affected the area within which people were enumerated as "urban" for nearly every center.

For the purpose of the MSCP, since not only existing infrastructures, labor markets and hierarchies of service are being evaluated, but rather their potential for development as urban employment markets and service centers as well, and in particular due to Malawi's predominantly agricultural economy, the functional approach described above is avoided. Here, the method of selecting settlements for analysis was that any settlement currently holding a status of urban jurisdiction is treated as such, and consequently evaluated and ranked for its characteristics. This list includes 35 settlements across the country as defined by the Ministry responsible for urban development.

Each settlement was profiled based on a combination of statistical and spatial information. The profiles provide an account of matters which relate to the settlements existing conditions as well as indications of opportunities as identified by various policies and programs. Those opportunities are largely evident through physical proximities to projects and assets that have been mapped through a wide variety of sources. The main purpose of these profiles is to visualize the main characteristics a settlement and its surrounding holds, and by that allow for an informed process of comparison and ranking between settlements. The profiles help the decision-making process in infrastructure planning and investments as well as urbanization policies, which in turn help maximise impact across scales and geographies.



APPENDIX I:
SETTLEMENT CATALOGUE PROFILES

Nsanje

District: Nsanje

Population Distribution and Growth Trends	
Settlement Footprint 2018 (ha)	1,424
Settlement Population 2018	32,778
Settlement Density	23
25 km radius	
Population 2018	164,411
Urban/Rural Ratio	20/80

Jurisdiction and Land Tenure	
Urban Jurisdictional Area (ha)	1,542
Population with Jurisdictional Boundary	26,844
Density in Jurisdictional Boundary	17
Estates (within 25 km radius) (ha)	149

Natural Ecosystems (25 km radius)	
Agricultural Land Suitability	31,932
Conservation Area	23,337
Water Resources	-

Fisheries and Aquaculture	
Active/Potential for Fishing and Aquaculture	Yes

Transportation	
Lake Port	1
Rail	1
Major Road	1
Airport	-

Tourism	
Attractions	Yes

Climate Change and Resiliency	
Flood Risk	Medium

Mining	
Active Licence	Yes

Projects and Assets in a 25 km radius

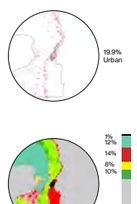
Flagship Projects
T7: Development of Nsanje World Inland Port
T17: Limbe to Marka Rail Line Rehabilitation

Environmental Protection Projects
EP19: Matandwe Forest Reserve

Mining Projects
M24: Crown Minerals (Heavy Minerals Sand)

Population Projections

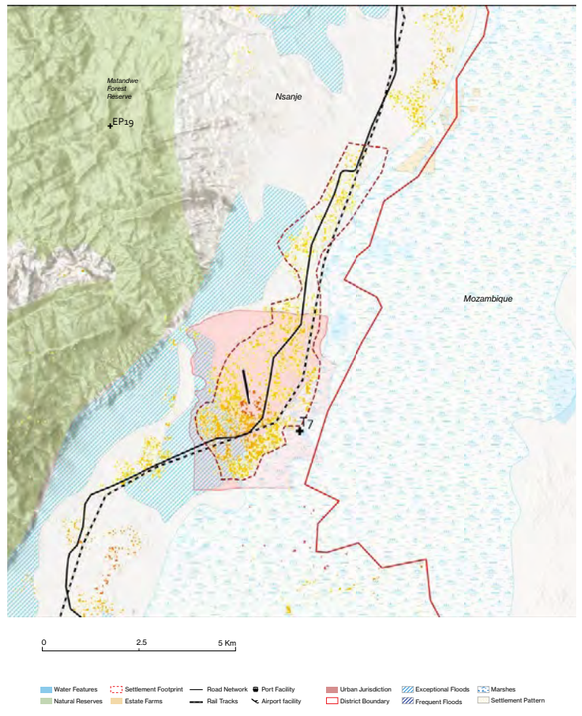
Growth rate	2.4%
by 2040	55,230
by 2063	95,297
by 2040	277,031
by 2063	478,001



Urban Potential
7 / 41

Land Suitability
32 / 41

Connectivity
Group A/2



The MSCP further analysed the 2018 census using Enumeration Area data sets to potentially identify settlements which present both a significant density (greater than 10 households per ha) and an amount of population within that density (clusters of 5,000 residents and more), as a method of highlighting 'emerging cities' which may have been neglected by previous or current policies. This analysis has identified additional 16 settlements which present traits of urbanity, and, as such, have also been evaluated with respect to their potential in agricultural and infrastructural development opportunities. From the list of 16 settlements, a subset of 6 has been identified, clearly presenting highly valuable economic and infrastructural opportunities. Those 6 settlements have been added to the list of 35 settlements, to form a list of 41 settlements to be evaluated in the MSCP.

+ Urban Jurisdictions 2018
+ Urban Settlements removed from 1987
+ Urban Settlements proposed by this study 2020

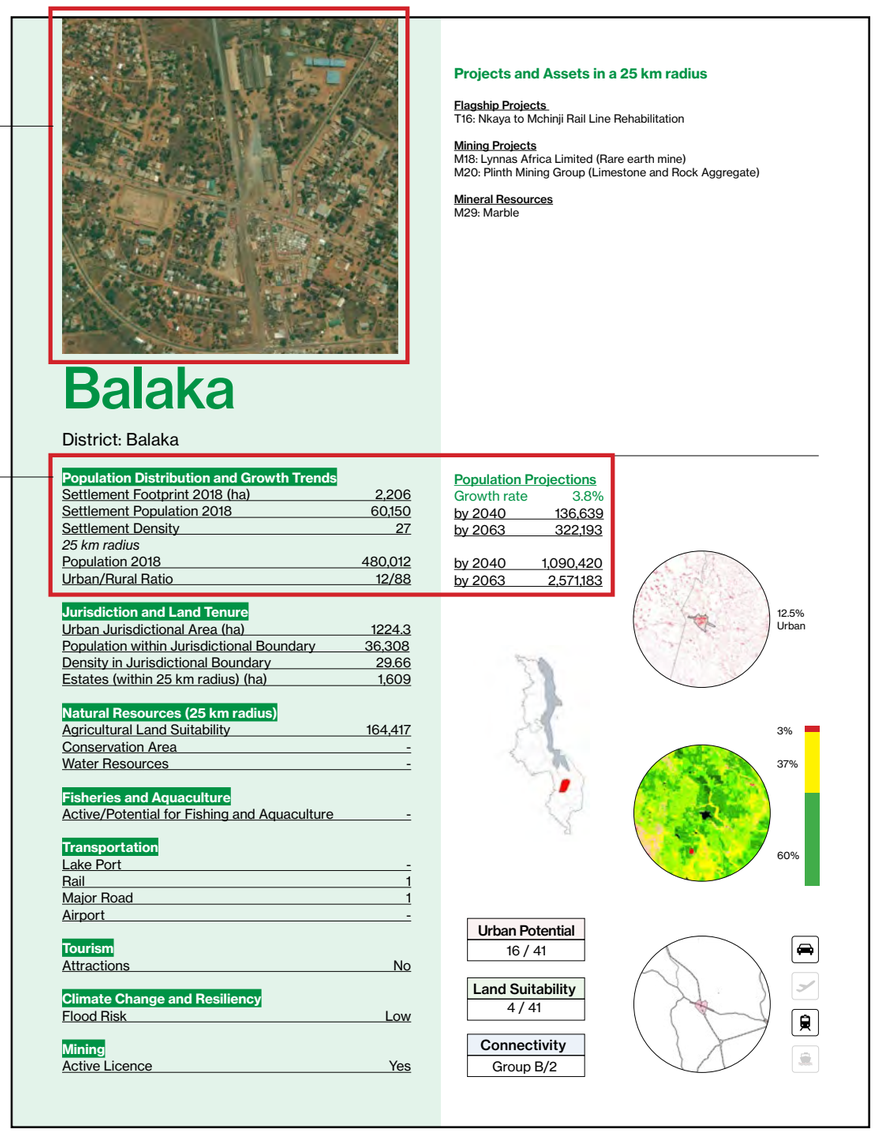
Comparative Table of Urban Jurisdictions and Settlements

1987 NPDP	Urban Jurisdictions 2018	Study Settlement List 2020
-	Balaka Town	Balaka Town
Blantyre	Blantyre City	Blantyre City
Chikwawa	Chikwawa Boma	Chikwawa Boma
-	Chipoka Urban	Chipoka Urban
Chiradzulu	Chiradzulu Boma	Chiradzulu Boma
Chitipa	Chitipa Boma	Chitipa Boma
Dedza	Dedza Boma	Dedza Boma
Dowa	Dowa Boma	Dowa Boma
Karonga	Karonga Town	Karonga Town
Kasungu	Kasungu Boma	Kasungu Boma
-	Likoma Boma	Likoma Boma
Lilongwe	Lilongwe City	Lilongwe City
Liwonde	Liwonde Town	Liwonde Town
-	Luchenza Town	Luchenza Town
Machinga	Machinga Boma	Machinga Boma
Mangochi	Mangochi Town	Mangochi Town
Mchinji	Mchinji Boma	Mchinji Boma
Monkey Bay	Monkey Bay Urban	Monkey Bay Urban
Mponela	Mponela Town	Mponela Town
Mulanje	Mulanje Boma	Mulanje Boma
Mwanza	Mwanza Boma	Mwanza Boma
Mzimba	Mzimba Boma	Mzimba Boma
Mzuzu	Mzuzu City	Mzuzu City
-	Neno Boma	Neno Boma
-	Ngabu Urban	Ngabu Urban
Nkhata Bay	Nkhata Bay Boma	Nkhata Bay Boma
Nkhotakota	Nkhotakota Boma	Nkhotakota Boma
Nsanje	Nsanje Boma	Nsanje Boma
Ntcheu	Ntcheu Boma	Ntcheu Boma
Ntchisi	Ntchisi Boma	Ntchisi Boma
Phalombe	Phalombe Boma	Phalombe Boma
Rumphi	Rumphi Boma	Rumphi Boma
Salima	Salima Town	Salima Town
Thyolo	Thyolo Boma	Thyolo Boma
Zomba	Zomba City	Zomba City
Bangula	-	Bangula
Euthini	-	-
Ntaja	-	-
-	-	Chilumba
-	-	Dwangwa
-	-	Golomoti
-	-	Nchalo
-	-	Muloza

Settlement Profile Template

Aerial imagery

Population distribution and growth trends



Aerial imagery

Each profile includes an aerial imagery depicting a 1km x 1km representative sample of the density and urban morphology present in the settlement. The patterns of settlement depicted in the aerial photography can offer a reading of growth, expansion, and densification.

Population distribution and growth trends

Settlement Footprint
Each settlement is examined individually in detail through high resolution aerial photography and manually drawn outlines based on a visual assessment of the settlement area. This process allows for a rather clear distinction between a settlement form and its surrounding based on an understanding of boundary and diffusion. Naturally, some settlements have more blurred edges which make the case harder than others, but an effort was made to at least capture the large majority of a settlement footprint, until densities and settlement continuities become hard to trace.

Population 2018
The above-mentioned settlement footprint polygon was intersected with the population census from 2018 at the most detailed grains available (enumeration areas level), in order to summarize the population counts of all EA's that interest the settlement polygon. This process allows for the most accurate assessment of population amount for each settlement, in a manner which is not prejudiced by political boundaries.

Density
Once a settlement outline and population counts had been established, population densities were calculated for an average hectare. Those figures could provide a good indication with respect to the possibility of a settlement to further densify and populate within its current footprint. This naturally depends on building typologies and block structures, but still a very useful indicator for further planning purposes.

Population Projections
Urban population increase can occur through three processes: (i) net in-migration from rural areas; (ii) population reclassification as jurisdictional boundaries expand; and (iii) natural increase dependent on fertility and mortality rates. The analysis of population projections adopted by the MSCP only accounts for the later since the two other processes are very hard to assess in long term.

Average Annual Growth Rates
To project population counts on generational intervals, the MSCP looked as far as 2063 (the target year of the visioning exercise), as well as 2040 as a mid-point. To calculate average annual growth rates for each district, the census data was used on the district level from 2008 and 2018. Once average growth rates for each district had been calculated, population counts on the 4th level (2018 census) were multiplied with those growth rates. Naturally, this process assumes growth rates maintain for the next three decades.

Settlement Profile Template

Balaka

District: Balaka

Projects and Assets in a 25 km radius

Flagship Projects
T16: Nkaya to Mchinji Rail Line Rehabilitation

Mining Projects
M18: Lynnas Africa Limited (Rare earth mine)
M20: Plinth Mining Group (Limestone and Rock Aggregate)

Mineral Resources
M29: Marble

Population Distribution and Growth Trends	
Settlement Footprint 2018 (ha)	2,206
Settlement Population 2018	60,150
Settlement Density	27
25 km radius	
Population 2018	480,012
Urban/Rural Ratio	12/88

Jurisdiction and Land Tenure	
Urban Jurisdictional Area (ha)	1224.3
Population within Jurisdictional Boundary	36,308
Density in Jurisdictional Boundary	29.66
Estates (within 25 km radius) (ha)	1,609

Natural Resources (25 km radius)	
Agricultural Land Suitability	164,417
Conservation Area	-
Water Resources	-

Fisheries and Aquaculture	
Active/Potential for Fishing and Aquaculture	-

Transportation	
Lake Port	-
Rail	1
Major Road	1
Airport	-

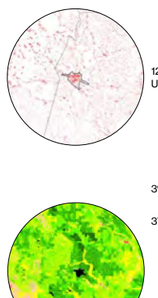
Tourism	
Attractions	No

Climate Change and Resiliency	
Flood Risk	Low

Mining	
Active Licence	Yes

Population Projections

Growth rate	3.8%
by 2040	136,639
by 2063	322,193
by 2040	1,090,420
by 2063	2,571,183



Urban Potential
16 / 41

Land Suitability
4 / 41

Connectivity
Group B/2

Jurisdiction and land tenure

Jurisdiction and land tenure

Urban Jurisdiction area (ha), Population within Jurisdictional Boundary and Density in Jurisdictional Boundary

For the 35 settlements which have an urban jurisdictional boundary, the MSCP recorded the population counts from the 2018 census, areas of jurisdiction and calculated the population density (persons per ha). Important to distinguish here the difference between the jurisdictional area and the *de facto* settlement footprints, which is accounted for above as they rarely overlap. And yet, although the settlement may be larger than the actual jurisdiction, matters of jurisdiction are of critical importance when it comes to securing foreign or local investments. Therefore, the legal value of an urban jurisdiction is important as it may well ease processes of financing for investments in infrastructure projects.

Estates within 25km radius (ha)

Similarly to the case of urban jurisdictions, estates present an attractive opportunity in respect to their legal status as 'titled' land, instead of 'customary' land. Therefore, a settlement's proximity to an estate is not merely an opportunity from a value chain or contracting agreement perspective, where a larger commercial operation could reinforce a smallholder co-op in various ways, but also an opportunity for investments in infrastructure which could support larger populations in the area. As an example, an estate located downstream from a settlement could be suitable as a site for a wastewater treatment plant which would service the settlement upstream. Alternatively, where the estate is even closer to a settlement, it could be grounds for an urban neighborhood project, designed as a PPP and benefiting from a 'titled' legal status. In this respect, land use of a given area will be dealt with in accordance with relevant laws.

Settlement Profile Template

Projects and Assets in a 25 km radius

Flagship Projects
T16: Nkaya to Mchinji Rail Line Rehabilitation

Mining Projects
M18: Lynnas Africa Limited (Rare earth mine)
M20: Plinth Mining Group (Limestone and Rock Aggregate)

Mineral Resources
M29: Marble

Balaka

District: Balaka

Population Distribution and Growth Trends	
Settlement Footprint 2018 (ha)	2,206
Settlement Population 2018	60,150
Settlement Density	27
25 km radius	
Population 2018	480,012
Urban/Rural Ratio	12/88

Jurisdiction and Land Tenure	
Urban Jurisdictional Area (ha)	1224.3
Population within Jurisdictional Boundary	36,308
Density in Jurisdictional Boundary	29.66
Estates (within 25 km radius) (ha)	1,609

Natural resources

Natural Resources (25 km radius)	
Agricultural Land Suitability	164,417
Conservation Area	-
Water Resources	-

Fisheries and Aquaculture	
Active/Potential for Fishing and Aquaculture	-

Transportation	
Lake Port	-
Rail	1
Major Road	1
Airport	-

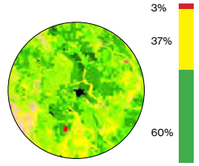
Tourism	
Attractions	No

Climate Change and Resiliency	
Flood Risk	Low

Mining	
Active Licence	Yes

Population Projections

Growth rate	3.8%
by 2040	136,639
by 2063	322,193
by 2040	1,090,420
by 2063	2,571,183



Urban Potential
16 / 41

Land Suitability
4 / 41

Connectivity
Group B/2

Natural resources (25km radius)

Agricultural land suitability

Within the agricultural sector in Malawi, continuous cropping without the use of long-term sustainable strategies and frequent cultivation on marginal lands have resulted in declining soil fertility. A study done at Michigan State University (Li et al. 2017) found that highly suitable, moderately suitable, marginally suitable, and unsuitable agricultural areas account for 8.2%, 24%, 28% and 39.7% of the total land area. The majority of suitable lands are currently used for agriculture, but more than half (57.4%) of Malawi's total cropland exists on marginally suitable or unsuitable land categories. In order to increase agricultural productivity and improve food security, it is imperative to improve the soil quality of marginal lands, as well as begin a process of rehabilitation through sustainable agricultural practices. Further, it is of critical importance that areas of highly suitable lands are planned in a manner that ensures those lands are not consumed by unplanned urban expansion. Therefore, for settlements that are located on highly productive lands, and are still projected to expand rapidly, it is of urgency to devise plans to not only control urban growth, but also ensure a productive integration of agricultural practices within the cities' greater area. The land suitability analysis associated with each settlement is within a 25 km radius, an area that could easily be serviced by the associated settlement even for a very pedestrian mobility system.

Conservation areas

Areas dedicated for natural conservation within the analysed 25km radius were accounted for, to indicate opportunities for both ecosystem restoration and extension of reserves. These could be acheived through ecological corridors and waterworks green infrastructure strategies. These areas also present commercial and recreational opportunities, as they attract local residents and domestic and international tourists.

Water resources

Waterbodies have been accounted for only as long as they have been registered in the above described land suitability study as a surface area. Those include the main rivers (such as the Shire and Dwangwa) and the various lakes across the country. This surface area does not account for the wetland and *dambo* areas which are represented in the closer maps, as the accuracy of sources were not validated*.

*Footnote: Important to note here is the study titled "Malawi National Water Atlas" prepared by the Ministry of Water and Irrigation (2018). Once the team acquires the GIS data used for that study, the information would be included it in those profiles.

Settlement Profile Template

Balaka

District: Balaka

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	2,206
Settlement Population 2018	60,150
Settlement Density	27
25 km radius	
Population 2018	480,012
Urban/Rural Ratio	12/88

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	1224.3
Population within Jurisdictional Boundary	36,308
Density in Jurisdictional Boundary	29.66
Estates (within 25 km radius) (ha)	1,609

Natural Resources (25 km radius)

Agricultural Land Suitability	164,417
Conservation Area	-
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	-

Transportation

Lake Port	-
Rail	1
Major Road	1
Airport	-

Tourism

Attractions	No

Climate Change and Resiliency

Flood Risk	Low

Mining

Active Licence	Yes

Projects and Assets in a 25 km radius

Flagship Projects
T16: Nkaya to Mchinji Rail Line Rehabilitation

Mining Projects
M18: Lynnas Africa Limited (Rare earth mine)
M20: Plinth Mining Group (Limestone and Rock Aggregate)

Mineral Resources
M29: Marble

Population Projections

Growth rate	3.8%
by 2040	136,639
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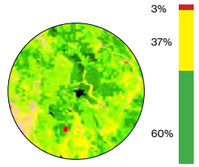

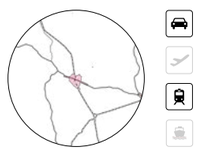

Urban Potential
16 / 41

Land Suitability
4 / 41

Connectivity
Group B/2

Fisheries and aquaculture
Transportation
Tourism
Climate change and resiliency
Mining

Fisheries and aquaculture

Although Malawi has a very robust fisheries sector, the analysis adopted by the MSCP was only able to capture those areas which are formally recognized as such, as the large majority of activities of the sector is informal and undocumented. In this analysis, settlements which present pronounced opportunities for both aquaculture and fisheries sector investments were pointed out, as they are in close proximity to a substantial body of water.

Transportation

The analysis offers an inventory of significant existing transportation routes and hubs, their status as it relates to necessary rehabilitation or upgrades, and any project concepts which are promoted by the Ministry of Transportation and Public Works, in the Malawi National Transportation Master Plan 2017 - 2037 (2017).

Tourism

The analysis points to those settlements which are in proximity to existing and potential touristic attraction points. Those include both the more established resorts and hotel offerings, and the national parks and nature reserve which could be further developed over time to attract a significant number of visitors for ecological tourism.

Climate change and resiliency

It is important to stress how critical it is for Malawi's spatial planning processes to account for an evidently changing climate, and to actively intervene, where possible, to mitigate the impacts of widespread processes such as rapid deforestation, soil erosion, drought cycles and flooding. The effects of those processes on the livelihoods of urban and rural populations could well be mitigated through strategic investments in green infrastructure measures, or directly through zoning policies that protect settlements impacted most. Areas where flooding appears to be consistent, in varying degrees of severity, were accounted for*.

Mining

The analysis points to those settlements which are in proximity (up to 25km) to current licensed mining activity. While there are many reconnaissance missions ongoing across the country, they have not been included in this analysis due to the early stage of that effort.

*Footnote: The team has yet to identify a study which provides an account for climate sensitivity across the country.

Settlement Profile Template

Projects and assets

Balaka

District: Balaka

Projects and Assets in a 25 km radius

Flagship Projects
T16: Nkaya to Mchinji Rail Line Rehabilitation

Mining Projects
M18: Lynnas Africa Limited (Rare earth mine)
M20: Plinth Mining Group (Limestone and Rock Aggregate)

Mineral Resources
M29: Marble

Population Distribution and Growth Trends	
Settlement Footprint 2018 (ha)	2,206
Settlement Population 2018	60,150
Settlement Density	27
25 km radius	
Population 2018	480,012
Urban/Rural Ratio	12/88
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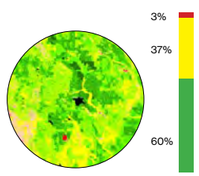
Urban Jurisdictional Area (ha)	1224.3
Population within Jurisdictional Boundary	36,308
Density in Jurisdictional Boundary	29.66
Estates (within 25 km radius) (ha)	1,609
Natural Resources (25 km radius)	
Agricultural Land Suitability	164,417
Conservation Area	-
Water Resources	-
Fisheries and Aquaculture	
Active/Potential for Fishing and Aquaculture	-
Transportation	
Lake Port	-
Rail	1
Major Road	1
Airport	-
Tourism	
Attractions	No
Climate Change and Resiliency	
Flood Risk	Low
Mining	
Active Licence	Yes

Population Projections

Growth rate	3.8%
by 2040	136,639
by 2063	322,193
by 2040	1,090,420
by 2063	2,571,183



Urban Potential
16 / 41
Land Suitability
4 / 41
Connectivity
Group B/2

Projects and assets in a 25km radius

The MSCP provides an account of the main infrastructural and physical assets the country has, as well as those which are in the process of planning, whether as projects or as programs and initiatives. The premise behind this inventory work is that investments could benefit from identifying proximities to other ongoing initiatives and projects, by co-financing, or by collaboratively designing elements of their plans to increase impact and sustainability. The MSCP has listed 12 sectors of interest in which assets and projects were mapped. The analysed sectors are: (1) Population Distribution and Growth Trends; (2) Jurisdiction and Land Tenure Subdivision; (3) Water Resources and Hydrology; (4) Natural Ecosystems; (5) Agriculture; (6) Fisheries and Aquaculture; (7) Transportation; (8) Industry; (9) Energy; (10) Mining; (11) Tourism; and (12) Climate Change and Resiliency.

Two key Government policy documents have been used to develop this projects and assets list. The first is the Public Sector Investment Program (PSIP), which compiles all projects which have a public funding component.

The second source for this inventory is the Malawi 2063 First 10-Year Implementation Plan (MIP-1), which is the medium-term strategy designed to contribute to Malawi's long-term development aspirations. The MIP-1 covers a period of ten years, from 2021 to 2031. MIP-1 is guided by a set of prioritised interventions which, if implemented at a minimum, will contribute to the attainment of the lower middle-income status and realisation of the SDGs by 2030. It defines foundational transformative strategies and interventions, including flagship projects, that will help meet the set milestones at the shortest time possible. Some of these projects have been approved and were allocated funding while others await funding. Some are in the process of being implemented while others have not been initiated yet.

Settlement Profile Template

Balaka

District: Balaka

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	2,206
Settlement Population 2018	60,150
Settlement Density	27
25 km radius	
Population 2018	480,012
Urban/Rural Ratio	12/88

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	1224.3
Population within Jurisdictional Boundary	36,308
Density in Jurisdictional Boundary	29.66
Estates (within 25 km radius) (ha)	1,609

Natural Resources (25 km radius)

Agricultural Land Suitability	164,417
Conservation Area	-
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	-

Transportation

Lake Port	-
Rail	1
Major Road	1
Airport	-

Tourism

Attractions	No

Climate Change and Resiliency

Flood Risk	Low

Mining

Active Licence	Yes

Projects and Assets in a 25 km radius

Flagship Projects
T16: Nkaya to Mchinji Rail Line Rehabilitation

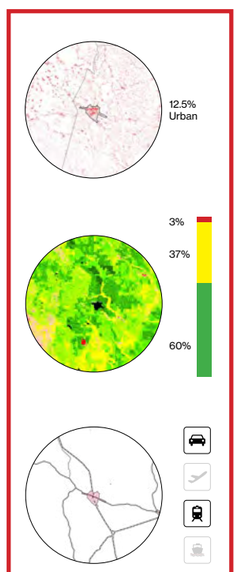
Mining Projects
M18: Lynnas Africa Limited (Rare earth mine)
M20: Plinth Mining Group (Limestone and Rock Aggregate)

Mineral Resources
M29: Marble

Population Projections

Growth rate	3.8%
by 2040	136,639
by 2063	322,193
by 2040	1,090,420
by 2063	2,571,183

Urban Potential	16 / 41
Land Suitability	4 / 41
Connectivity	Group B/2



Urban growth potential

The urban growth potential ranking presents an assessment of a settlement's factor of population concentration by way of calculating the percentage of people living within the settlement boundary in relation to population living in the 25 km radius area. Those cities which present high concentration values are considered to be in a good position territoriality compared to its neighboring towns and villages (within a 25km radius), in the sense that it would be able to act as a 'pull' force for rural to urban migration.

Agricultural land suitability

As described in the previous Section, the land suitability study maps out the different land qualities across the country. As a method for ranking the different settlements, the combined area of the first two categories (highly suitable and moderately suitable) was used to see which settlements have the highest area of good agricultural land.

Transport infrastructure connectivity

The transport infrastructure connectivity presents an assessment of a settlement's degree of connectivity across modes of transportation. The ranking takes into account two variables. First, a settlement's existing or potential mode of transport (major road, port, rail, airport). Second, the condition in which the existing mode is (i.e needs rehabilitation or not).

5. PRIORITISATION FOR DEVELOPMENT

Settlements Comparison, Scoring and Ranking

In an environment where infrastructure provisions are severely lacking and budgets are highly constrained, it is imperative to maximise impact through project groupings and by designing infrastructure as multi-purpose provisions for a wide variety of beneficiaries and stakeholders. Such an agenda should be ideally implemented in a minimal set of locations, where groups of projects could emerge and build enough capacity and momentum to catalyze a local process of long-term development.

Once the reasoning behind locational prioritisation is laid out, the natural following question should be, where then? Where does it make most sense to invest in order to propel national development agendas? Which urban settlements present the most opportunities with respect to multi-purpose infrastructure investments, impacting both industry, and smallholders, both urban development and environmental restoration?

The settlement catalogue presented in the previous Chapter with its statistics and rankings, provides an instrument for the evaluation of alternatives, visualising complex realities for multi-stakeholder consultations, and ultimately meant to simplify the challenge of comparison and prioritisation, as decisions on national development agendas are taking place. The following Chapter will expand on the process of classification and prioritisation of the locations that appear to provide the most opportunities for the development of robust multi-industry secondary cities. Chapter 6 will highlight the subsequent master planning exercise as a means of facilitating the spatial integration of investment opportunities.

As the ultimate goal of profiling the different settlements is to identify the most outstanding candidates for investment promotion and national development prioritisation compatible with the MW2063 Pillars of (1) industrialisation (including mining), (2) urbanisation (including tourism), and (3) agriculture commercialisation; a number of corresponding scoring tools have been developed to assess the potential of each settlement in facilitating these processes.

Which urban settlements present the most opportunities with respect to multi-purpose infrastructure investments, impacting industry, smallholders, urban development and environmental restoration?

View over Lilongwe, 2018.

Photo by Kwathu Ndi Kwanu

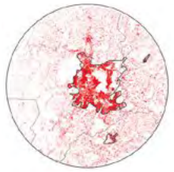
Urban growth potential

The urban growth potential ranking presents an assessment of a settlement's factor of population concentration by way of calculating the percentage of people living within the settlement boundary in relation to population living in the 25 km radius area. Those cities which present high concentration values are considered to be in a good position compared to their neighboring towns and villages (within a 25km radius), in the sense that they would be able to act as a 'pull' factor for rural to urban migration.

For scoring purposes, the results of the analysis were divided by quartiles, and given points accordingly. Thus settlements with an urban population percentage over 49.2% received 4 points (Blantyre, Mzuzu and Lilongwe), settlements with an urban population percent over 16.5% but under 49.2% received 3 points (Dwangwa, Chitipa, Karonga, Mangochi, Salima, Nkhotakota and Nsanje), settlements with an urban population percentage over 9.1% but under 16.5% received 2 points, and, lastly, settlements with an urban population percentage under 9.1% received a single point.

Naturally, three of the main urban cities in the country ranked the highest; **Lilongwe, Blantyre** and **Mzuzu** – in this order, as they also take the most space in footprint, and by that take up a significant percent of the area of analysis predefined at 25km radius which is estimated to correspond to about an hour commute for a very minimally motorised environment.
Still, it is relevant to examine the results for those settlements that present high ratios of concentration, mainly due to natural difficulties in inhabiting large parts of their surroundings, such as steep topographical conditions, water bodies, nature reserves, or national boundaries for settlements close to the national borders. Thus, settlements such as **Nkhotakota, Karonga, Nsanje, Chitipa, Dwangwa**, among others, are ranked rather high, as the degree of concentration in those settlement is very pronounced, and, as dictated by spatial constraints, it is not expected to change over time.

Another category of settlements worth noting are those which rank surprisingly low due to higher density rates in their peripheral rural communities, and by that reduce the 'centrality' of a settlement from a density perspective, although operationally they may well be still very central to the areas' activities. This also indicates locations where smallholder communities experience significant pressure for land, and may well point to a number of cities which are rather urgent to activate by increasing their urbanisation rates and attracting larger amounts of populations in the near future. Those include **Zomba, Liwonde, Mponela, Thyolo, Luchenza, Ntchisi** and **Dowa**.

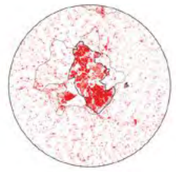


56.2%
of population
concentrated
in settlement
in 25km radius

Blantyre
1

54.5%

Mzuzu
2



49.2%

Lilongwe
3

29

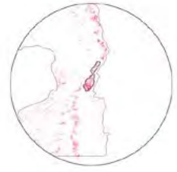
Karonga
4

21.1%

Nkhotakota
5

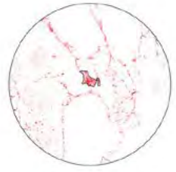
20.9%

Chitipa
6



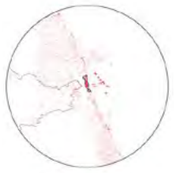
19.9%

Nsanje
7



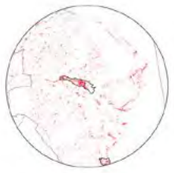
19.3%

Mangochi
8



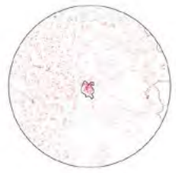
18.9%

Dwangwa
9



18.0%

Salima
10

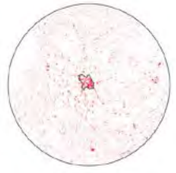


16.5%

Mzimba
11

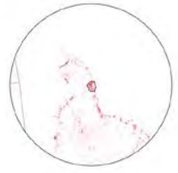
15.

Zomba
12



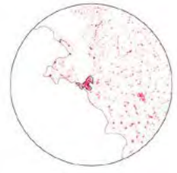
14.6%

Kasungu
13



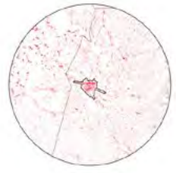
12.9%

Monkey Bay
14



12.7%

Mchinji
15

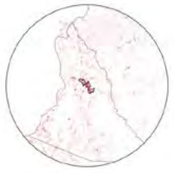


12.5%

Balaka
16

12.3%

Rumphi
17

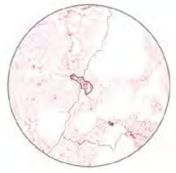


12.2%

Mwanza
18

11.0%

Muloza
19

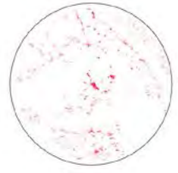


10.

Liwonde
20

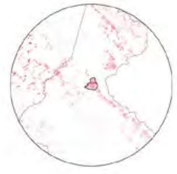
9.1%

Dedza
21



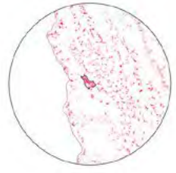
7.7%

Nchalo
22



7.4%

Bangula
23

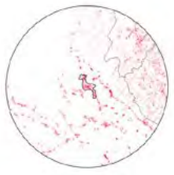


7.3%

Ntcheu
24

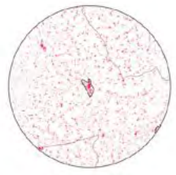
7.0%

Chilumba
25



6.5%

Chikwawa
26

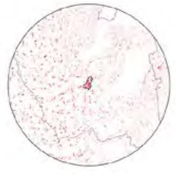


5.9%

Mponela
27

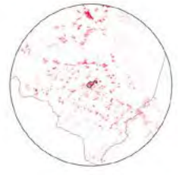
5.5

Nkhata Bay
28



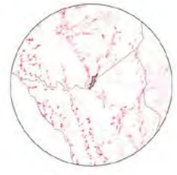
4.1%

Ntchisi
29



3.9%

Ngabu
30

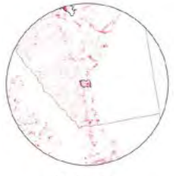


3.5%

Golomoti
31

2.9%

Neno
32

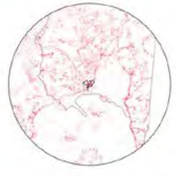


2.8%

Chipoka
33

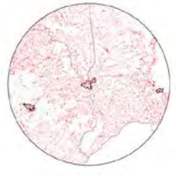
2.6%

Likoma Boma
34



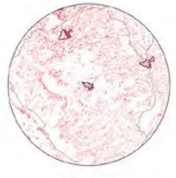
2.6%

Phalombe
35



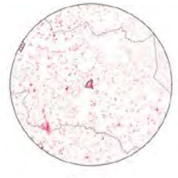
2.0

Luchenza
36



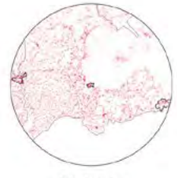
1.9%

Thyolo
37



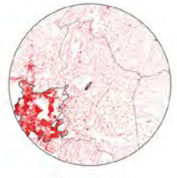
1.5%

Dowa
38



1.1%

Mulanje
39



0.4%

Chiradzulu
40

0.3%

Machinga
41

Urban Growth Potential Ranking

Data sources: Traditional Area (TA) and Urban Boundaries - 4th Level (Department of Surveys and GIS, MoLHUD), High Resolution Settlement Layer(HRSL) population counts for Malawi (Facebook Connectivity Lab, Center for International Earth Science Information Network - CIESIN - Columbia University. Source imagery provided by DigitalGlobe), Urban Settlement Footprints (ORG Desktop Mapping)

Tea plantations near Mulanje mountain.

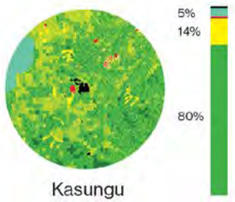
Photo by Ashley Cooper.

Agricultural land suitability

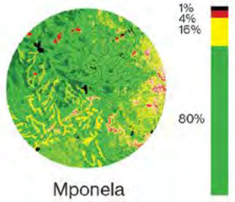
As described in the previous Chapter, the land suitability study maps out the different land qualities across the country. As a method for ranking the different settlements, the study used the combined area of the first two categories (highly suitable and moderately suitable) to see which settlements have the highest area of good agricultural land.

For scoring purposes, the study divided the analysis results by quartiles, and given a point accordingly. Thus settlements with a percentage of good agricultural land within a radius of 25km of over 66% received 4 points (Balaka, Chiradzulu, Dowa, Lilongwe, Liwonde, luchenza, Mponela, Ntchisi, Thyolo and Zomba), settlements with a percentage of good agricultural land over 51% but under 66% received 3 points, settlements with a percentage of good agricultural land over 37% but under 51% received 3 points, and, lastly, settlements with a percentage of good agricultural land under 37% received a single point.

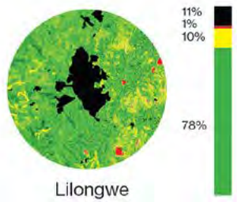
The settlement areas which stood out were largely those which are located on the Lilongwe plateau such as **Kasungu, Mponela, Lilongwe, Dowa** and **Ntchisi**. The other area of the country which ranked high is the upper shire area up to the southern west lake front areas. Those include **Salima, Balaka, Liwonde, Golomoti, Chiradzulu, Zomba** and **Luchenza**. Other parts of the country proved to be more difficult from either a topographical standpoint, or where substantial parts of the 25km radius are consumed by water bodies and areas for natural conservation. Still within that category, settlements such as **Nkhotakota, Dwangwa, Monkey Bay, Karonga** and **Chilumba**, presented a substantial opportunity for agriculture development, especially with possible productive links to value chain verticals related to fisheries and aquaculture benefiting from their proximity to Lake Malawi.



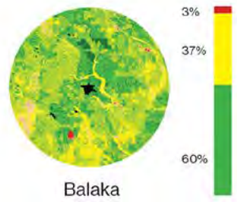
Kasungu
1



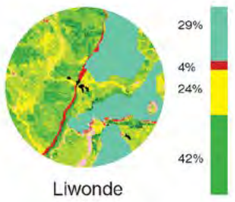
Mponela
2



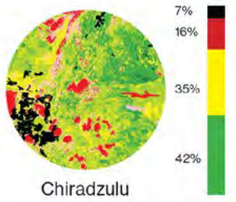
Lilongwe
3



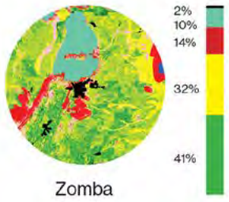
Balaka
4



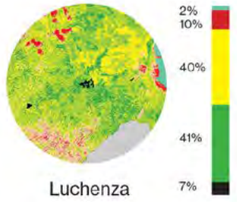
Liwonde
9



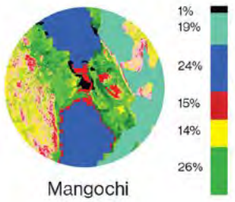
Chiradzulu
10



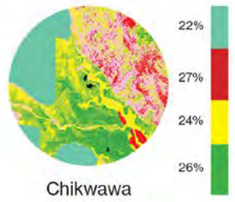
Zomba
11



Luchenza
12



Mangochi
17



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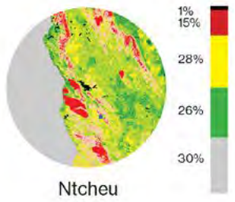

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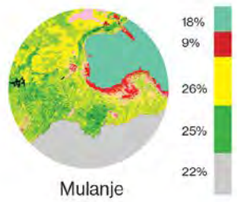

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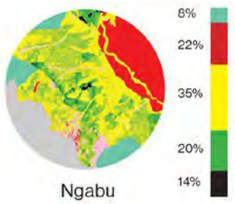

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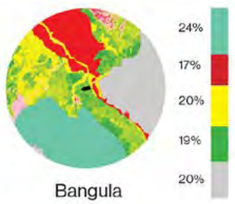

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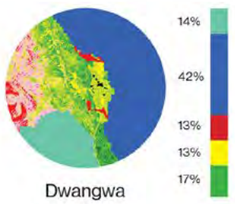

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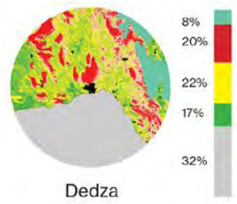

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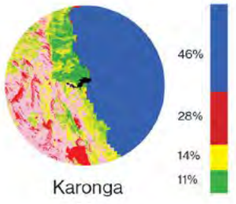

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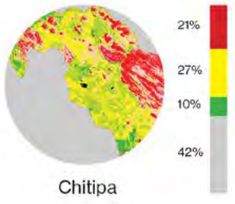

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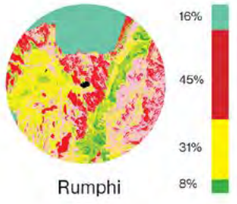

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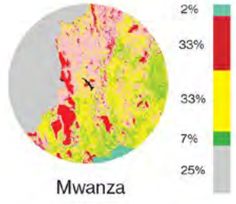

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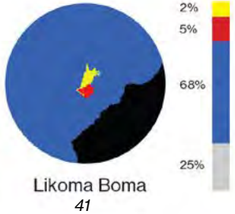

Likoma Boma
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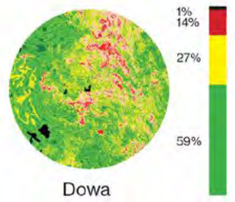

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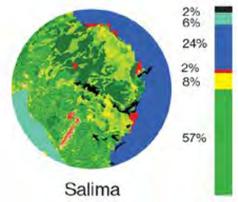

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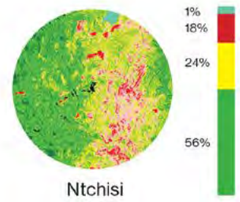

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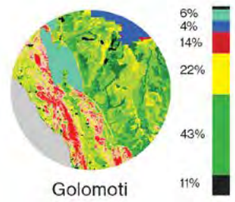

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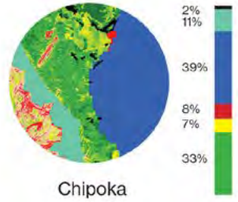
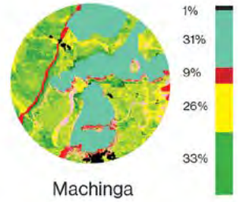


Chipoka



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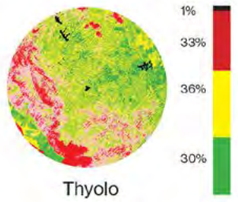

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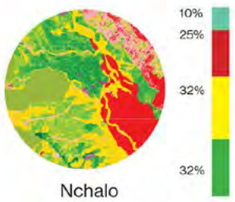

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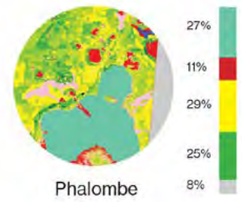
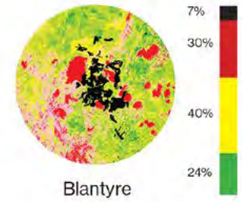
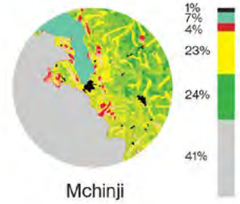


Phalombe



Blantyre



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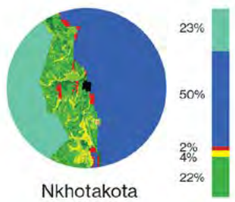

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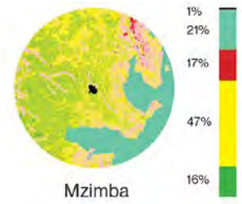
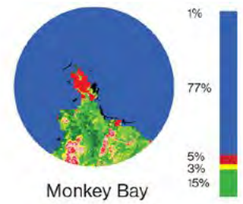
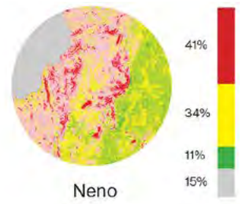


Mzimba



Monkey Bay



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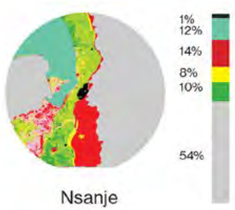

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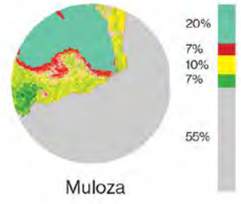

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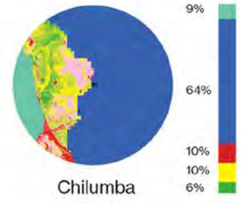
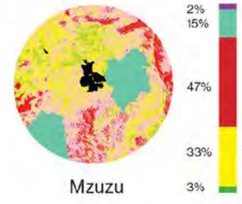


Chilumba



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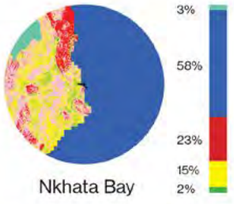


Nkhata Bay

Land Suitability Ranking

Data source: Land suitability for agriculture study
Guiying Li, Joseph P. Messina, Brad G. Peter and Sieglinde S. Snapp. (2017). "Mapping land suitability for agriculture in Malawi". Michigan State University.

Chipoka Port, 2010.

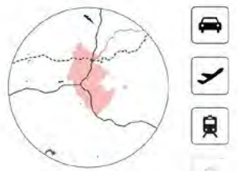
Photo by Michael Phoya.

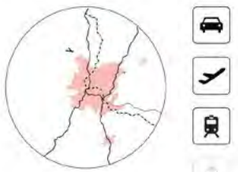
Transport infrastructure connectivity

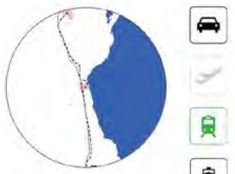
The Government of Malawi, with the support from the World Bank, has developed the Malawi National Transport Master Plan which provides a clear framework for delivering sustainable interventions to enhance the transport sector across the country for the period between 2017 and 2037. The MSCP includes interventions in roads, rail, inland water transport, civil aviation and urban transport. Most of the projects from the MNTP are also prioritised under MIP-1 and form a basis for short-term planning frameworks for the Ministry responsible for transport.

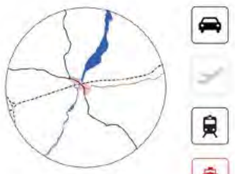
This scoring presents an assessment of a settlement degree of connectivity across modes of transportation. Scores were calculated using a two-step process. First, settlements were grouped into four groups, based on the existing or potential mode of transport they present (major road, port, rail, airport). As such, group A includes settlements that offer 3 modes of transport, group B includes settlements that offer 2 modes of transport, group C includes settlements that offer 1 mode of transport, and group D includes settlements that have no mode of transport. Second, settlements were scored and ranked within each group in the following manner: Each mode of existing transport got a full (1) point, a mode of transport that needs major rehabilitation in order to be operated got half a point (0.5), a mode of transport that is proposed by the MSCP or by the Transportation Master plan got a quarter point (0.25). The final result was captured in the following manner: Group A/2.5 would mean the settlement has three modes of transport and 2.5 reflects its score based on the status of those modes.

Again, not surprisingly, the two main cities ranked the highest - **Lilongwe** and **Blantyre**, as they are both established connections by air, road, and rail. Here, there is particular interest in settlements that appear to be located at critically important multi-modal intersections, such as **Chipoka**, and **Liwonde**, which present unique opportunities for water and rail links, should their water ports be rehabilitated, or constructed (accordingly). There are other settlements which present opportunities from a transportation development perspective, namely **Bangula, Karonga, Nsanje, Monkey Bay and Chilumba** – all of those are included in larger transportation initiatives, and could be considered as key transport hubs in relation to future urban development planning.


Lilongwe

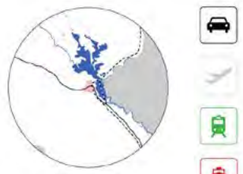

Blantyre


Chipoka

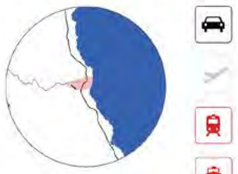

Liwonde

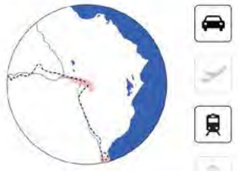

Monkey Bay


Nsanje

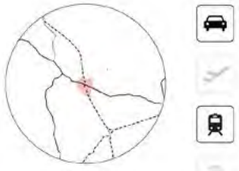

Bangula


Chilumba

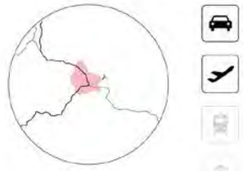

Karonga


Salima

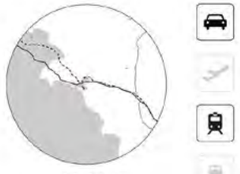

Nkhata Bay

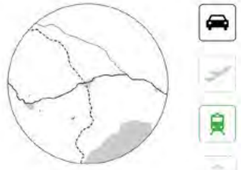

Balaka


Golomoti


Mzuzu

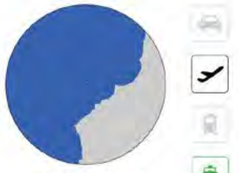

Zomba

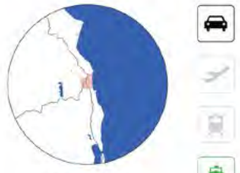

Mchinji


Luchenza


Kasungu

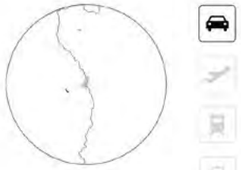

Chitipa

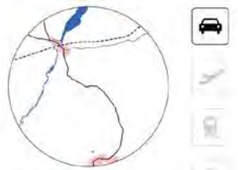

Likoma Boma

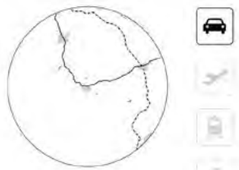

Nkhotakota


Mangochi

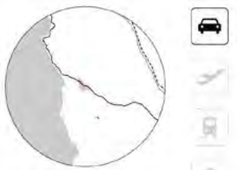

Dowa


Ntchisi


Machinga

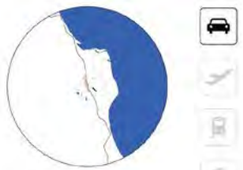

Thyolo


Chikwawa


Ntcheu

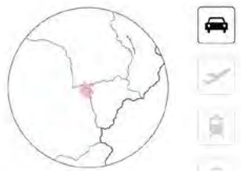

Mulanje


Ngabu

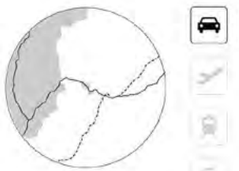

Dwangwa


Mponela


Dedza


Mzimba


Rumphi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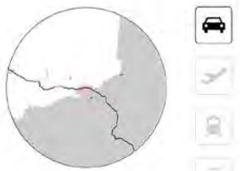
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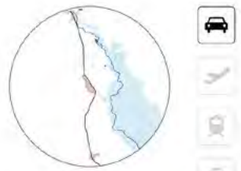
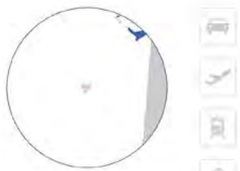

Nchalo


Chiradzulu


Phalombe


Neno

Major Road

Airport

Rail

Port

Existing

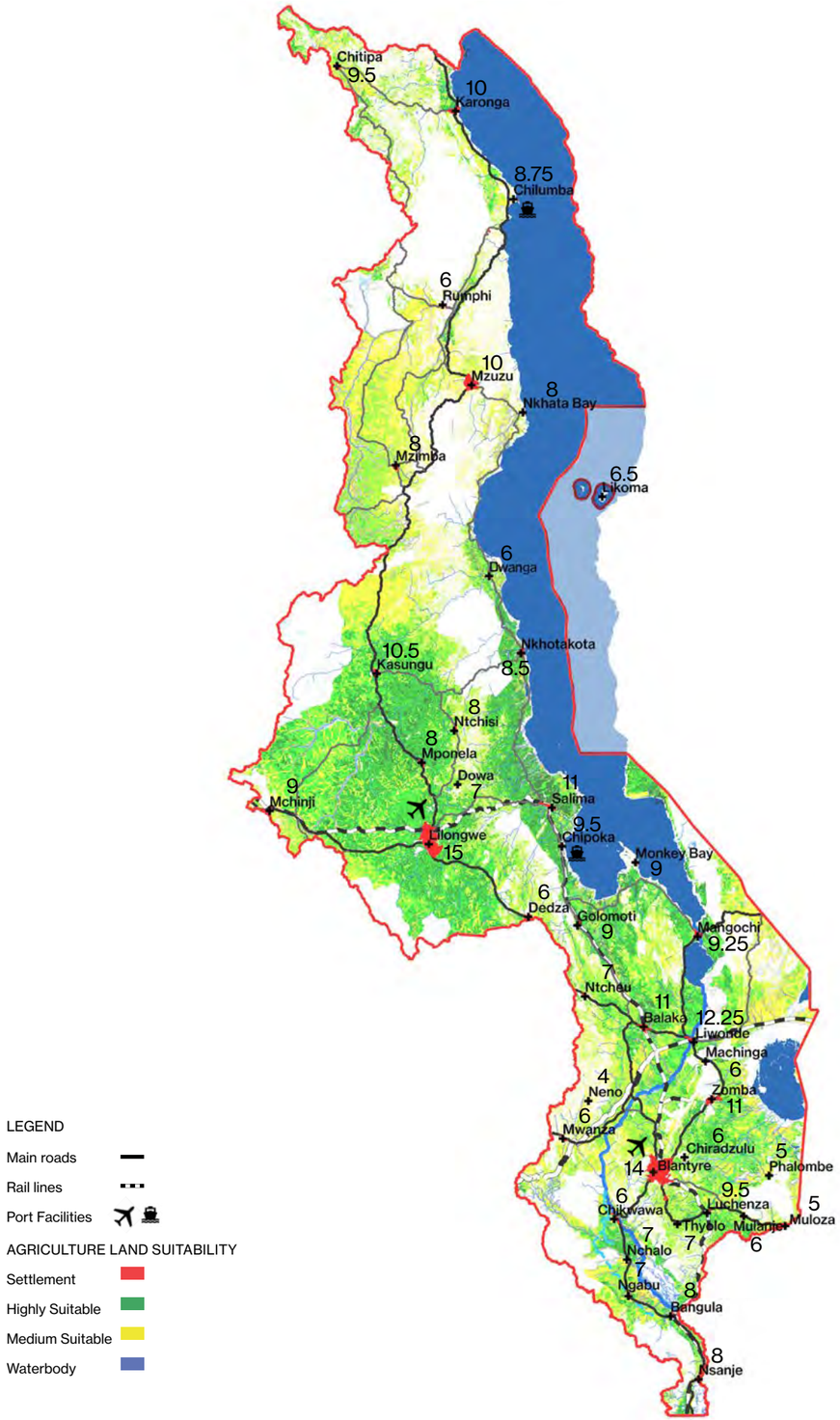
Absent

Rehabilitation

Proposed

Transportation Ranking

Data sources: Roads (MASDAP - unknown author), Rail Lines (Ministry of Transportation, National Transportation Master Plan (NTMP), Airports (Ministry of Transportation, National Transportation Master Plan (NTMP), Water ports (Ministry of Transportation, National Transportation Master Plan (NTMP), ORG mapping Analysis)



Settlement scoring summary based on the three main ranking parameters and including a transport premium

Settlement scoring
by key agri-Industrial urbanisation parameters

Settlement	Settlement Population % in 25km Radius	Agriculture Land Suitability % in 25km radius	Transport Infrastructure Connectivity ranking	Combined Score	**Score with Transport Premium**
Blantyre	56.2	64	A/3	11	**14**
Lilongwe	49.2	88	A/3	12	**15**
Salima	18.0	65	B/2	9	**11**
Liwonde	10.8	66	A/2.25	10	**12.25**
Karonga	29.2	25	A/1.5	8	**10**
Bangula	7.4	39	A1.75	8	**9.75**
Balaka	12.5	97	B/2	9	**11**
Zomba	15.3	73	B/2	9	**11**
Chipoka	2.8	40	A/2.5	7	**9.5**
Kasungu	14.6	94	B/1.5	9	**10.5**
Chilumba	7.0	16	A/1.75	7	**8.75**
Nsanje	19.9	18	A/2	8	**10**
Chitipa	20.9	37	B/1.5	8	**9.5**
Mangochi	19.3	40	B/1.25	8	**9.25**
Monkey Bay	12.9	18	A/2	7	**9**
Nkhotakota	21.1	26	B/1.5	7	**8.5**
Luchenza	2.0	81	B/1.5	8	**9.5**
Golomoti	3.5	65	B/2	7	**9**
Mchinji	12.7	47	B/2	7	**9**
Mzuzu	54.5	36	B/2	8	**10**
Nkhata Bay	5.5	17	B/1.5	6	**8**
Chikwawa	6.5	50	C	6	**6**
Nchalo	7.7	64	C	7	**7**
Ngabu	3.9	56	C	7	**7**
Rumphi	12.3	39	C	6	**6**
Thyolo	1.9	66	C	7	**7**
Likoma	2.6	2	B/1.5	5	**6.5**
Mzimba	16.5	63	C	8	**8**
Mponela	5.9	96	C	8	**8**
Ntchisi	4.1	80	C	8	**8**
Dowa	1.5	86	C	7	**7**
Machinga	0.3	59	C	6	**6**
Mulanje	1.1	51	C	6	**6**
Mwanza	12.2	40	C	6	**6**
Ntcheu	7.3	54	C	7	**7**
Phalombe	2.6	54	D	5	**5**
Dwangwa	18.9	30	C	6	**6**
Chiradzulu	0.4	77	D	6	**6**
Dedza	9.1	39	C	6	**6**
Muloza	11.0	17	C	5	**5**
Neno	2.9	45	D	4	**4**

Points	Quartiles	Quartiles	Ranking*
4	49.2<	66<	A
3	16.5 <	51<	B
2	9.1 <	37<	C
1	3.5 <	2<	D

*additional transport premium

Additional Opportunity Areas

While the three parameters presented above correspond to the three Pillars of MW2063, a number of additional areas of opportunity were identified through the analysis. These include a number of sectors which are not necessarily seen as drivers urbanisation, although they could certainly contribute to it, as well as benefit from such processes. Those sectors include the following:

Mining

Although large parts of the country hold potential for commercialisation of extractive resources, for the purpose of this analysis, only opportunities which currently hold mining licenses were highlighted. By analysing existing mining licenses, a single (1) point was allocated to those cities in proximity of at least 25km to an active mine. Among those, it is worth highlighting a number of prominent settlements, includin: **Karonga** and **Chilumba** in the North, with large coal and uranium mines in their immediate vicinity; and **Bangula** in the South, where deposits of heavy mineral sands as well as coal are being mined in great proximity to the city. Additionally, a quarter (0.25) point was allocated to cities which are close to areas where mining opportunities are currently explored.

Eco-tourism

While large parts of the country appear to hold substantial opportunities with respect to tourism development, all along the lake front, as well as those which have a major nature reserve near by, the MSCP points out a number of cities that seem to be actively promoting tourism as a substantial economic activity for the benefit of the city itself and the larger regional economy. Those include: **Monkey Bay**, which is not only one of the most beautiful lake shore areas in the country, but also appears to have beaches which are particularly well protected against winds. As such, Monkey-bay has become a point of great interest for the promotion of international tourism activity, which could prove to become a substantial economic engine for the Mangochi peninsula and beyond. Similarly, the beaches around **Salima** and **Chipoka**, and specifically the area close to Senga Bay, are seen as an established attraction point for both international and domestic tourists with convenient commuting times from Lilongwe. Lastly, with respect to tourism, it should be noted that a number of nature reserves could become engines of economic activity in relation to near by cities, a few worth noting are: **Mulanje** with the Mulanje Mountain reserve nearby; **Nkhatokota** with the adjacent Nkhotakota game reserve; **Liwonde** with the adjacent game reserve; **Rumphi** with the Nyika plateus and game reserve; and the Majete and Vwaza game reseves in the **Lower Shire Valley**, to just name a few.

Fisheries and aquaculture

Opportunities for substantial development in the aquaculture and fishing sectors appear to be highly relevant in relation to the development of secondary cities in Malawi for two main reasons: (i) the natural linkages with lake and river ports which would benefit from the multi-use application of their facilities, to reinforce adjacent water transport and logistics services; and (ii) the possible shared benefit from water network utilities and sanitation facilities, which could be integrated with a pond aquaculture farming area. Locations which appear to be presenting opportunities for such development are naturally along the lake shore and major waterbodies, and particularly in **Karonga, Chilumba, Nkhata Bay, Nkhotakota, Chipoka, Monkey Bay, Mangochi, Liwonde, Bangula** and **Nsanje** to name a few. The abundance of substantial waterbodies in the country is clear, and intentional investment in formalisation of the fishing sector seems to be a critical opportunity for the infrastructure development of secondary cities in Malawi.

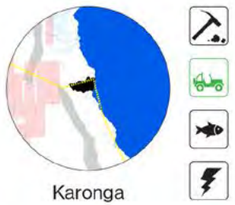
Energy

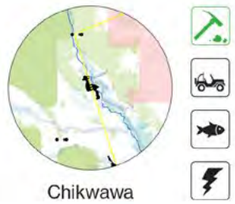
While energy production is largely a matter of national infrastructure development, which is not often directly related to any locality or city, the MSCP points to opportunities for the development of smaller energy production facilities, which could well benefit from proximity to urban development areas, both from a land management perspective and from an off-take perspective for a large commercial anchor entity. This is especially true in early stages of development where energy back up facilities are a necessity for any industrial activity. Local hydro-electric multi-purpose dams seem to be one attractive option for investments in facilities which would reinforce local water system development and power provision options. Settlements which are in close proximity to streams and rivers which have been identified as opportunities in the energy sector, include: **Chitipa** and **Karonga** being close to the Songwe river, **Chilumba** with the Wovwe river nearby, **Kasungu** which is close to the Dwangwa river, and **Luchenza** with the adjacent Zoa Falls. Similarly worth highlighting is the emerging solar power plants currently established near the towns of S**alima, Nkhotakota** and **Nkhata Bay.**

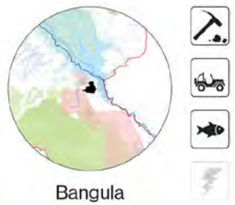
Main crops*

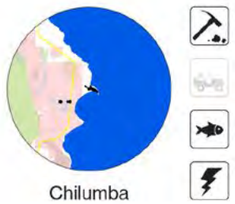
Lastly, with respect to agricultural development of specific crops and the possible advantage of certain cities becoming key centers for farming, value addition or marketing, worth highlighting is a number of key crops which seem to be worthy of attention. For rice development (wetland rice cropping under traditional management and improved traditional management using improved cultivars; application of inorganic fertilizer; and hired labor or animal traction), places that stand out are **Karonga, Salima, Chipoka, Nkhotakota** and **Dwangwa**. For soybean development (rain-fed cultivation under improved traditional management), settlements such as **Karonga, Balaka** and **Nkhotakota** appear to be most suitable. For tea production (rain-fed cultivation under improved traditional management), settlements such as **Neno, Mulanje, Luchenza, Thyolo** and **Muloza** appear to be most suitable.

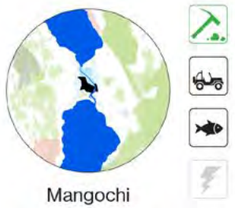
*Sourced from the detailed crop suitability maps prepared by Benson, Mabiso and Nankhuni under NAPAS in 2016.

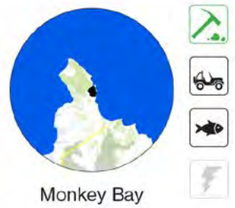


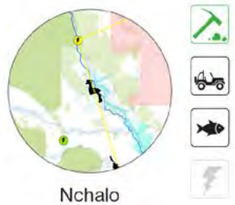


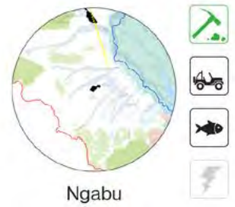


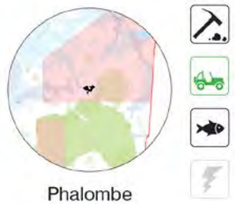


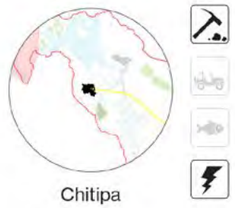


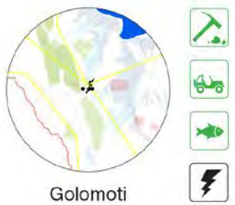


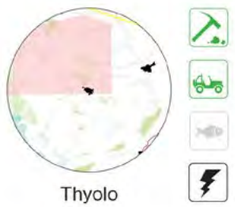


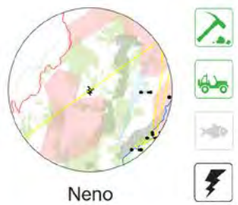


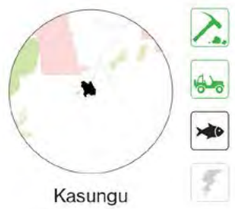


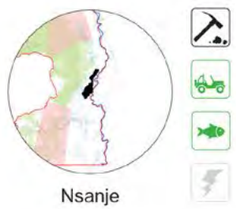


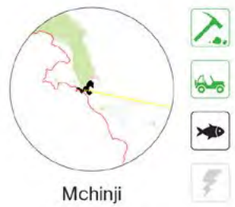


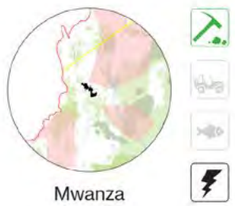


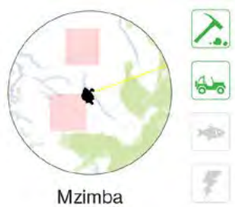


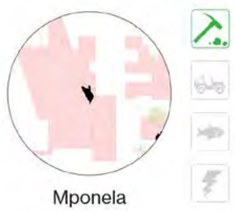


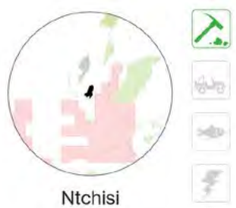


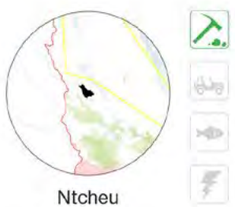












Mining Activity

Eco-Tourism

Fisheries and Aquaculture

Energy Production

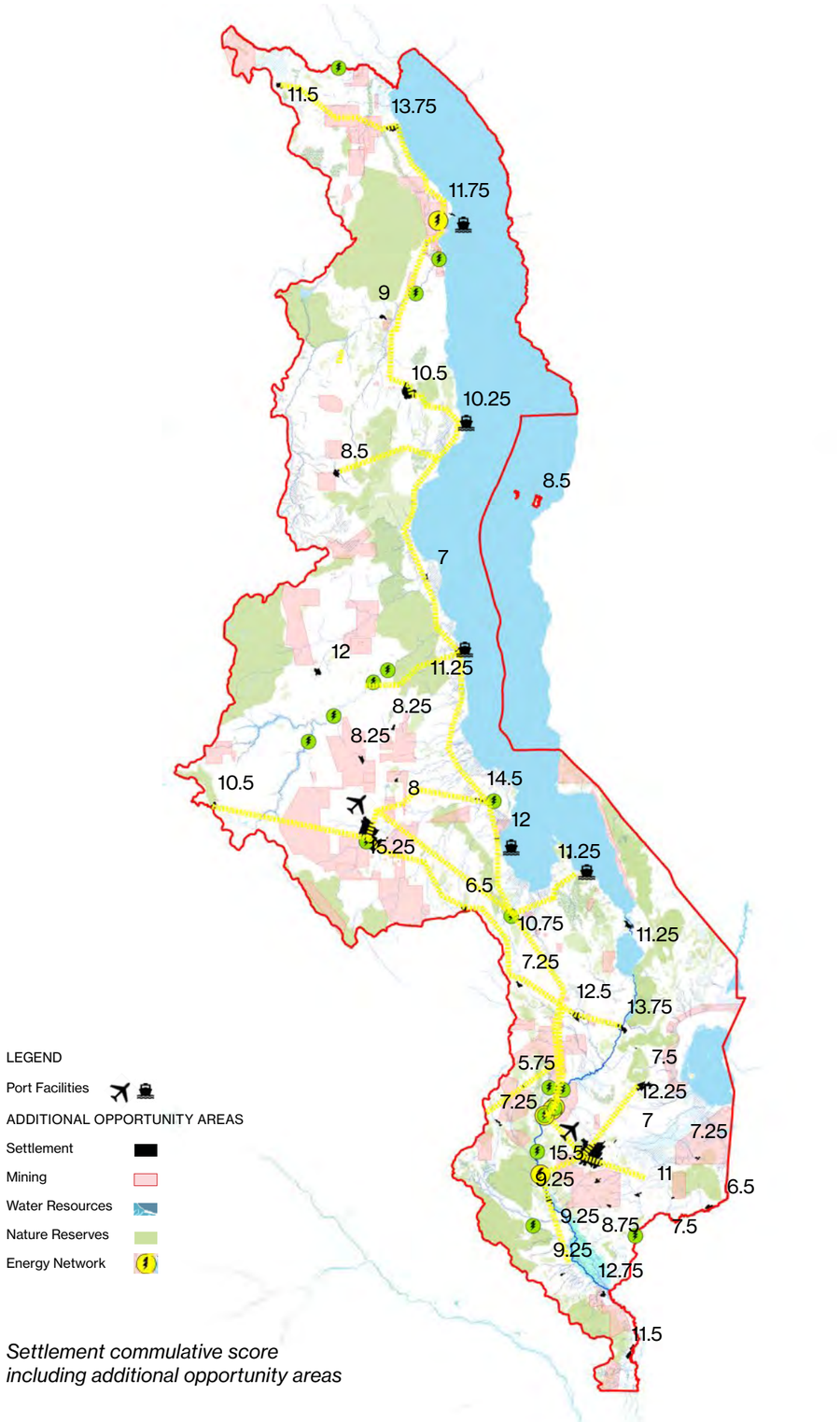
Existing

Absent

Prospective

Additional Opportunities Ranking

Sources: Mining (Malawi Mining Cadastre Portal), Eco-Tourism (Ministry of Tourism and Ministry of Natural Resources and Forestry), Energy (Ministry of Energy), Fisheries and Aquaculture (Ministry of Natural Resources and Forestry)



Settlement commulative score including additional opportunity areas

Cumulative Settlement Scoring
including additional opportunity areas

Sorted by final score

Settlement	Mining	Eco-Tourism	Fisheries and Aquaculture	Energy	Rice	Soy	Tea	Commulitive Score (FINAL)
Blantyre	1	0.25	0.25					**15.5**
Lilongwe	0.25							**15.25**
Salima	0.25	1	1	1	0.25			**14.5**
Liwonde	0.25	1	0.25					**13.75**
Karonga	1	0.25	1	1	0.25	0.25		**13.75**
Bangula	1	1	1					**12.75**
Balaka	1		0.25			0.25		**12.5**
Zomba	0.25	1						**12.25**
Chipoka	0.25	1	1		0.25			**12**
Kasungu	0.25	0.25	1					**12**
Chilumba	1		1	1				**11.75**
Nsanje	1	0.25	0.25					**11.5**
Chitipa	1			1				**11.5**
Mangochi	0.25	1	1					**11.5**
Monkey Bay	0.25	1	1					**11.25**
Nkhotakota	0.25	1	1		0.25	0.25		**11.25**
Luchenza	0.25			1			0.25	**11**
Golomoti	0.25	0.25	0.25	1				**10.75**
Mchinji	0.25	0.25	1					**10.5**
Mzuzu	0.25	0.25						**10.5**
Nkhata Bay	0.25	1	1					**10.25**
Chikwawa	0.25	1	1	1				**9.25**
Nchalo	0.25	1	1					**9.25**
Ngabu	0.25	1	1					**9.25**
Rumphi	1	1		1				**9**
Thyolo	0.25	0.25		1			0.25	**8.75**
Likoma		1	1					**8.5**
Mzimba	0.25	0.25						**8.5**
Mponela	0.25							**8.25**
Ntchisi	0.25							**8.25**
Dowa	1							**8**
Machinga	0.25	1	0.25					**7.5**
Mulanje	0.25	1					0.25	**7.5**
Mwanza	0.25			1				**7.25**
Ntcheu	0.25							**7.25**
Phalombe	1	0.25	1					**7.25**
Dwangwa	0.25	0.25	0.25		0.25			**7**
Chiradzulu	1							**7**
Dedza	0.25	0.25						**6.5**
Muloza	0.25	1					0.25	**6.5**
Neno	0.25	0.25		1			0.25	**5.75**

Existing	1
Prospective	0.25

Combined Scoring Summary

As a way to estimate a settlement's suitability for development as a secondary city, the MSCP developed a combined scoring method which represents all of the parameters taken into consideration, while giving the transportation parameter an additional weight as it is understood to serve all sectors (urban, agricultural and industrial), and by that is seen as most influential also on regional scales.

Looking at the combined score ranking, it is not surprising that **Lilongwe** and **Blantyre** stand out at top, as the most connected cities, and with the most urban growth potential. Perhaps less intuitive is their extremely high ranking when it comes to premium land for agriculture suitability, although it should be recalled that the very establishment of both cities at the core of the two main plateaus of the country is based on them being the main agricultural markets in Malawi.

At the next level of combined scores, **Liwonde, Balaka, Salima, Zomba** and **Kasungu** stand out. Those cities are all located in relatively short commute distances (about an hour driving maximum) from Blantyre or Lilongwe, and in fact benefit from similar advantages to the main two cities – connectivity to rail (except for Kasungu), premium agricultural lands on largely flat areas, and high degree of population concentration, which is seen to be rather dominant in its 25km radius. Among this tier, it is especially interesting to point out Liwonde and Chipoka, which present the rare occasion where rail and water transport opportunities intersect. For Salima, this intersection is in fact established just at the southern edge of its radius in **Chipoka**, where a multi-modal port was established in the 80's, and due for rehabilitation. In Liwonde, the water transport port has not been developed yet but it is identified as an opportunity for future consideration and could well reinforce an established industrial district currently serviced by rail along the Nacala corridor.

Finally, a tier of cities are located further away from the main plateaus, yet still present high degree of suitability with respect to the analysed parameters. Those include: **Karonga** and **Mzuzu** in the North; and **Mangochi**, **Nsanje** and **Bangula** in the South.

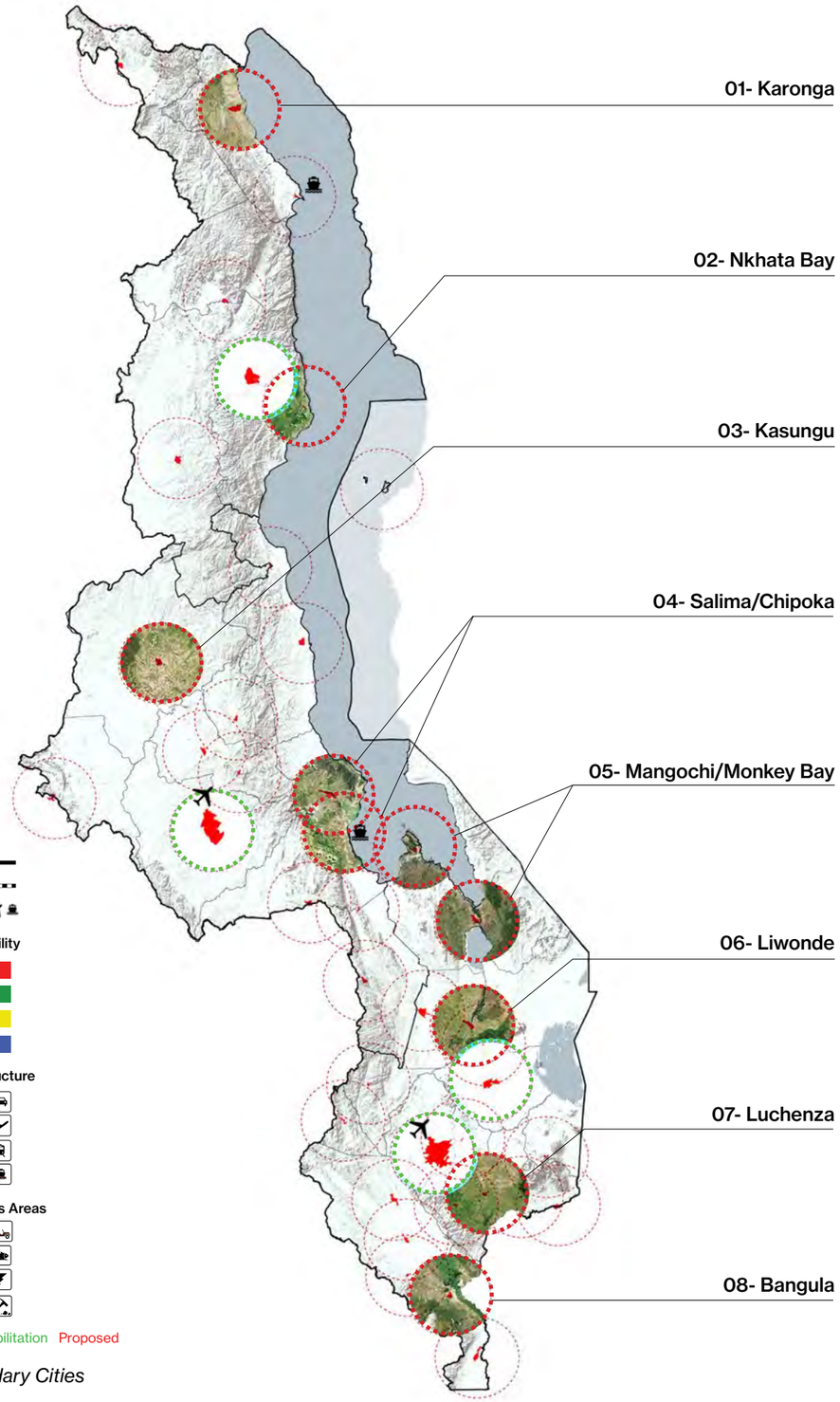
Considering the utmost northern part of the country, **Karonga** stands out as a location where not only agriculture and urban development could flourish, but also as a city where connectivity through multiple modes of transport could be established, with possible benefits for growth in the mining sector. This could be achieved by either reinforcing links to the existing port in Chilumba (60km southwards), or by developing a local urban/industrial port at the heart of the city. Such a lake port could be further reinforced in the future through a rail connection to the TAZARA corridor only 120km northwards in Mbeya, Tanzania.

While Mzuzu is by far the most urban settlement in the Northern region, and should be invested in as the primary city that it is (rather than as a secondary one), the study identifies **Nkhata Bay**, which is only 45km East of Mzuzu, as a location presenting critical opportunities for the reinforcement of Mzuzu as the capital of the north and solidifying and expanding its industrial and logistical activity towards the rest of the country and the region. As such, the Nkhata-bay port together with the opportunity to develop a substantial industrial district at the lake front, would enable water transport links to the ports of Chipoka, Chilumba and potentially Liwonde, as well as the lake ports of Tanzania such as Itungi and Mbamba Bay (merely 65km west).

With respect to secondary city development opportunities in the southern region, Nsanje and Bangula clearly stand out since they both present opportunities for water transport development with possible links to rail, should it be rehabilitated. Such a multi-modal port would allow for the establishment of a critically important industrial district to service the Lower Shire Valley area and by that facilitate market connectivity to a highly challenged area of the country. This, combined with the apparent opportunities the area presents in the mining and tourism sectors, make a strong case for a central multi-industry investment cluster. By comparing the two cities with respect to investment opportunities, **Bangula** is argued for, mainly due to its location at the edge of the Elephant Marsh. Here, and as critical crossing point, circulation around the marsh should be re-established by rebuilding the collapsed bridge. Moreover, Bangula is currently considered as the southern-most point of the ongoing Lower Shire Valley Transformation Program, and could well serve as a critical anchor and economic engine for development of the valley at large.

Additionally in the Southern region, **Mangochi** is identified as an important settlement for the development of the southern shores of Lake Malawi, and a critical hinge connecting the Nankumba penninsula, where there appears to be incredible opportunities for developments in the 'blue economy' sectors, and particularly in tourism. The town of **Monkey Bay** which is located at the northern tip of the penninsula and presents ideal conditions for marine transport, presents an ideal setting for the development of a city to service the tourism sector in the area as well as become a substantial center for fisheries and aquacultrue industries.

Lastly, Luchenza stands out with respect to its neighboring cities on the Blantyre plateau due to its rail link. While the plateau at large is highly suitable for agriculture development (with an apparent specialty in tea), **Luchenza** is seen as an opportunity to establish a critical industrial node to benefit Thyolo, and Mulanje and through which existing road links could be reinforced to the border crossing in Muloza and to the ports in Mozambique. This opportunity is especially attractive due to the extreme pressures the plateau is projected to experience from rural to urban migration, and the further subdivision of farm plots which are the smallest in the country already.



LEGEND

Main roads

Rail lines

Port Facilities

Agriculture Land Suitability

Settlement

Highly Suitable

Medium Suitable

Water body

Transportation Infrastructure

Road

Airport

Rail

Port

Additional Opportunities Areas

Eco-tourism

Fisheries/Aquaculture

Energy Production

Mining Activity

Existing Absent Rehabilitation Proposed

Proposed Secondary Cities

Transportation Infrastructure Connectivity	Agriculture Land Suitability	Urban Growth Potential	Additional Opportunity Areas
	46% 28% 14% 11%	29.2% Urban	
	3% 58% 23% 15% 2%	5.5% Urban	
	5% 14% 80%	14.6% Urban	
	2% 11% 39% 8% 7% 33%	2.8% Urban	
	1% 77% 5% 3% 15%	12.9% Urban	
	29% 4% 24% 42%	10.8% Urban	
	2% 10% 40% 41% 7%	2.0% Urban	
	24% 17% 20% 19% 20%	7.4% Urban	

6. PLANNING GUIDELINES

Positioning Discrete Projects in a Holistic Environment

The relationship between infrastructure development and processes of urbanisation is essential to carefully plan in any context. Yet in environments where informal settlements and economies are ubiquitous, and enforcement of land policies is a constant struggle, infrastructure is often the primary tool for land use management, as populations and economic activities gravitate towards engines of opportunity. As such, cities become harbors for populations migrating from the countryside, either by a 'pull' force, as cities present opportunities for enhanced quality of life, or by 'push' forces where rural livelihood becomes untenable and forces citizens to search for alternatives.

As mentioned earlier, the MSCP proposes a hypothesis in which by carefully clustering investments in multi-use infrastructure, it is possible to deliberately catalyse a process of urbanisation in a specific area; and by that, enhance economic activity and diversification of sources of livelihood to the local residents. Yet, the relationship between urbanisation and economic growth is not predetermined. A mindset of 'if you build it, they will come' should be discredited. In fact, the opposite dynamics should be pursued, where existing opportunities for economic development are identified, to be enhanced by infrastructure investment, which subsequently benefit large populations and multiple stakeholders across a variety of sectors. That dynamic represents an urbanisation agenda which is 'demand driven' and accommodates the shared interest of the public and private sectors at large.

For that reason, the MSCP identifies those locations where 'investment clustering' could be most impactful. Such locations represent multiple opportunities for development across several sectors; and by that, allow for the design of multi-purpose infrastructure in the deepest sense – where water systems would benefit agriculture, and industry and residential communities. Or, where a port facility would be used by ferries for passengers and container vessels, and for the small fisheries community. Such projects would both enhance the economic viability of a city and its region, while enhancing the benefit/cost ratio significantly.

Maximising investment impact around critical intersections of opportunity

Specifically, for the purpose of the master plans developed in those 'intersections' of opportunity, investments are proposed in three key sectors corresponding to the MW2063 Pillars of: Urbanisation; Agriculture; Industrialisation. Under each sector, a number of possible projects are envisioned, tailored into each locality as demand and context allows. The diagram below illustrates how certain project categories fall under a particular sector although, as stated above, those are not siloed, and are meant to fully service the full range of stakeholders and potential beneficiaries. An industrial zone, which is well integrated with its urban environment will not only provide land plots for prospective factories and warehouses, but also increase commercial activity for the daily workers. Additionally, various civic and academic institutions would reinforce a sense of community to establish substantial feedbacks between businesses and local leadership. By that, an agenda of project clustering represents the dynamics of a city, where a given activity is never siloed and the public is included throughout the process and exposed to economic activities integral to a location's success.

To further support the concept of sectoral integration and multi-purpose infrastructure, let us take a contrary view for a moment and imagine an environment which is intentionally designed in an opposite manner. Such an environment would look for isolation and exclusivity for a certain type of activity. An 'industrial park' distant from other activities, with matters of privacy or autonomy in mind. Such an isolated development would require independent investments in transport, ICT, energy and water systems – an expense hopefully recuperated through the economic activity in the park, but without direct benefit to neighboring development. Workers in the park would have to commute longer distances, on the expense of their time while burdening the transit system. This would have direct impact on the residential areas they arrive from, which may well become commuter towns, as well as the very park being described, which would be possibly only active during working hours, and would not be adequately used in early mornings or afternoons. Such a scenario is what the study aims to avoid, in line with a consensus among contemporary urban planners in both developed and developing countries.

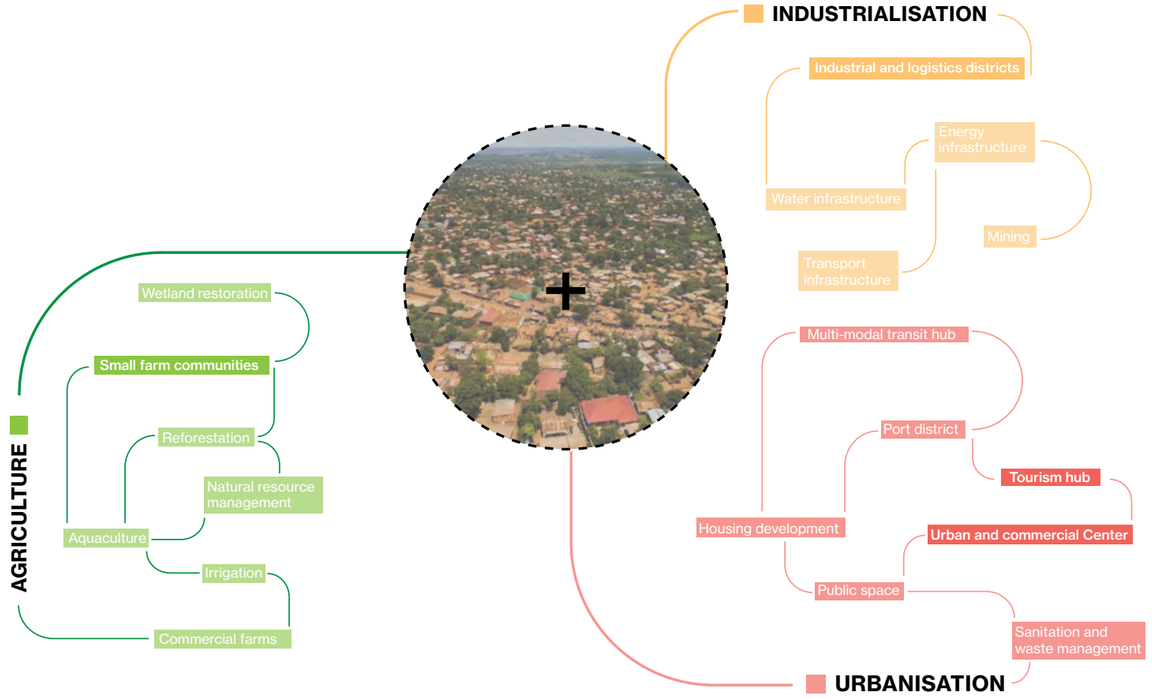
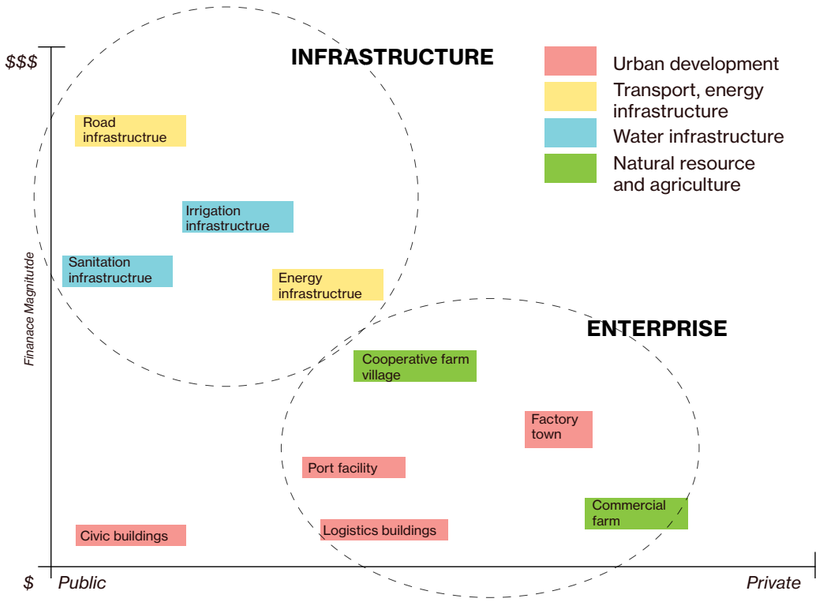


Diagram of project clustering across the three pillars in and around an existing settlement, to develop it as a Secondary City.

A wide range of investment opportunities across sectors and scales

The MSCP process dedicates specific attention to the difference between infrastructure and enterprise developments, both on the spectrum of public vs private finance, as well as on the spectrum of anticipated cost, where mostly infrastructure projects tend to be much more expensive – as illustrated in the diagram below. Yet it is important to note that the differences between infrastructure and enterprise financing do not necessarily imply the inability of the private sector to invest in projects which are normally associated with expensive and large infrastructure. Specifically, more affordable options for investment in water, power and transportation sectors should not be merely envisaged as 'off-grid' rural options for locations which are too far to conceive as urban, but also to the locations that are being proposed in this Report as key secondary cities. In such cases, small investments in gravity fed water supply systems, or small solar panel farms, as examples, could well become early stage investments in larger infrastructure networks, which will take a longer time frame and larger budget to become reality. Still, even those preliminary and small investments should be located in such strategic locations where the overall grid could develop, as dots connect over time.



A diagrammatic project 'menu' which provides investment opportunities across the Public/Private and cost scales

A selection of global case studies through a sectoral definition

As MSCP comes to promote cross-sectoral alignment through project clustering under comprehensive master plans, it is important to define what it means by 'project' as a vehicle for investment and to catalyse development. Therefore, a number of projects relatable to the ones aspired through this program have been selected, to contribute to the process of development of secondary cities. Below is a complimentary 'menu' of global case studies building on the previous axis graph and the general sectoral division applied in this work. In the next few pages, a project from each sector will be highlighted, as an illustration towards the projects envisioned later in Chapter 7.

Urban Development

Urban industrial districts

Florentine, Tel Aviv, Israel

Housing and urban growth

Mekele, Ethiopia

Transport, Energy Infrastructure

Water ports

Mahajanga, Madagascar

Trade centers

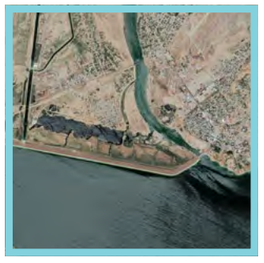
Edirna Market, Turkey

Water Infrastructure

Multi-purpose urban water Systems

Medellin, Columbia

Multi-purpose dams



Shardara, Kazakhstan

Natural Resources and Agriculture

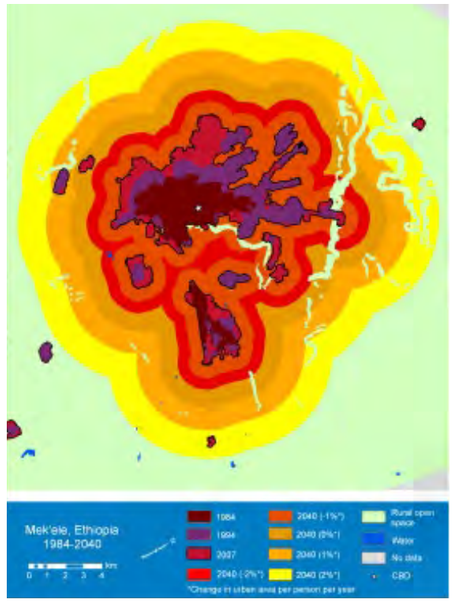
Commercial agriculture

Makushi, Zambia

Agricultural cooperatives

Aldeia Nova, Angola

Plan of arterial grid in preparation for the growth of the city of Mekele by 2050
Image source: A new plan for African cities, The Ethiopia Urban Expansion Initiative



The expansion of the city of Mekele from 1984 to 2040
Image source: A new plan for African cities, The Ethiopia Urban Expansion Initiative

The “making room” approach presents a method for cities to prepare the grounds, literally, for population growth before significant development occurs in an informal manner. After analysing where population growth and development will likely occur, cities would preemptively acquire land to be used for public infrastructure and services later. According to the project team, retroactively building infrastructure for already developed communities can cost three to nine times as much as if the city had made room in the first place, while also disrupting or displacing existing communities.

The project process

1. Preparation of realistic maps based on forecasts of urban growth.
2. Creation of generous metropolitan boundaries for development and expansion (allow jurisdiction flexibility).
3. Securing of land for a 1km x 1km grid of 30 meter wide arterial roads aside. Roads would carry public transport and major trunk infrastructure (including water, electricity and ICT).
4. Establishing a hierarchy of public open spaces in the expansion zone.

The argument for these actions is that while planning activities such as determining land uses or the location of public facilities can come later, land for key public works must be secured in advance of development. This process catalyzes a smoother urban expansion.

Selection of cities

As part of NYU’s Marron Institute Urban Expansion initiative, Dr. Shlomo Angel led a team of planners to develop expansion schemes for various cities in Ethiopia. The selection of cities for participation in the initiative was partly technical, and partly political. The candidate cities had to meet three criteria:

- (i) not be the primary city in the country;
- (ii) have population growth rates of at least 3% per year, meaning a doubling time of 20 years; and
- (iii) have a population of at least 100,000 as of 2010.

In terms of distribution, it was important to select cities across the country in order to demonstrate the workability of the concept in more than one region and, in the future, apply the same approach on the country scale.

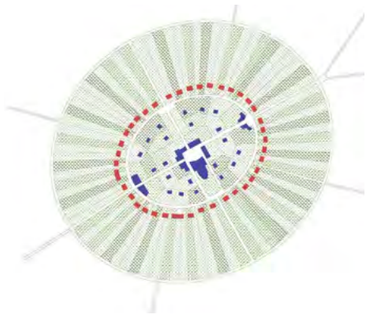
The selected cities were Bahir dar, Mekele, Adama and Hawassa; and have to date approved plans for over 1,700 km of 30m wide arterial roads, along with 81,000 hectares of land for expansion - enough to accommodate a 4-fold increase in the current built-up area of the cities. The cities budgeted over 8$ million for their expansion plans in 2014, and in 2015 they budgeted at least $24 million.

Financial model

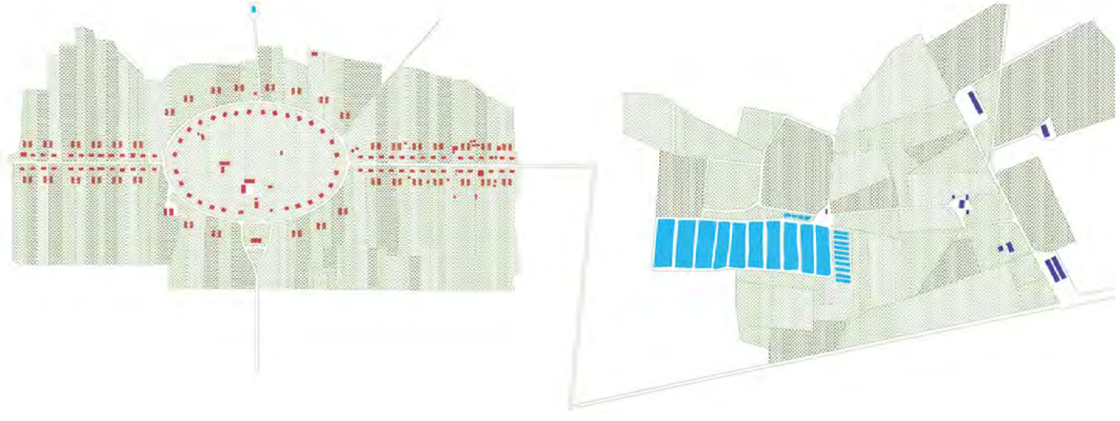
In order for cities to agree to allocate big sums of money on urban expansion, there has to be a mechanism for them to capture the value increase that would result from the conversion of land to urban use. In other words, the urban expansion model should work as an investment. In Ethiopia, that took the form of a revolving fund for the revenues from leasing land in the expansion areas.

Source: A new plan for African cities, The Ethiopia Urban Expansion Initiative. Patrick Lamson-Hall, David Degroot, Richard Martin, Tsigereda Tafesse, Shlomo Angel

Name: **Moshav Nahalal**
Location: Jezreel Valley, Israel
Population: 803 inhabitants (2016)
Residential Area: 1,08km²
Economy: Fruit and Vegetable agriculture



Name: **Aldeia Nova**
Location: Cuanza Sul province, Angola
Population: approx. 600 families
Residential Area: 0,34 km²
Economy: Livestock, Fruit and Vegetables, Grain.

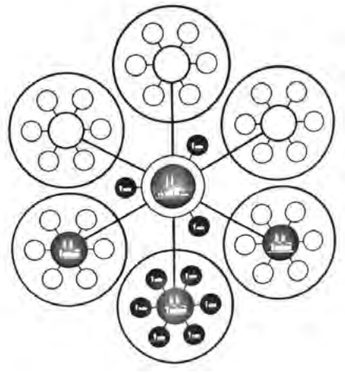


Established in the early 20th century in Israel, the Moshav is a rural settlement which unites a group of residents (formerly mostly farmers) in a cooperative economic framework. The participants in the settlement are called members. In contrast to the historic communist kibbutz, the family is an independent economic unit that operates within the framework of mutual aid rules. Each member of the Moshav is assigned a plot, which in most cases is used for residence and agricultural uses. Overtime, some of the Moshav's accepted additional people who are not members of the cooperative and are called residents. The moshavim movement and the kibbutz movement are the largest settlement movements in Israel and comprise of the large majority of agricultural production.

In a moshav, the basic production unit is the individual farmstead. There are between 50 to 150 private farmsteads, with an average of 80 farmsteads per moshav. Production is carried out individually but under certain constraints (such as mutual aid among different farmsteads on the moshav, cooperative purchasing and marketing, self-employment, etc.), and consumption is individual. Every farmer has to budget part of his time for a collective farming of the moshav's lands. Expensive agricultural tools are purchased collectively as well.

From a regional planning stand point, the Moshav's and Kibutz's were planned around secondary cities in a way that would serve the agricultural communities urban services and utilities. In the digram below you will see a diagram applied for regional development of the agricultural communities in Israel in the 1950's pointing to a hierarchy of settlements circling a secondary. While each Moshav has a population of about 1,000 people, Afula city has a population of around 40,000 people.

The Aldeia Nova village in Angola, was developed by an Israeli private investment group in partnership with the Angolan Government as a PPP, based on the Moshav model in 2005, aimed at demobilizing ex-combatants to rural areas and settling them in modern agricultural communities with regional economic development and job creation agenda in mind. Today around 600 families reside on farmsteads between 8 villages, divided to 160 dairy farms, 120 egg farms, 120poultry farms, 20 pullet farms and 80 pig farms; all sharing logistics and processing facilities as well as water system infrastructure developed as part of the project. The project is estimated to contribute around $3.5 million annually to the local economy.



Regional settlement hierarchy digram, 1950's Israel rural areas
Source: Efrat, Zvi. "The Israeli project: Building and architecture 1948–1973." Tel Aviv: Tel Aviv Museum of Art (2004).

Source on Aldeia Nova: Ayal Kimhi (2010) Revitalizing and modernizing smallholder agriculture: The Aldeia Nova Project in Angola, Development Southern Africa, 27:3, 381-395.

Regional map of Jezrael Valley, Israel
Total population: 216,233
Agrarian population: 79,562
Area in image: 576 km²

4,5 km
1,8 km
2 km
4,1 km
5,4 km
3,9 km
1,4 km
1,8 km
3,4 km
9 km
8,2 km
7 km
8,2 km
5 km
0,9 km
4,6 km
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4,4 km
2,4 km
2,6 km
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4,6 km

0.5 km 1 km 2 km 3 km 4 km 5 km

Integrated water management system (IWMS) is the practice of managing freshwater, wastewater, and storm water as components of a basin-wide management plan. It builds on existing water supply and sanitation considerations within an urban settlement by incorporating urban water management within the scope of the entire river basin. IWMG seeks to change the impact of urban development on the natural water cycle, based on the premise that by managing the urban water cycle as a whole, a more efficient use of resources can be achieved. This provides not only economic benefits but also improve social and environmental outcomes.

The Medellín system

Population growth coupled with urbanization had turned the Medellín River into a dump site for millions of tons of municipal household waste. At the same time, the lack of open land had led people to settle on the banks of the river and along its 200 tributaries. Urban drainage became a substantial challenge for the city. The approach in Medellín was to establish an inner, urban, water cycle loop through the implementation of reuse strategies. Accounting for flows in the pre- and post-development systems was an important step toward limiting urban impacts on the natural water cycle.

Original Infrastructure: Moscú Tank
Neighborhood/Commune: San Pablo, Popular
Design and Construction: January 2013 - March 2014

The program included six more objectives as well:

1. Partial decontamination of the river and its tributaries.
2. Partial treatment of the wastewater to be collected from wastewater treatment plants.
3. Extension of the potable water networks and sewer system to all areas lacking these services.
4. Optimization of the water distribution system, management of consumption and reduction of unaccounted-for water losses.
5. Preparation of phase two of the sanitation program.
6. Institutional strengthening of EPM's management system for aqueducts and the sewer system.

Legal and financial framework

In order to influence industrial users to adopt clean technologies for the production of goods, a Water Taxation Law was introduced in 1999. The law emphasizes the use of economic instruments to induce water users to comply with environmental laws and ensure that water used for industrial purposes is reusable. Environmental authorities that guarantee the renewability of water could make use of this compensatory tax to cover expenses related to carrying out their responsibility.

Water tanks as public parks

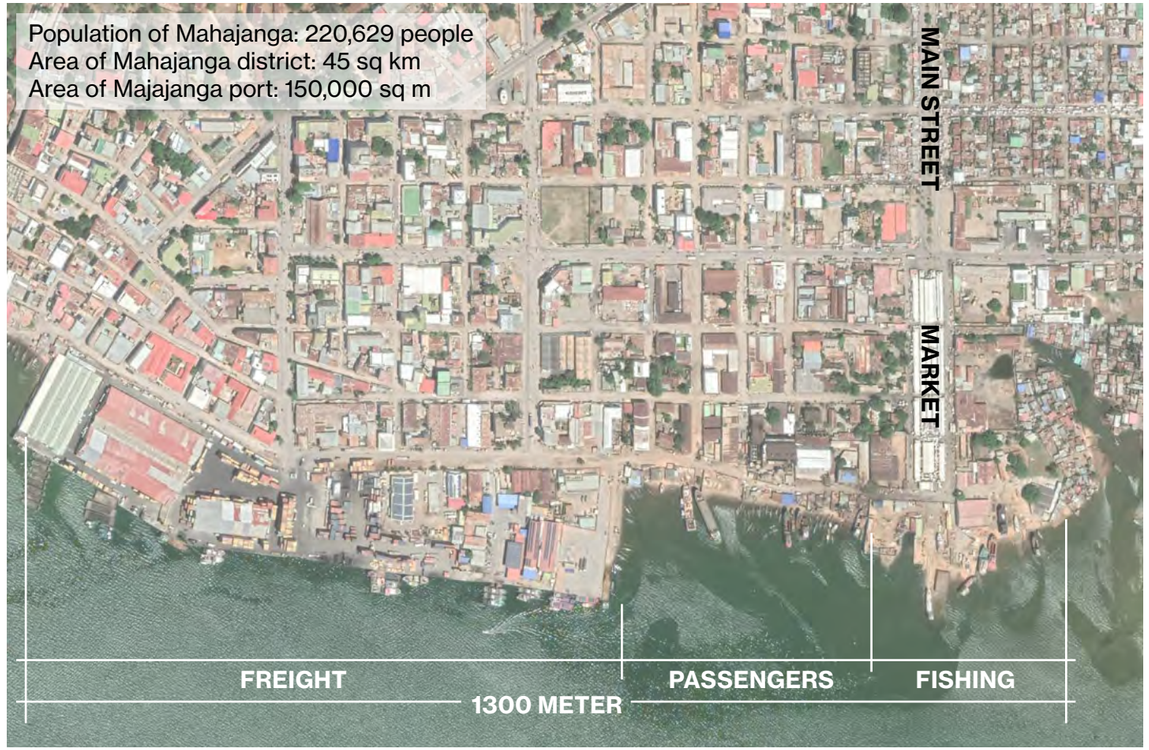
As part of this project, several water tanks across the city were identified to become public spaces for the communities around them. Initially secluded sites of violence, the water tanks were transformed into public social spaces that the city desperately needed. In addition to serving its original purpose of storing water, the tanks provided an opportunity to bring together urban infrastructure and urban dwellers, turning the area into a social hub.

A transit-oriented development (TOD) is a paradigm for urban development which maximizes land uses in a variety of programs (residential, commercial, industrial, recreational, etc.) within walking distance of transport nodes. By that, it promotes a mutually beneficial relationship between dense, compact urban form and transport uses. A TOD typically includes a central transit hub (such as a ferry, train or bus station) surrounded by a high-density mixed-use zone, with lower density areas spreading out from this center. A TOD is also typically designed to be more walkable than other built-up areas, through using smaller block sizes and reducing the land area dedicated to cars. The densest areas of a TOD development are normally located within a radius of 800m around the main transit stop, as this is considered to be an appropriate distance for pedestrians, averaging at about a 10 minute walking shed.

To illustrate the potential benefits of a well integrated transportation based district in an urban development we have chosen the port of Mahajanga as it presents an especially compact and efficient urban form. Madagascar's second-largest port, it is situated in Bombetoka Bay with direct access to the Mozambique Channel. A transshipment port, Mahajanga is linked by road with Antsiranana and with the national capital, Antananarivo, about 225 miles (360 km) south-southeast. The port is mainly used for local trade on Madagascar's west coast and small neighboring islands.

The principal commodities handled in the Port of Mahajanga are rice, salt, and containers (ICTSI, 2017). Large prawn farms near Mahajanga also use the port to export their products. Due to its low water depth at berth of 4.5 m, Mahajanga is only capable of handling small-to-medium-sized vessels, with an average vessel size of 800 TEU. The stated water depth is measured during high tide; and, with a tidal range of roughly 4m, there is hardly any water depth during low tide. This severely limits the operations and cargo handling activities in the port. Because of limited water depth at the wharf, only small ships can call at the terminal. Deeper-draft ships anchor off the terminal and transfer cargoes to and from barges, which move it to and from the terminal.

It is quite significant that despite being a shallow port, Mahajanga is still preferred by customers because of its connectivity to the main center of production and consumption. The plan of the Mahajanga port district sits right at the edge of the city. The port is divided into three main zones: a freight for containers and industrial uses; a passengers zone which directly connects the port to the urban fabric; and a fishing zone right adjacent to the main market along the main street of the city. Mahajanga's industries include the processing of agricultural products, meat canning, and the manufacture of soap, sugar, and cement. The marine terminal accommodates container ships and small (150 gross ton) general cargo freighters.



Mahajanga port district plan, Madagascar

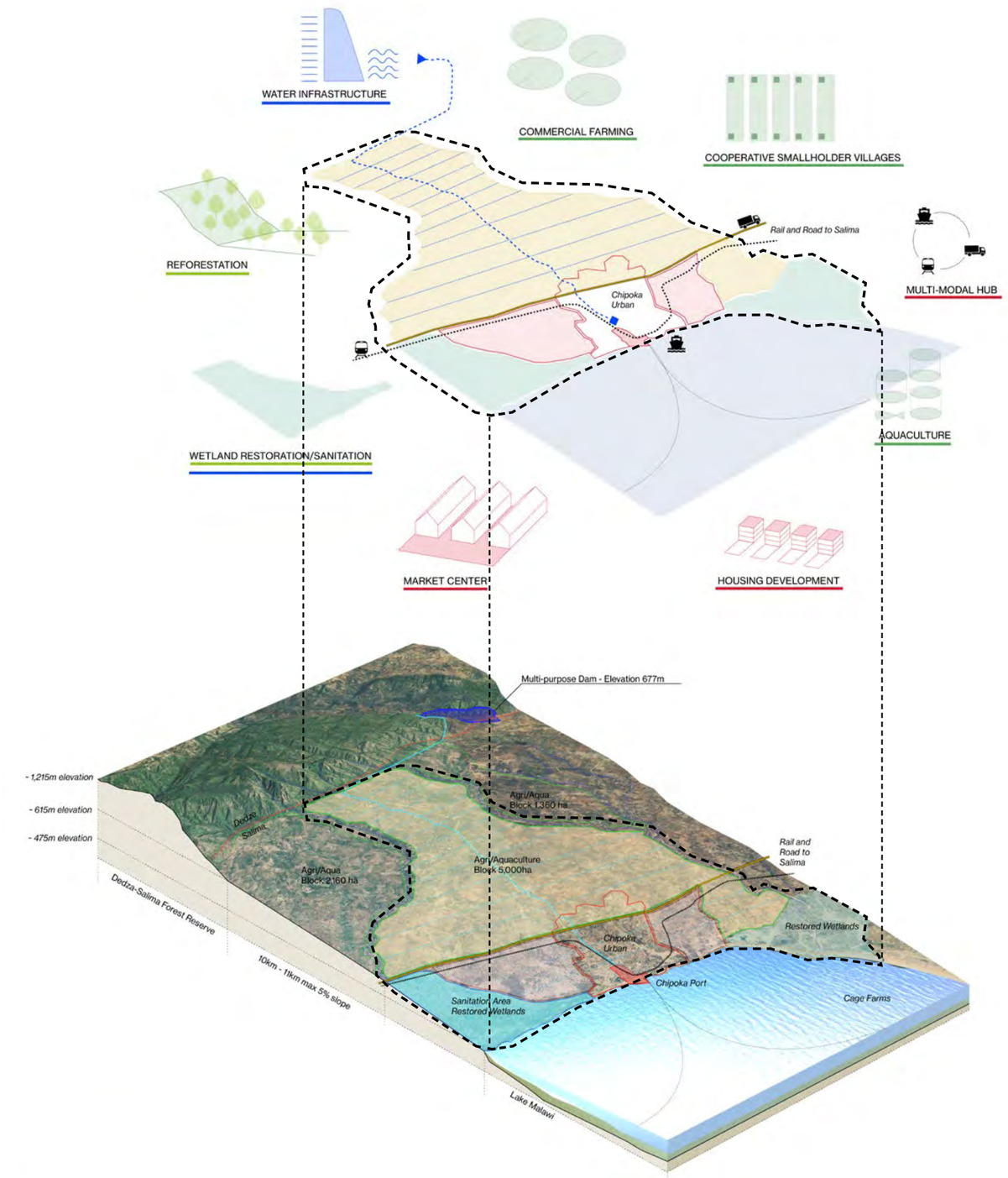
Mahajanga port, Madagascar

Sources: Restructuring the secondary deep sea shipping ports in Madagascar, Ronhi Gabriel Ralamboarivony

Project Sequencing and Phasing Strategies

Matters of project origination and strategic investment promotion through early stage project designs are at the core of the master planning process as proposed in this report. The master plan becomes a platform for both the conceptualisation of a comprehensive environment with well-defined relationships between its elements and takes into consideration conflicting pressures in space - where independent activities are assigned a location, a footprint, a budget, an operator and an investor. This is not an abstract experiment in which we satisfy common interest through a shared vision, but rather a method of work through which we ensure that prospective investors are able to achieve their respective goal, while fitting into a larger framework.

As for a timeline, these investments should not only be sequenced in space, but also on a time scale that corresponds to other planned activities, i.e. strategic phasing. In this context, the matter of 'bankability' becomes extremely pertinent. Projects, whether private or public, require formality to allow for international investors to take part. Such formality includes aspects of land titling, legal relationships between the parties, Government supervision and enforcement protocols. As far as land use management practices are concerned, formality of land designation and the deliberate positioning of a certain activity in relation to its neighbors are among the key activities facilitated through a master plan.



Project clustering strategy and development zone designation for Chipoka urban and TA Ndindi

2020 - Existing condition

Population: 12,615

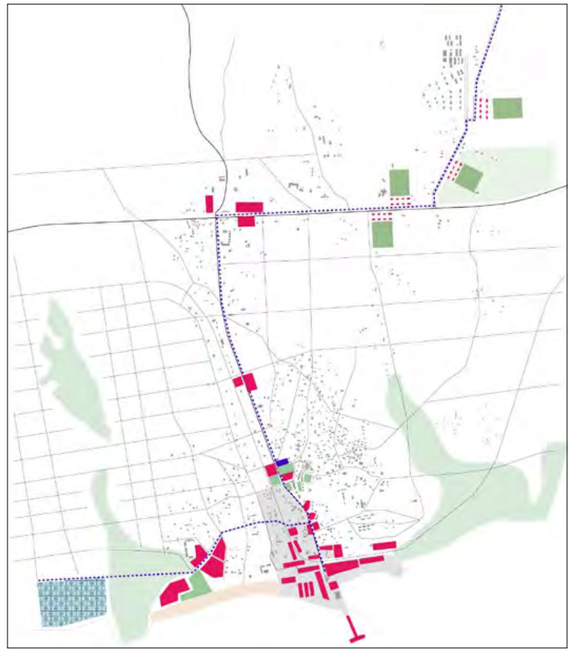
Urban Population: 6,395
Urban Density: 6 per ha

Rural Population: 6,220
Rural Density: 3.1ha per household

2030

Independent developments located strategically

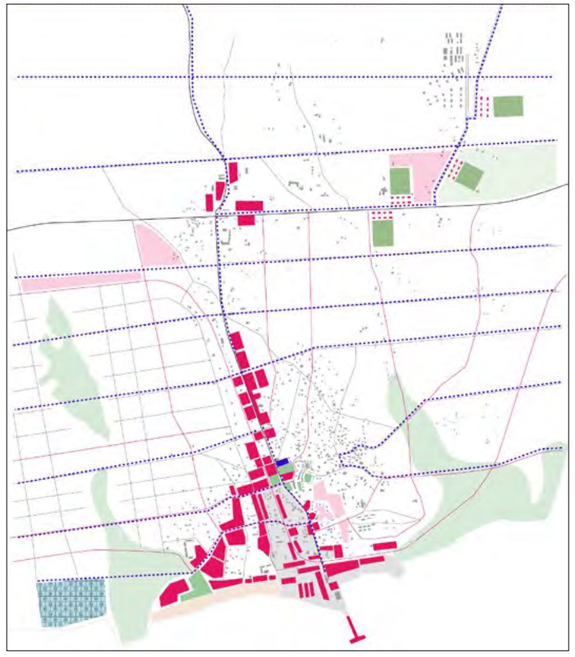
- Port rehabilitation and development of multi-modal industrial district.
- Establishing smallholder and commercial agriculture and aquaculture cooperatives serviced by off-grid water and energy systems.
- Formalizing land use plans in urban and rural areas to allow for further development in next phases.



2040

Connecting independent developments into a network

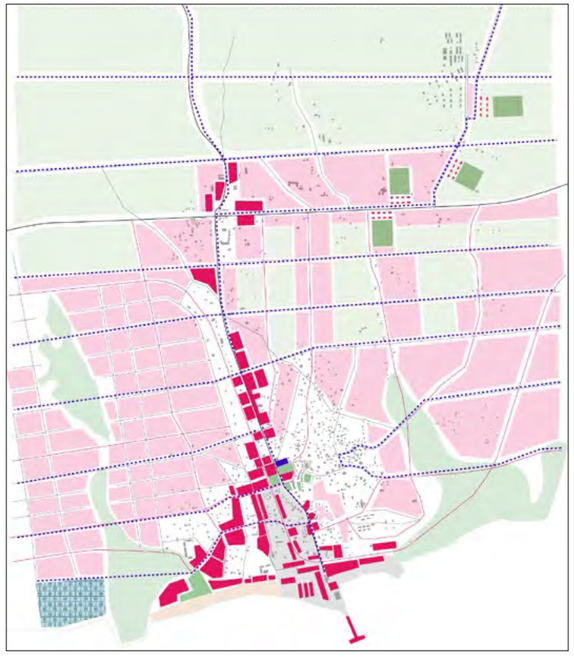
- Water network development connecting the municipality and adjacent industries.
- Development of green infrastructure at the edges of the city as sanitation areas for wastewater treatment.
- Development of an urban commercial center with a passenger rail / bus / ferry station.



2050

Establishing a fully distributed infrastructure network servicing urban and rural areas

- Development of commercial strip along the lake shore with boardwalk and recreational amenities combined with tourism attractions and hotels.
- Development of residential neighborhoods with civic and social amenities.
- Development of regional commercial district at the city's gateway along the highway.



2063

Population: 207,260

Urban Population: 112,400
Urban Density: 100 per ha

Rural Population: 94,860
Rural Density: 1.1ha per household

Diagrammatic phasing strategy for Chipoka urban and TA Ndindi selected area with key investments highlighted

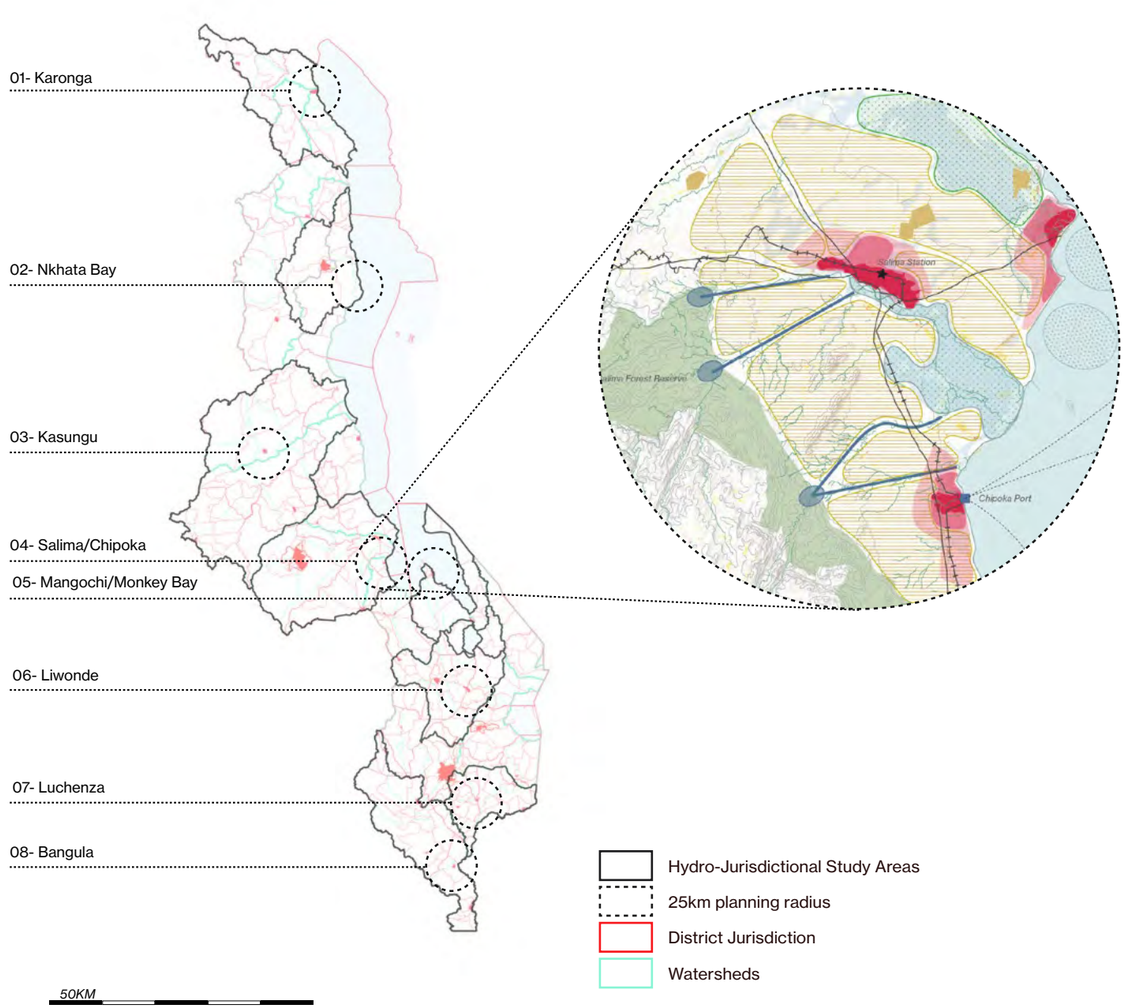
7. MASTER PLANS

Spatial Integration of Long and Medium Term Investments

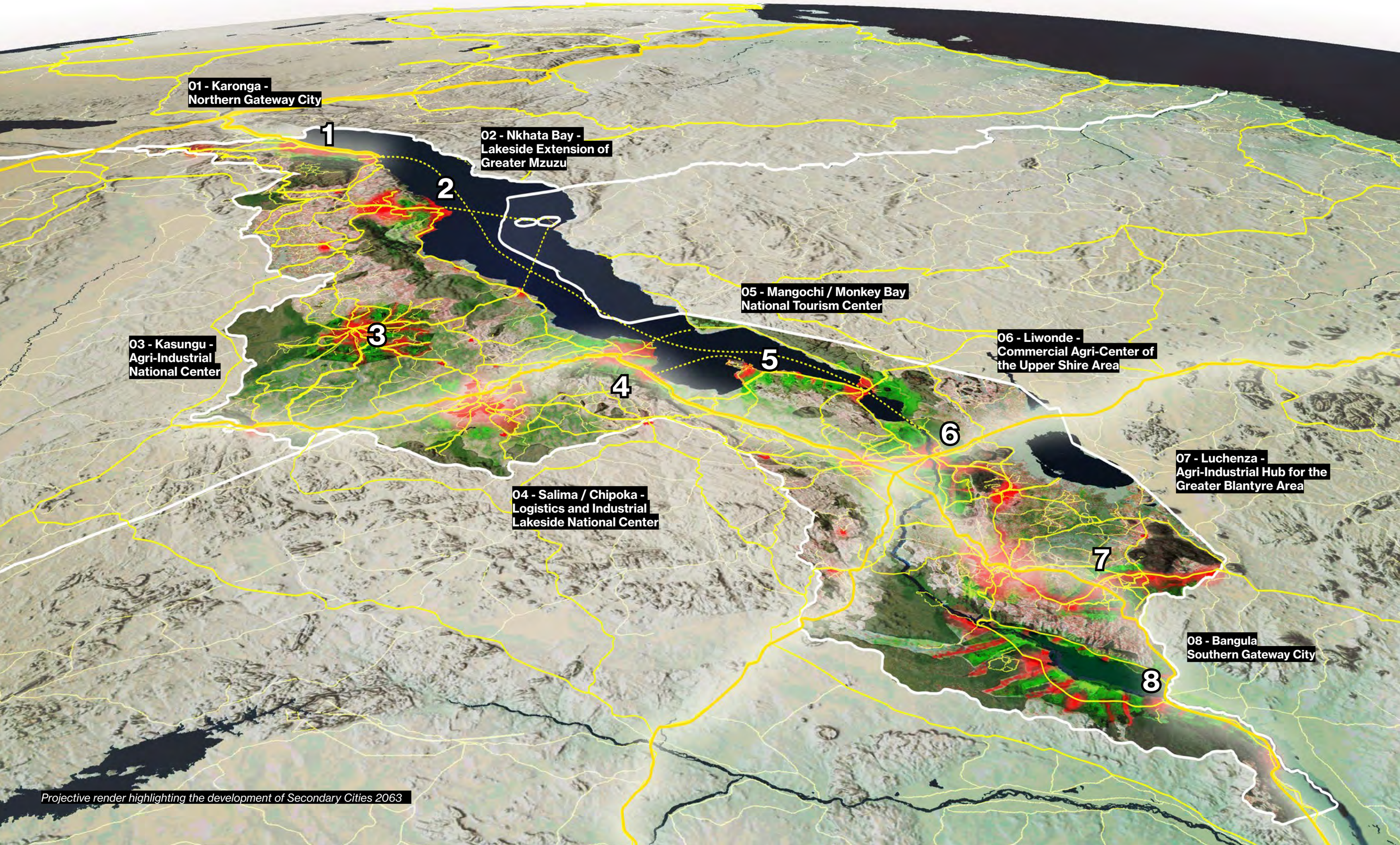
Following the identification of the most appropriate locations across the country where opportunities for the development of Agri-Industrial Secondary Cities appear, we have developed a spatial planning protocol through a number of intermediary scales. The first being a regional scale through which we come to define a scale of analysis which relates both to watershed(s) in which the prospective city is in, as well as the corresponding district(s) jurisdictional boundaries. Between both aspects of political jurisdiction and hydrology, we are able to establish the largest scale of analysis necessary to properly address matters of Environmental Social Governmental (ESG) analysis which will be of critical importance for an Environmental Impact Statement (EIS), necessary for each one of the proposed projects as they head towards implementation.

Such area definitions naturally diverge from the predetermined 25km radius applied in earlier stages of the work, and allows the design process to include assets and resources which may have been neglected earlier on. The following map diagram presents in thick black outlines the regional areas which have been taken into consideration under each one of the eight master plans. You can see how they differ in size in a manner which corresponds to local topographic and political conditions.

Once larger area definitions are established with long term planning processes in mind, the second step is to establish a more local scale of planning, which allows for more detailed understanding of local population footprints and growth trends, land use patterns and spatial relationships between the different sectors. Those local scales of design are highly tailored for each of the locations, while trying to maintain a rough radius of about 25km, corresponding to an hour commuting time for a largely non-motorized transportation network.



Two key scales of analysis and design - the one on a watershed and district jurisdiction scale, the other on a local TA level scale. Highlighting the Salima/Chipoka area as an example.



Projective render highlighting the development of Secondary Cities 2063

01 Karonga
Northern Gateway City

Logistics and industrial multi-modal port district: A case study from Chile. Photo credit: By Peretz Partensky.

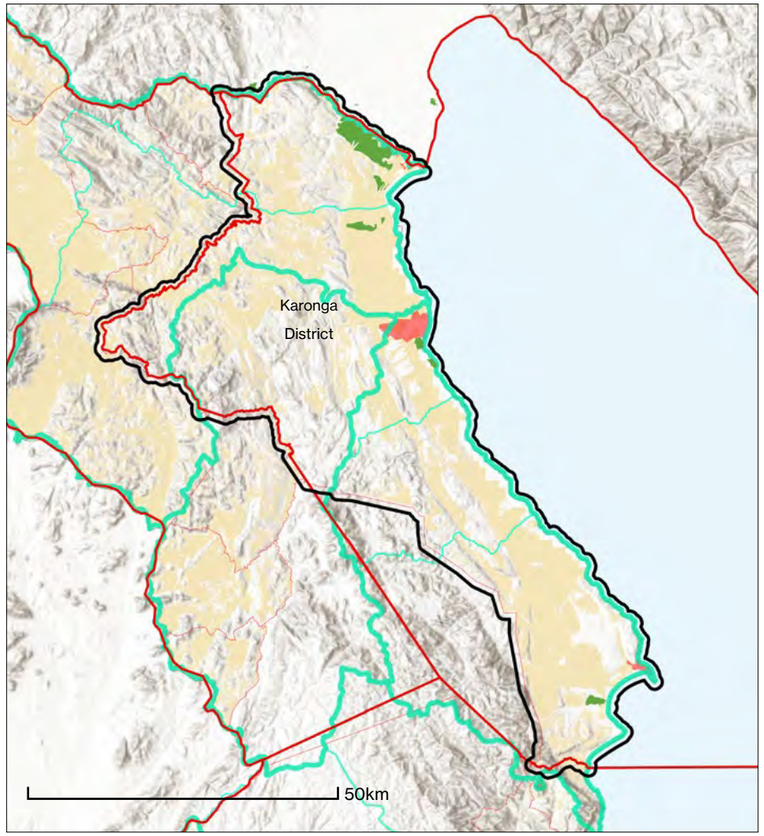
Karonga
District and watershed boundaries

Karonga stands out as a location where not only agriculture and urban development could flourish, but also as a city, where connectivity of multiple modes of transport could be established. This could be achieved by either reinforcing links to the existing port in Chilumba (60km southwards and in need of rehabilitation), and by developing a local urban/industrial port at the heart of the city. Such a lake port could be further reinforced in the future through a rail connection to the Tazara corridor only 120km northwards in Mbeya, Tanzania. Apart from its lake port, a multi-modal hub in the heart of the city, at the intersection of rail and the M1 highway, would be the main connection to movement of goods and people through land. Fisheries development on the lakefront near the port would become an important source of employment and nutrition for the towns and villages of the northern region of the country.

Data sources: RCMRD, Open Street Map; USGS / NASA SRTM DEM; Facebook Connectivity Lab; CIESIN, Columbia University; DigitalGlobe; Malawi Spatial Data Platform (MASDAP)

Karonga

Land use scenario planning



DISTRICT | **TA JURISDICTIONS**

Karonga	Karonga Town
Karonga	TA Kilupula
Karonga	TA Kyungu
Karonga	TA Mwakaboko
Karonga	TA Mwirang'ombe
Karonga	TA Wasambo

WATERSHED UNITS
17A, 17B, 17C, 8A, 9A, 9B

The Table below uses projection scenarios to illustrate local land constraints in each of the planning areas.

Year 2018 is taken as a base and three possible scenarios are projected for the year 2063, using the district's growth rate from the last decade.
First, a *status quo* 2063 scenario projects an urban density and urban population growth not too far from the 2018 trend. In this scenario, it becomes clear that as the population grows with an urban density of 30%, the urban settlement footprint would grow 8 times which would in turn have a negative impact on the availability of land per family, dropping from 1.0 ha/family to 0.37 ha/family.
Second, the moderate scenario 2063 assumes a higher urban density of 60 people/ha, which would constrain the expansion of the settlement area and in turn positively impact the land per family average area to 0.61 ha. Lastly, the compact scenario 2063 applies an even higher urban density of 80 people/ha, as well as a 50% of the population living in urban areas.

This allows smallholder families to have access to 0.51/ha per family. Apart from dedicating land for small farms, the moderate and compact scenarios also increase the capacity for commercial farms from 4,196 ha in 2018 to 6,000 ha in 2063 conservative scenario and 12,000 ha in 2063 compact scenario.

In conclusion, in order to maintain smallholder farming viability in rural areas, it is essential to make room for cities to grow as well as apply a high population density. However, even with a compact scenario, there is need to further urbanise, in order to make smallholder farming viable.

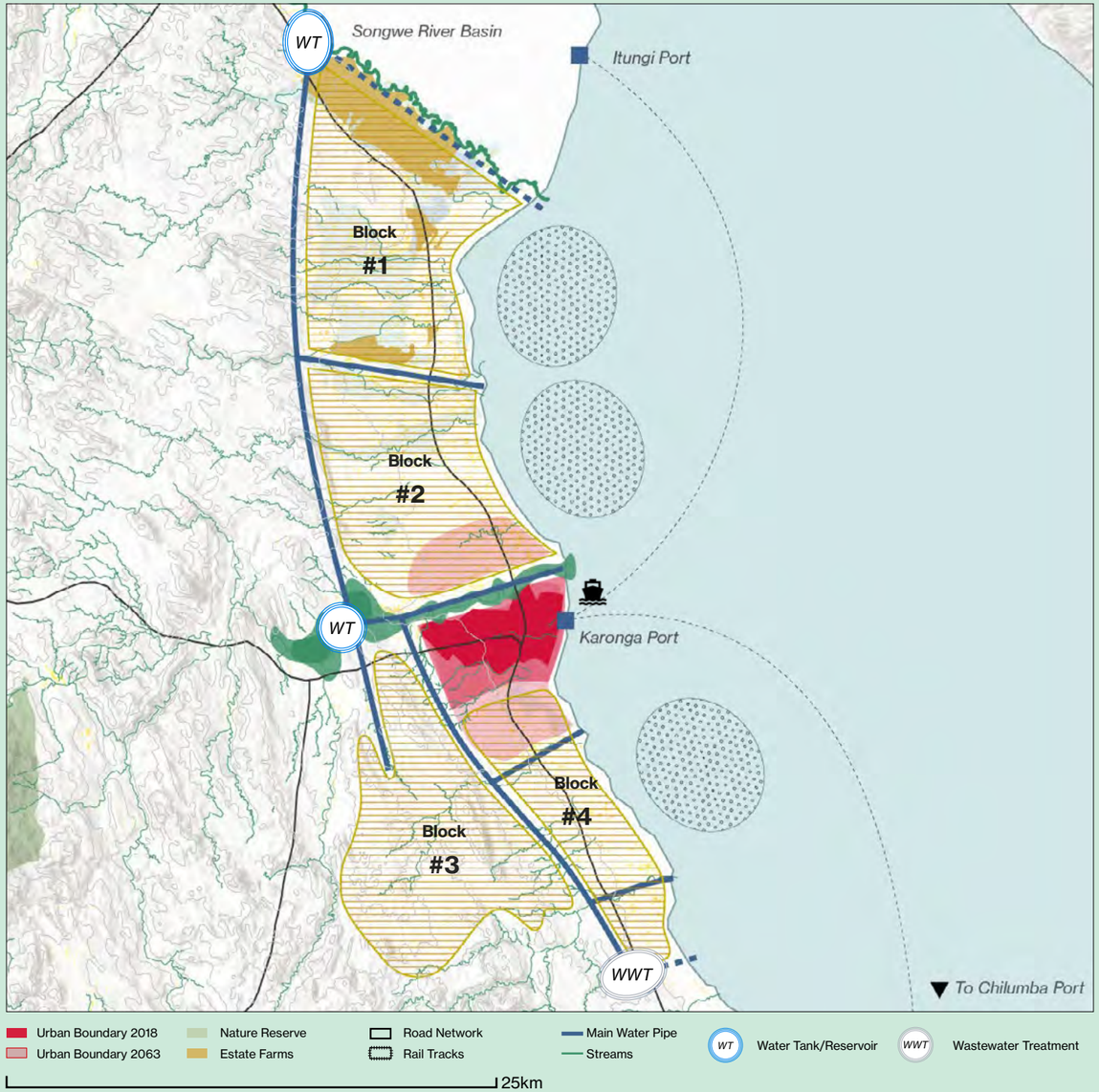
Here, other industries such as fishing and aquaculture as well as tourism would bring additional livelihood for the population.

	Base Scenario 2018	*Status Quo* - Sprawled 2063	Moderate Scenario 2063	Compact Scenario 2063
Total Surface Area (ha)	286,048	286,048	286,048	286,048
Arable Land (ha)	124,364	124,364	124,364	124,364
Non-Arable Land (Forest and Conservation Lands) (ha)	161,684	161,684	161,684	161,684
Crop Land / Small Farms (ha)	117,789	100,886	108,723	100,313
Crop Land / Commercial Farms (ha)	4,196	4,196	6,000	12,000
Settlement Area (urban footprint - ha)	2,379	19,282	9,641	12,051
Urban Density (people per - ha)	25.1	30.0	60.0	80.0
Percent Urban Population	17%	30%	40%	50%
Total Population	359,975	1,928,205	1,446,153	1,928,205
Urban Population	59,613	578,461	578,461	964,102
Rural Population	300,362	1,349,743	867,692	964,102
# of Households (total)	73,901	393,511	295,133	393,511
Household Members Ave.	4.9	4.90	4.90	4.90
# of Households (rural)	61,298	275,457	177,080	196,755
Land per Family Average (ha)	1.9	0.37	0.61	0.51

Karonga
Northern gateway city

Based on scenarios developed under this study, the Karonga area is projeted to grow from 204,194 inhabitants in 2018 to 463,857 in 2040; and 1,093,764 by 2063. If the boundary of the urban growth is controlled and density is encouraged, the surrounding plateau can be dedicated to commercial agricultural production on highly fertile lands. The urban boundary on the north will be defined by a proposed eco-corridor to protect the stream coming from the mountains to the lake. At the high points along the mountain, reservoirs are proposed to capture water and serve the agricultural lands as well as Karonga city. A wastewater treatment area is proposed along the lake, south of the city.

Aerial view of Karonga town center close to the lake front



Karonga

Project clustering scheme

Urban Development

I12 Karonga Transit-oriented Industrial and Commercial Development

Infrastructure

T19 Karonga Passenger Port Facility
T6 Chilumba to Mbeya Rail Line
T12 MIP-1 Flagship: Ports and jetties: Likoma, Nkhotakota, Nkhatabay, Monkey Bay, Chilumba
T22 Karonga Multi-Modal Hub
T23 MIP-1 Flagship: Malawi Air Travel Development and Modernization program (Karonga Airport Rehabilitation)

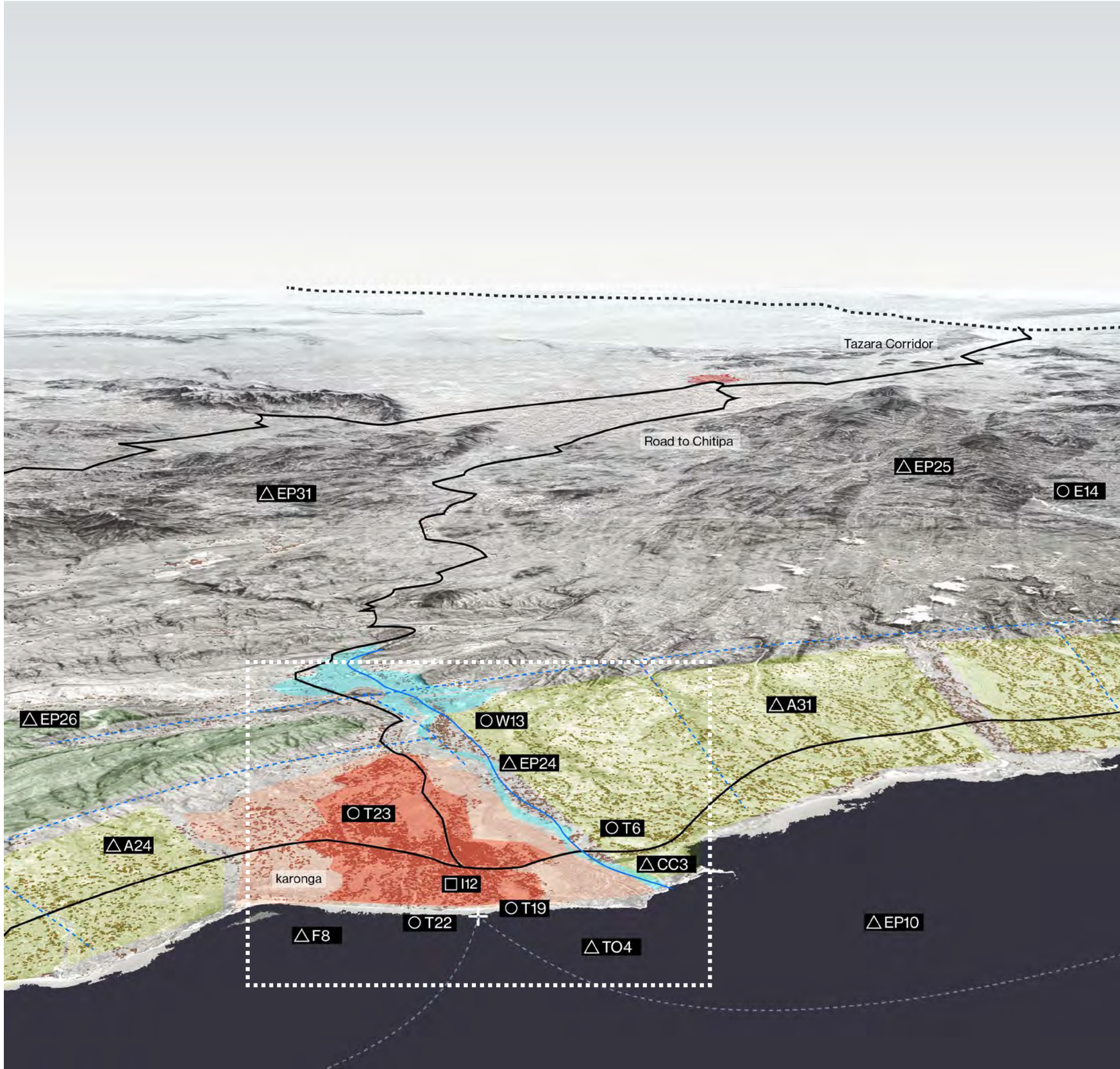
W1 MIP-1 Flagship: Songwe River Basin Development Program
W13 Karonga Town Water Supply and Sanitation Project
E14 Manolo Hydro-electric Dam (60-130 MW)

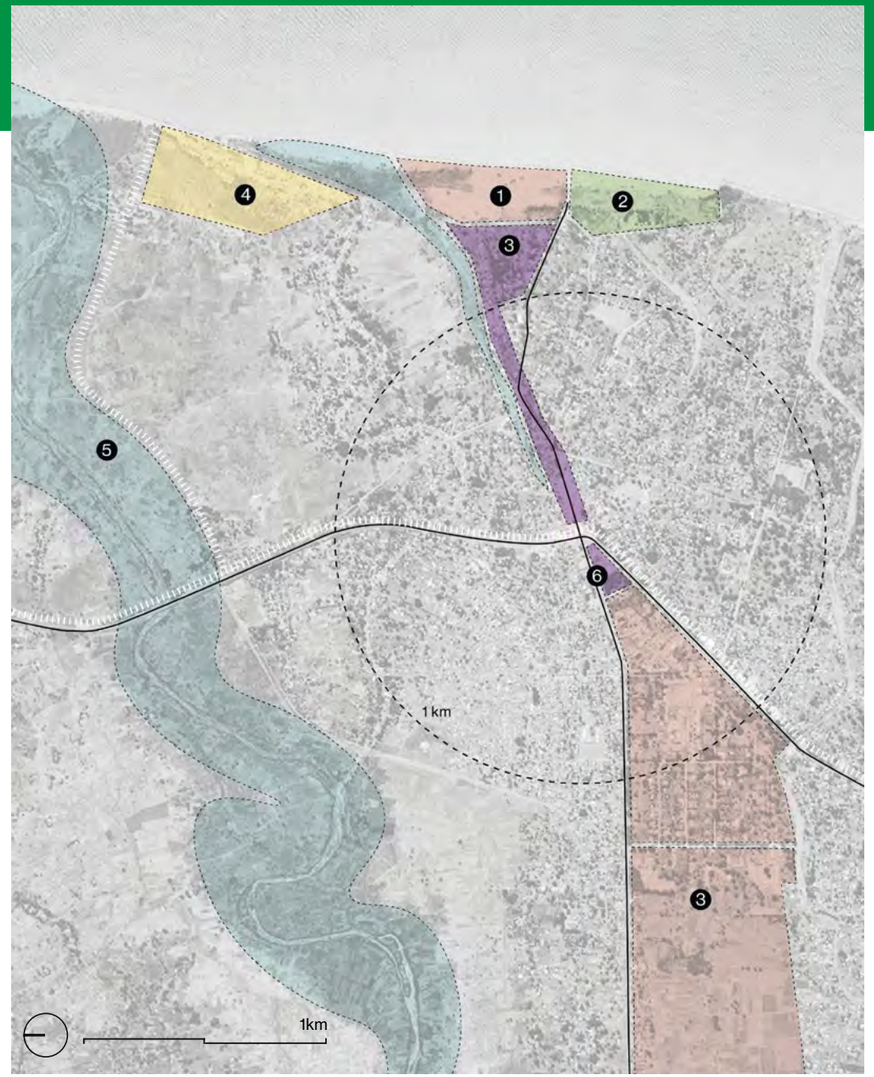
Natural Resources

TO4 MIP-1 Flagship: Malawi Lakeshore Tourism Development Program (Mangochi, Liwonde, Karonga, Nkhatabay, Salima)
EP25 Matipa Complex Forest
EP26 Nyika National Park
EP31 Musissi Forest Reserve
CC3 Karonga Flood Zone Management and Green Infrastructure Plan

F8 MIP-1 Flagship: Sustainable Aquaculture and Fisheries Development (Karonga Fisheries)
A31 Commercial and Small Farm Development for Karonga

- Urban Footprint 2020
- Urban Footprint Projection
- Nature Reserves
- Agricultural Lands
- Water Resources
- Irrigation





Karonga

Project clustering scheme - Project references

1- Karonga Passenger Port Facility Development (T19)
Connects to: Chilumba, Nkhotakota, Chipoka ports in Malawi, Itungi and Mbamba Bay ports in Tanzania.
Development area: 12 Ha — Proposed FAR: 0.75

2- Karonga Fisheries (F8)
Area : 6 Ha — Proposed FAR: 0.75

3- Karonga Transit-oriented Commercial Center Development (I12)
Existing commercial area: 65 Ha — Potential Cost: TBC
Proposed extension area: 147 Ha — Proposed FAR: 2

4- Karonga Transit-oriented Industrial Center Development (I12)
Proposed extension area: 40 Ha — Proposed FAR: 0.75

5- Karonga Flood Zone Management and Green Infrastructure Plan - North Rokuru River conservation (CC3)
Area: -

6- Karonga Multi-Modal Hub (T22)
Area: 1 Ha — Proposed FAR: 2

2- Fisheries port, Jaffa, Israel

3- Rueil-Malmaison TOD, Paris France

4- Kigoma industrial port, Tanzania

5- Urban wetland, Accra, Ghana

02 Nkhata Bay
Lakeside Extension of Greater Mzuzu

A cruise passing through Porti Kotor, Montenegro. Photo credit: jbdodane, Flickr.

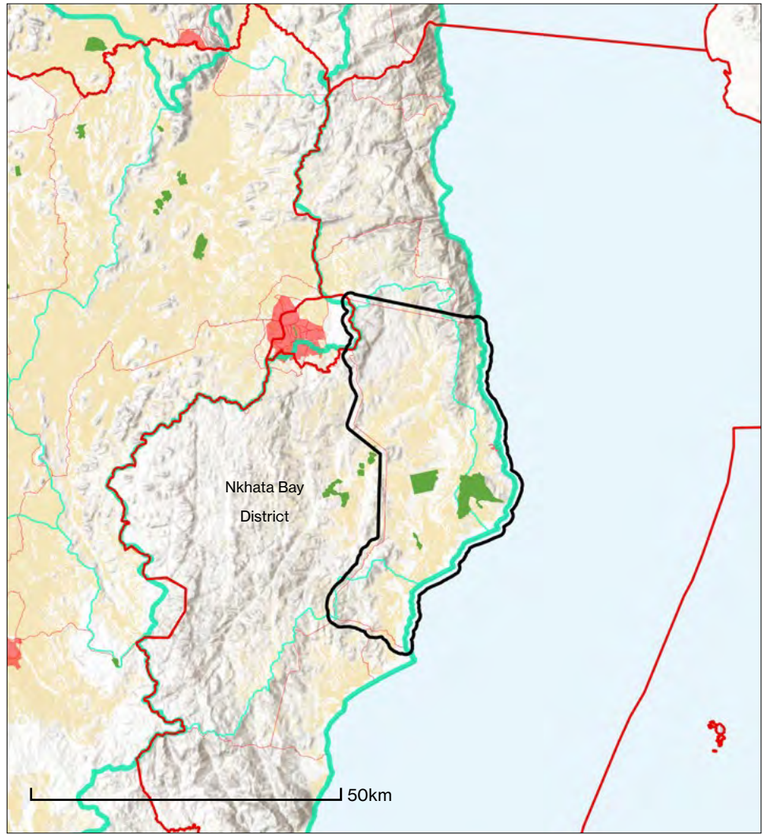
Nkhata Bay
District and watershed boundaries

The Nkhata Bay port together with the opportunity to develop a substantial industrial district at the lake front, would enable water transport links to the ports of Chipoka, Chilumba and potentially Liwonde, as well as the lake ports of Tanzania such as Itungi and Mbamba Bay (merely 65km west). Through its strategic position, Nkhata Bay has the potential to become the port city of Mzuzu. Both as a touristic attraction through the development of beaches along the shore, as well as the development of industry on the coast, Nkhata Bay has the potential to become an important hub that alleviates some of the pressures from Mzuzu by providing essential services, employment opportunities as well as recreational offerings to the northern region.

Data sources: RCMRD, Open Street Map; USGS / NASA SRTM DEM; Facebook Connectivity Lab; CIESIN, Columbia University; DigitalGlobe; Malawi Spatial Data Platform (MASDAP)

Nkhata Bay

Land use scenario planning



DISTRICT	TA JURISDICTIONS
Nkhata Bay	Nkhata Bay Boma
Nkhata Bay	TA Fukamalaza
Nkhata Bay	TA Fukamapiri
Nkhata Bay	TA Malanda
Nkhata Bay	TA Mankhambira
Nkhata Bay	TA Mkumbira
Nkhata Bay	TA Timbiri

WATERSHED UNITS
16E, 16F, 16G

The Table below uses projection scenarios to illustrate local land constraints for Nkhatabay area. Year 2018 is taken as a base and three possible scenarios are projected for the year 2063, using the district's growth rate from the last decade.

First, a *status quo* 2063 scenario projects an urban density and urban population growth not too far from the 2018 trend. In this scenario, it becomes clear that as the population grows with an urban density of 60 people/ha, the urban settlement footprint would grow almost 20 times which would in turn have a negative impact on the availability of land per family, dropping from 1.1 ha/family to 0.34 ha/family. Second, the moderate scenario 2063 assumes a higher urban density of 70 people/ha, which would constrain the expansion of the settlement area and in turn increase the land per family average area to 0.51 ha.
Lastly, the compact scenario 2063 applies an even higher urban density of 80 people/ha, as well as a 50% of the population living in urban areas. This allows smallholder families to have access to 0.34/ha per family. Apart from dedicating land for small farms, the conservative and compact scenarios also increase the capacity for commercial farms from 3,873 ha in 2018 to 5,000 ha in 2063 moderate scenario and 10,000 ha in 2063 compact scenario. Since Nkhata Bay is a coastal and hilly settlement, its arable land capacity is particularly limited compared to other areas. This results in low capacity for smallholder land.

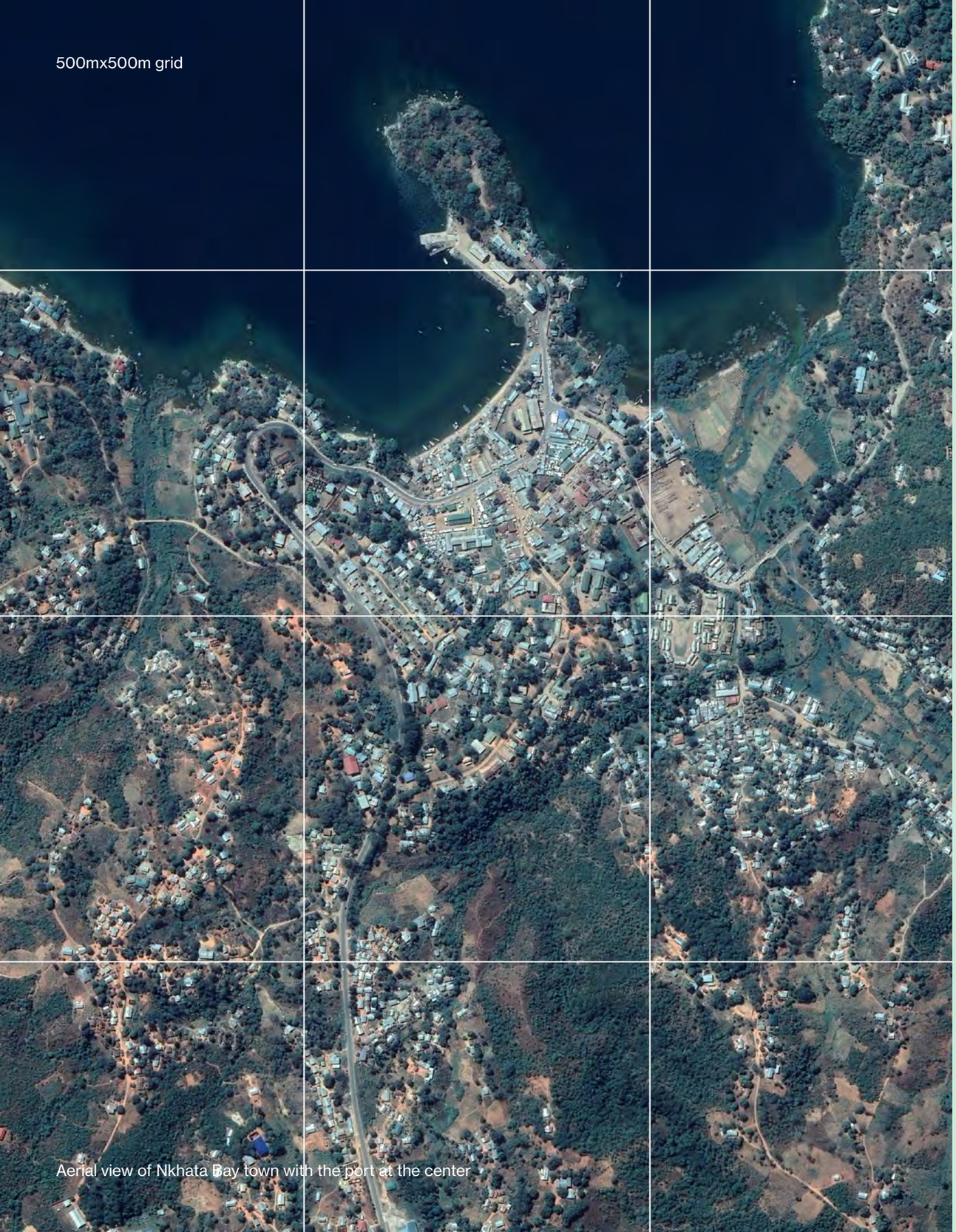
In conclusion, in order to maintain smallholder farming viability in rural areas, it is essential to make room for cities to grow as well as apply a high population density. However, even with a compact scenario, there is need to further urbanise, in order to make smallholder farming viable.

Here, other industries such as fishing and aquaculture as well as tourism would bring additional livelihood for the population.

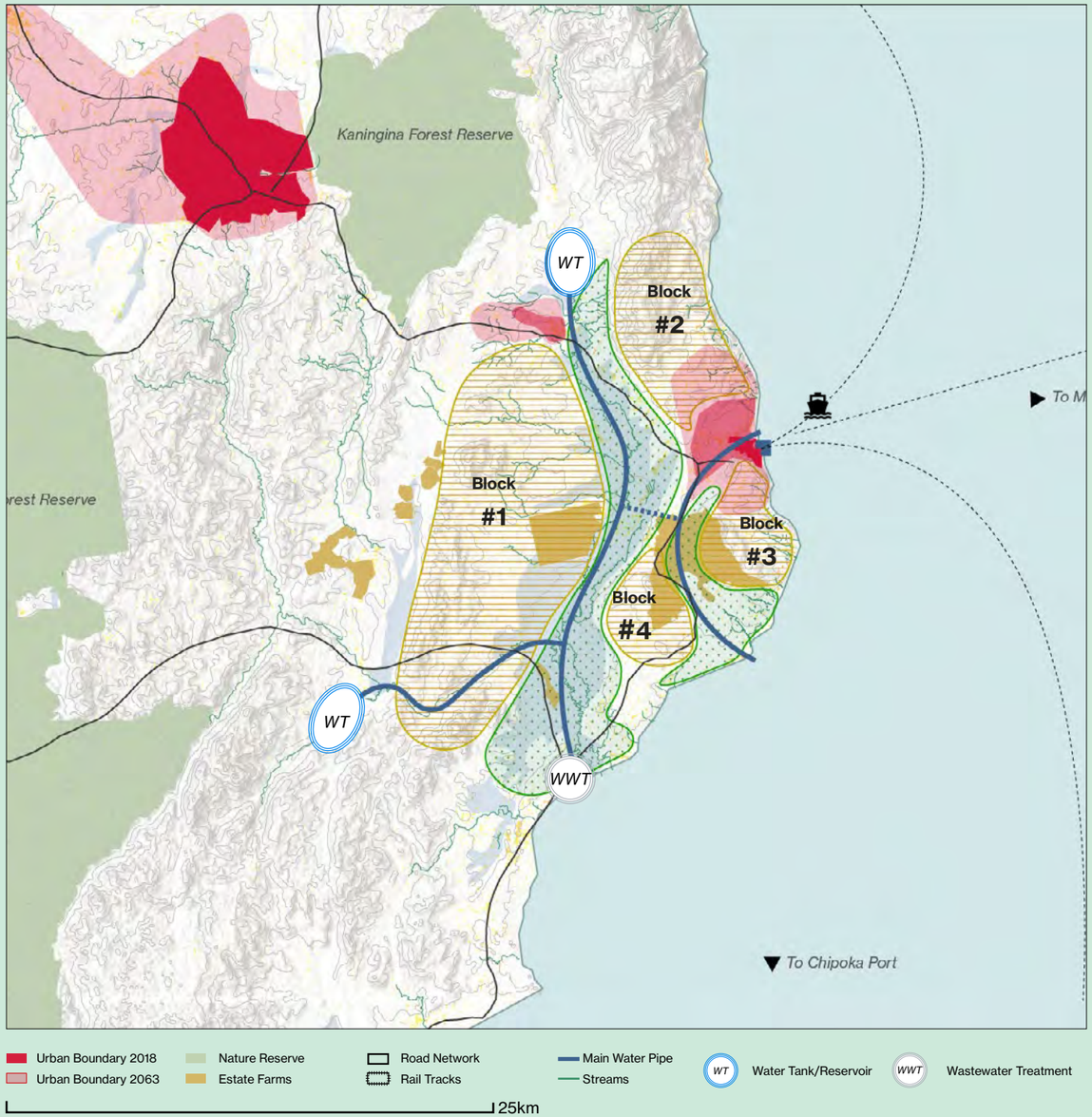
	Base Scenario 2018	*Status Quo* - Sprawled 2063	Moderate Scenario 2063	Compact Scenario 2063
Total Surface Area (ha)	90,215	90,215	90,215	90,215
Arable Land (ha)	31,915	31,915	31,915	31,915
Non-Arable Land (Forest and Conservation Lands) (ha)	58,300	58,300	58,300	58,300
Crop Land / Small Farms (ha)	27,891	25,081	24,377	18,214
Crop Land / Commercial Farms (ha)	3,873	3,873	5,000	10,000
Settlement Area (urban footprint - ha)	151	2,961	2,538	3,701
Urban Density (people per - ha)	51.9	60.0	70.0	80.0
Percent Urban Population	5%	30%	40%	50%
Total Population	143,519	592,237	444,178	592,237
Urban Population	7,831	177,671	177,671	296,118
Rural Population	135,688	414,566	266,506	296,118
# of Households (total)	25,841	106,634	79,975	106,634
Household Members Ave.	5.6	5.55	5.55	5.55
# of Households (rural)	24,431	74,643.80	47,985	53.317
Land per Family Average (ha)	1.1	0.34	0.51	0.34

Nkhata Bay
Lakeside extension to Greater Mzuzu

Based on scenarios developed under this study, Nkhata Bay area will grow from 143,226 inhabitants in 2018, to 286,401 in 2040; and 591,028 in 2063. If the urban growth is controlled, the lands north and south of the urban boundary are proposed to be dedicated to commercial agriculture. The lowland west of the urban center would be ideal for growing rice. Along its western edge could run the proposed main water pipe to service both Nkhata Bay center as well as the agricultural lands around. New water reservoirs would be located on the higher points of the mountains. The wetland near the lake would have a wastewater treatment area.



Aerial view of Nkhata Bay town with the port at the center



Nkhata Bay

Project clustering scheme

Urban Development

I13 Nkhata Bay Transit-oriented Industrial and Commercial Development

Infrastructure

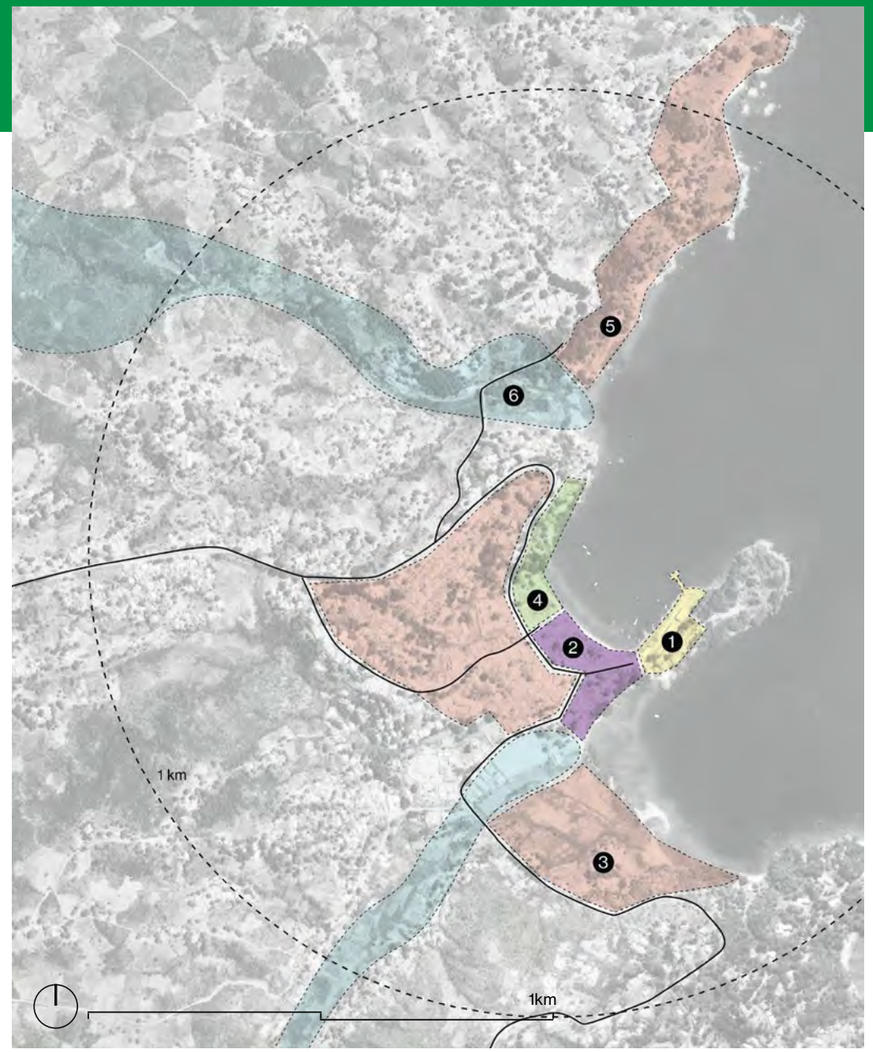
T11 MIP-1 Flagship Ports and jetties: Likoma, Nkhotakota, Nkhata Bay, Monkey Bay, Chilumba
T32 M5 road between Mzuzu and Nkhata-bay
T33 M18 road to Nkhotakota and Mchinji
W12 Nkhata Bay Water Supply and Sanitation Project

Natural Resources

TO4 MIP-1 Flagship: Malawi Lakeshore Tourism Development Program (Mangochi, Liwonde, Karonga, Nkhata Bay, Salima)
EP29 Nkwadzi Hill Forest Reserve
EP1 Kandoli Forest Conservation Project
CC4 Nkhatabay Flood Zone Mangement and Green Infrastructure

EP2 Fish Conservation Project
F10 Nkhata Bay Fisheries Development
A17 Vizara Rubber Estate
A18 Chombe Tea Estate
A19 Kawalazi Tea Estate
A29 Luweya Irrigation Scheme
A30 Limphasa Irrigation Scheme
A31 Commercial and Small Farm Development for Nkhatabay
F10 MIP-1 Flagship: Sustainable Aquaculture and Fisheries Development (Nkhata Bay Fisheries)

- Urban Footprint 2020
- Urban Footprint Projection
- Nature Reserves
- Agricultural Lands
- Water Resources
- Irrigation



Nkhata Bay

Project clustering scheme - Project references

1- Nkhatabay Jetty Rehabilitation (T11)
Connects to: Chilumba, Nkhotakota, Chipoka, Monkey Bay, Likoma ports, Itungi and Mbamba Bay ports in Tanzania.

Rehabilitation Area: 1.15 Ha — Proposed FAR: 0.75

2- Nkhatabay Transit-oriented Industrial Center Development (I13)
Area : 2.5 Ha — Proposed FAR: 0.75

3- Nkhatabay Transit-oriented Commercial Center Development (I13)
Existing commercial area: 13 Ha — Potential Cost: TBC
Proposed extension area: 15 Ha — Proposed FAR: 2

4- Nkhatabay Fisheries Development (F10)
Area: 1.7 Ha

5- Development of Public Beaches along the Shores of Lake Malawi (TO4)
Length : 10 Ha — Proposed FAR: 2

6- Nkhatabay Flood Zone Management and Green Infrastructure Plan (CC4)
Area : -

1- Zanzibar ferry terminal


4- Grouper fingerlings indoor hatchery, Taiwan


5- Mwanza commercial boardwalk, Tanzania


6- Wetland in industrial district, Zanzibar, Tanzania

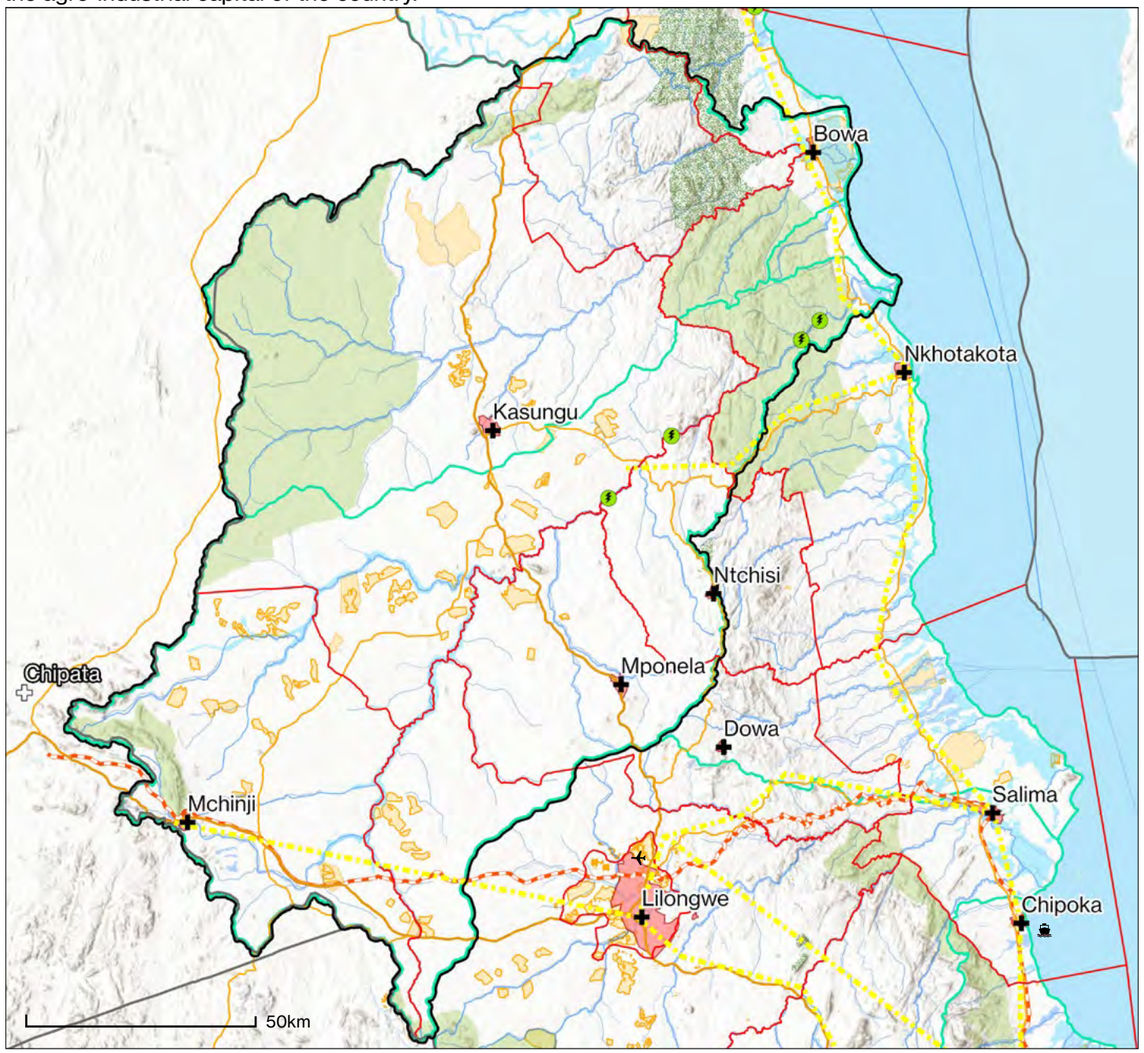
03 Kasungu
Agri-Industrial National Center

Agri-industrial zone development: A case study from China. Photo credit: Prologis.

Kasungu
District and watershed boundaries

Kasungu is the urban center of Kasungu district, central region of Malawi, known for its fertile soils and history of agricultural excellence. As a city with a high concentration of estates, Kasungu could be a potential asset for development plans that require large plots of titled lands. As an inland city, it would benefit from the rehabilitation of its airport facility, around which an economic zone could make Kasungu the agro-industrial capital of the country.

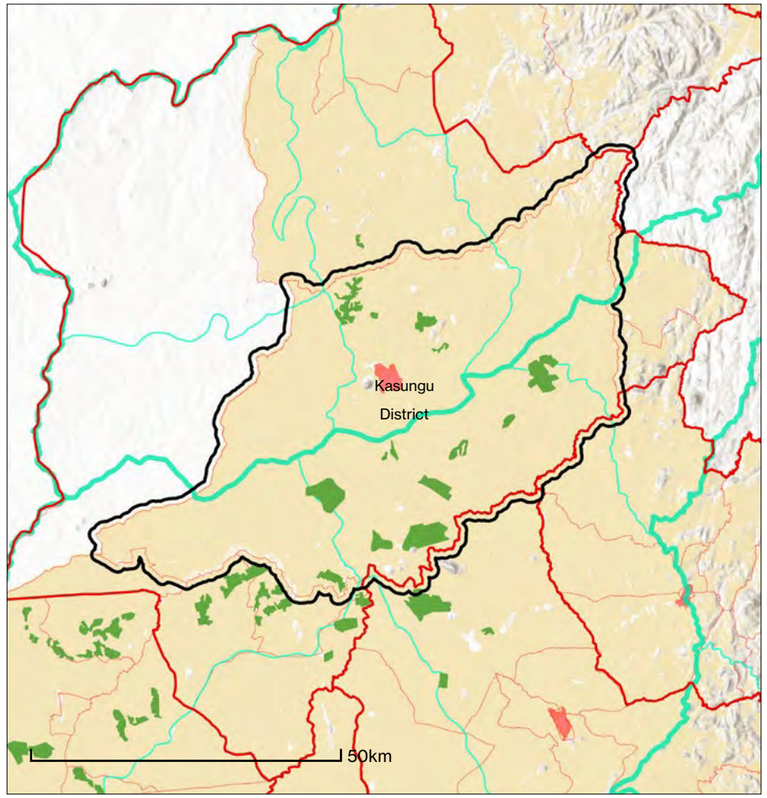
Through its airport, productive farmlands, and proximity to Lilongwe, Kasungu would be able to provide essential services and nutrition to settlements of the central plateau and divert some urban dwellers from Lilongwe to its city center.



Data sources: RCMRD, Open Street Map; USGS / NASA SRTM DEM; Facebook Connectivity Lab; CIESIN, Columbia University; DigitalGlobe; Malawi Spatial Data Platform (MASDAP)

Kasungu

Land use scenario planning



DISTRICT	TA JURISDICTIONS
Kasungu	Kasungu Boma
Kasungu	STA Chambwe
Kasungu	STA Mangwazu
Kasungu	STA Mawawa
Kasungu	TA Chilowamatambe
Kasungu	TA Kaomba
Kasungu	TA Kawamba
Kasungu	TA Lukwa
Kasungu	TA Mwase
Kasungu	TA Njombwa
Kasungu	TA Wimbe

WATERSHED UNITS
5C, 5D, 5F, 6B, 6C, 6D

The Table below uses projection scenarios to illustrate local land constraints for Kasungu area. Year 2018 is taken as a base and three possible scenarios are projected for the year 2063, using the district's growth rate from the last decade.

First, a *status quo* 2063 scenario projects an urban density and urban population growth not too far from the 2018 trend. In this scenario, it becomes clear that as the population grows with an urban density of 40 people/ha, the urban settlement footprint would grow almost 11 times; which would in turn have a negative impact on the availability of land per family, dropping from 3.2 ha/family to 0.77 ha/family. Second, the moderate scenario 2063 assumes a higher urban density of 60 people/ha, which would constrain the expansion of the settlement area and in turn increase the land per family average area to 1.23 ha.
Lastly, the compact scenario 2063 applies an even higher urban density of 80 people/ha, as well as a 50% of the population living in urban areas. This allows smallholder families to have access to 1.05/ha per family. Apart from dedicating land for small farms, the moderate and compact scenarios also increase the capacity for commercial farms from 1,058 ha in 2018 to 10,899 ha in 2063 moderate scenario and 21,798 ha in 2063 compact scenario.

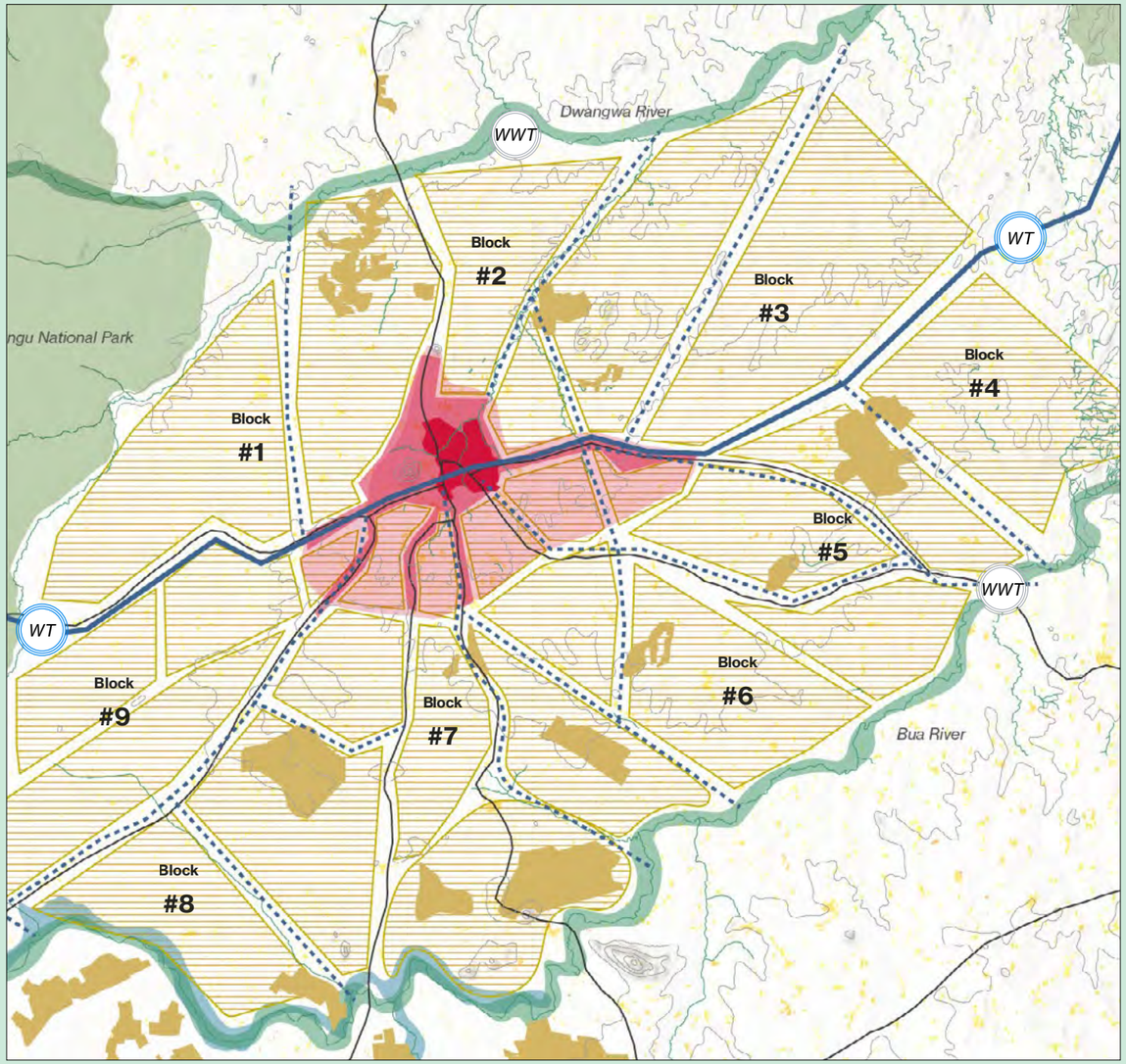
In conclusion, in order to maintain smallholder farming viability in rural areas, it is essential to make room for cities to grow as well as apply a high population density.

	Base Scenario 2018	*Status Quo* - Sprawled 2063	Moderate Scenario 2063	Compact Scenario 2063
Total Surface Area (ha)	287,509	287,509	287,509	287,509
Arable Land (ha)	279,186	279,186	279,186	279,186
Non-Arable Land (Forest and Conservation Lands) (ha)	8,323	8,323	8,323	8,323
Crop Land / Small Farms (ha)	276,735	252,121	257,510	243,917
Crop Land / Commercial Farms (ha)	1,058	10,899	10,899	21,798
Settlement Area (urban footprint - ha)	1,393	16,166	10,777	13,471
Urban Density (people per - ha)	39.1	40.0	60.0	80.0
Percent Urban Population	12%	30%	40%	50%
Total Population	458,371	2,155,424	1,616,568	2,155,424
Urban Population	54,446	646,627	646,627	1,077,712
Rural Population	403,925	1,508,797	969,941	1,077,712
# of Households (total)	99,084	465,928	349,446	465,928
Household Members Ave.	4.6	4.63	4.63	4.63
# of Households (rural)	87,315	326,149.95	209,667	232,964
Land per Family Average (ha)	3.2	0.77	1.23	1.05

Aerial view of Kasungu town center

Kasungu
Agri-industrial national center

Based on scenarios developed under this study, Kasungu area will grow from 373,567 inhabitants in 2018, to 796,262 in 2040; and 1,756,645 in 2063. If the urban growth is controlled, the land all around the urban boundary is proposed to be dedicated to commercial agriculture. A proposed buffer would protect Dwanga and Bua rivers. A main water pipe is proposed to run parallel to the rivers, cutting through the urban center and connecting the highest points on the two adjacent mountains.



Kasungu

Project clustering scheme

Urban Development

I14 Kasungu Transit-oriented Industrial and Commercial Development

Infrastructure

T24 Kasungu Airport Rehabilitation
T25 M1 road to Lilongwe and Mzuzu
T33 M18 road to Nkhotakota and Mchinji

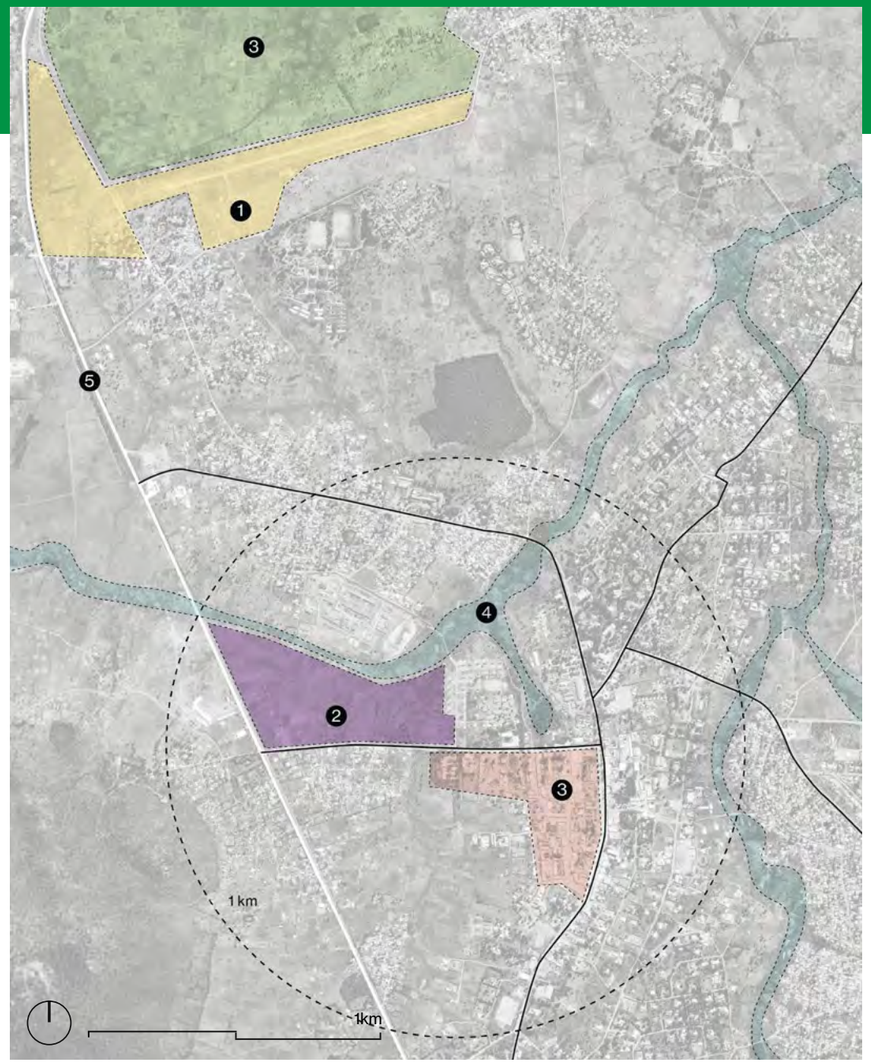
W8 Dwangwa Multi-purpose Dam
W15 Development of Multi-purpose Dam and Integration of Water Supply Schemes for Kasungu
W28 Chitete Dam
E9/10/11/12 Bua River Series of Hydro-electric Dams (Mbongozi, Malenga, Chasombo, Chizuma)

Natural Resources

EP28 Bua River Buffer Zone
EP29 Dwangwa River Buffer Zone
EP32 Kasungu National Park
EP31 Nkhotakota Wildlife Reserve
CC7 Kasungu Green Infrastructure Plan

A10 Exagris Ngala Estate
A12 Multiple Press Agriculture Estates around
A20 Dumbo Farming/Conservation Policy Development
A31 Commercial and Small Farm Development for Kasungu

- Urban Footprint 2020
- Urban Footprint Projection
- Nature Reserves
- Agricultural Lands
- Water Resources
- Irrigation



Kasungu

Project clustering scheme - Project references

1- Kasungu Airport Rehabilitation (T24)
Connects to: Lilongwe and Blantyre Airports
Airport Area: 55 Ha Proposed FAR: 0.75

2- Kasungu Transit-oriented Commercial Center Development (I14)
Existing Market Area : 66 Ha
Extension Area: 27 Ha Proposed FAR: 2

3- Kasungu Transit-oriented Industrial Center Development (I14)
Area: 220 Ha

4- Kasungu Green Infrastructure Plan (CC7)
Area - 15 Ha

5- M1 road to Lilongwe and Mzuzu (T25)
Length : 66 Ha


2- Transit-oriented development, Johannesburg, RSA


3- Tnuva dairy plant, Beer Tuvia, Israel


3- Special Economic Zone, Kigali, Rwanda

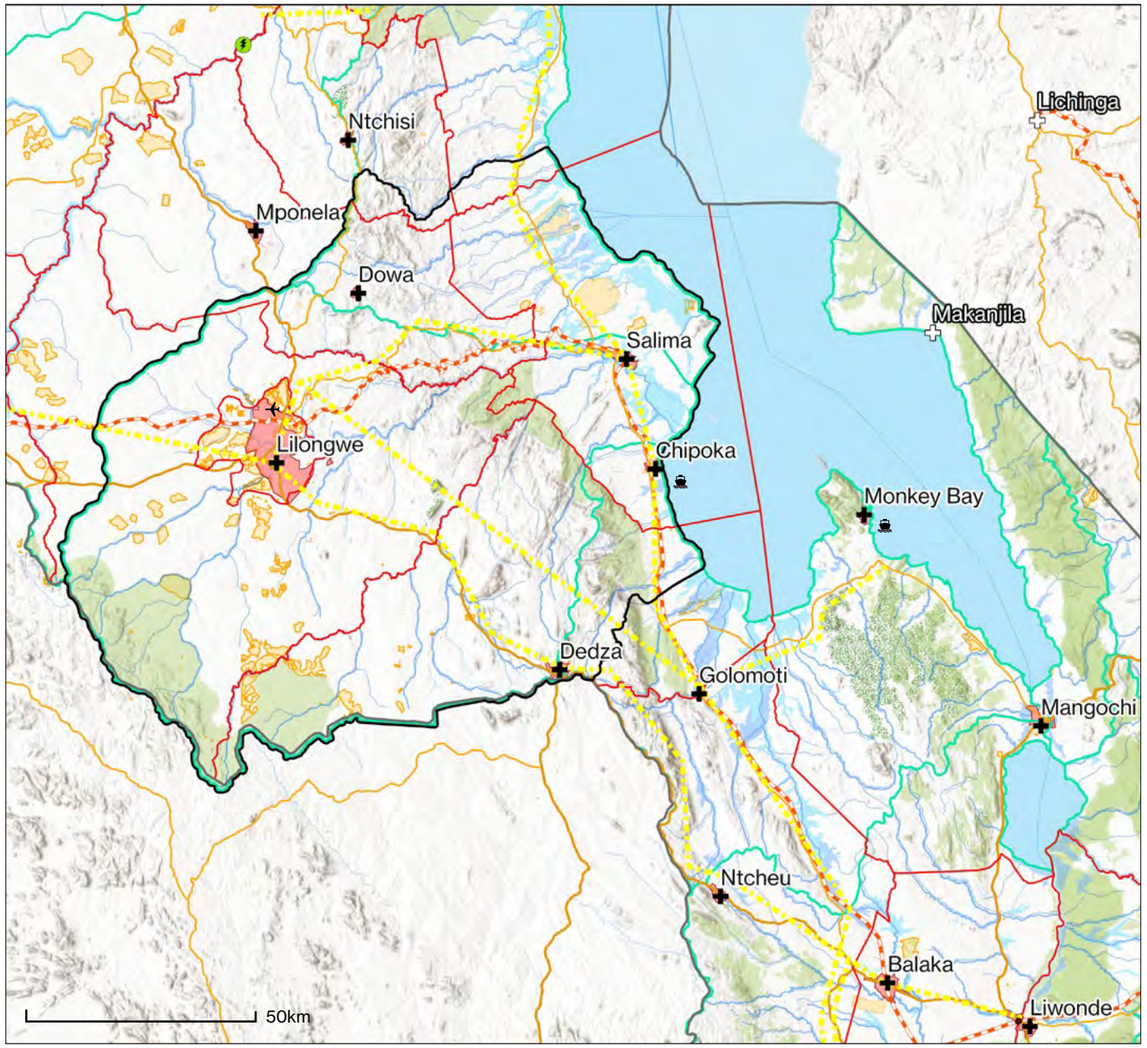

4- Urban green infrastructure, Edrina, Turkey

04 Salima/Chipoka
Logistics and Industrial Lakeside National Center

Freight activity near an industrial port: A case study from Los Angeles, US. Photo credit: Port of Los Angeles.

Salima/Chipoka
District and watershed boundaries

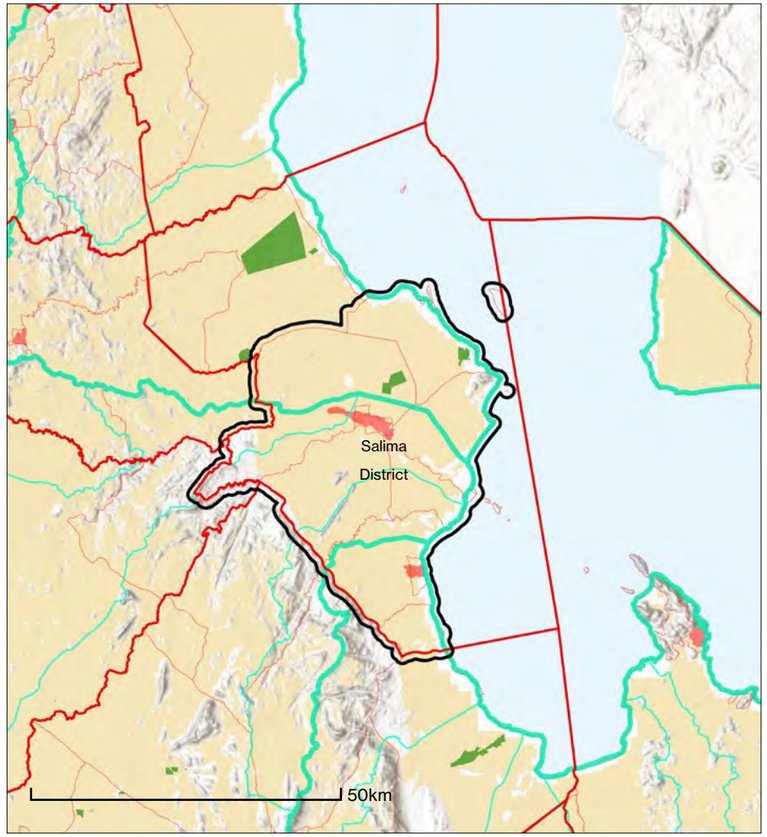
Chipoka is the closest waterfront to the capital Lilongwe. It is also the only point in the country where rail and lake port meet. Chipoka is close to and connected to Salima, an urban administrative hub, via rail, as well as Senga Bay, a touristic hub with great potential for expansion. The rehabilitation and development of the port district with industrial, fisheries and passenger facilities could transform Chipoka into the national and regional center for industry and logistics. The establishment of a major fisheries sector at Chipoka would also provide economic diversification for smallholders in the area as well as support food diversification programs. Furthermore, the area's beaches and natural beauty would allow for the development of a commercial waterfront attracting both local and international tourists.



Data sources: RCMRD, Open Street Map; USGS / NASA SRTM DEM; Facebook Connectivity Lab; CIESIN, Columbia University; DigitalGlobe; Malawi Spatial Data Platform (MASDAP)

Salima/Chipoka

Land use scenario planning



DISTRICT	TA JURISDICTIONS
Salima	Chipoka Urban
Salima	Salima Town
Salima	TA Kambalame
Salima	TA Kambwiri
Salima	TA Karonga
Salima	TA Kuluunda
Salima	TA Maganga
Salima	TA Ndindi
Salima	TA Pemba

WATERSHED UNITS
15A, 3F ,4A, 4B, 4C

The Table below uses projection scenarios to illustrate local land constraints for Salima area. Year 2018 is taken as a base and three possible scenarios are projected for the year 2063, using the district's growth rate from the last decade.

First, a *status quo* 2063 scenario projects an urban density and urban population growth not too far from the 2018 trend. In this scenario, it becomes clear that as the population grows with an urban density of 40 people/ha, the urban settlement footprint would grow almost 7 times which would in turn have a negative impact on the availability of land per family, dropping from 2 ha/family to 0.31 ha/family. Second, the moderate scenario 2063 assumes a higher urban density of 60 people/ha, which would constrain the expansion of the settlement area and in turn increase the land per family average area to 0.50 ha.
Lastly, the compact scenario 2063 applies an even higher urban density of 80 people/ha, as well as a 50% of the population living in urban areas. This allows smallholder families to have access to 0.43/ha per family. Apart from dedicating land for small farms, the conservative and compact scenarios also increase the capacity for commercial farms from 1,058 ha in 2018 to 2,000 ha in 2063 moderate scenario and 4,000 ha in 2063 compact scenario.

In conclusion, in order to maintain smallholder farming viability in rural areas, it is essential to make room for cities to grow as well as apply a high population density. However, even with a compact scenario, there is a need to further urbanise, in order to make smallholder farming viable.

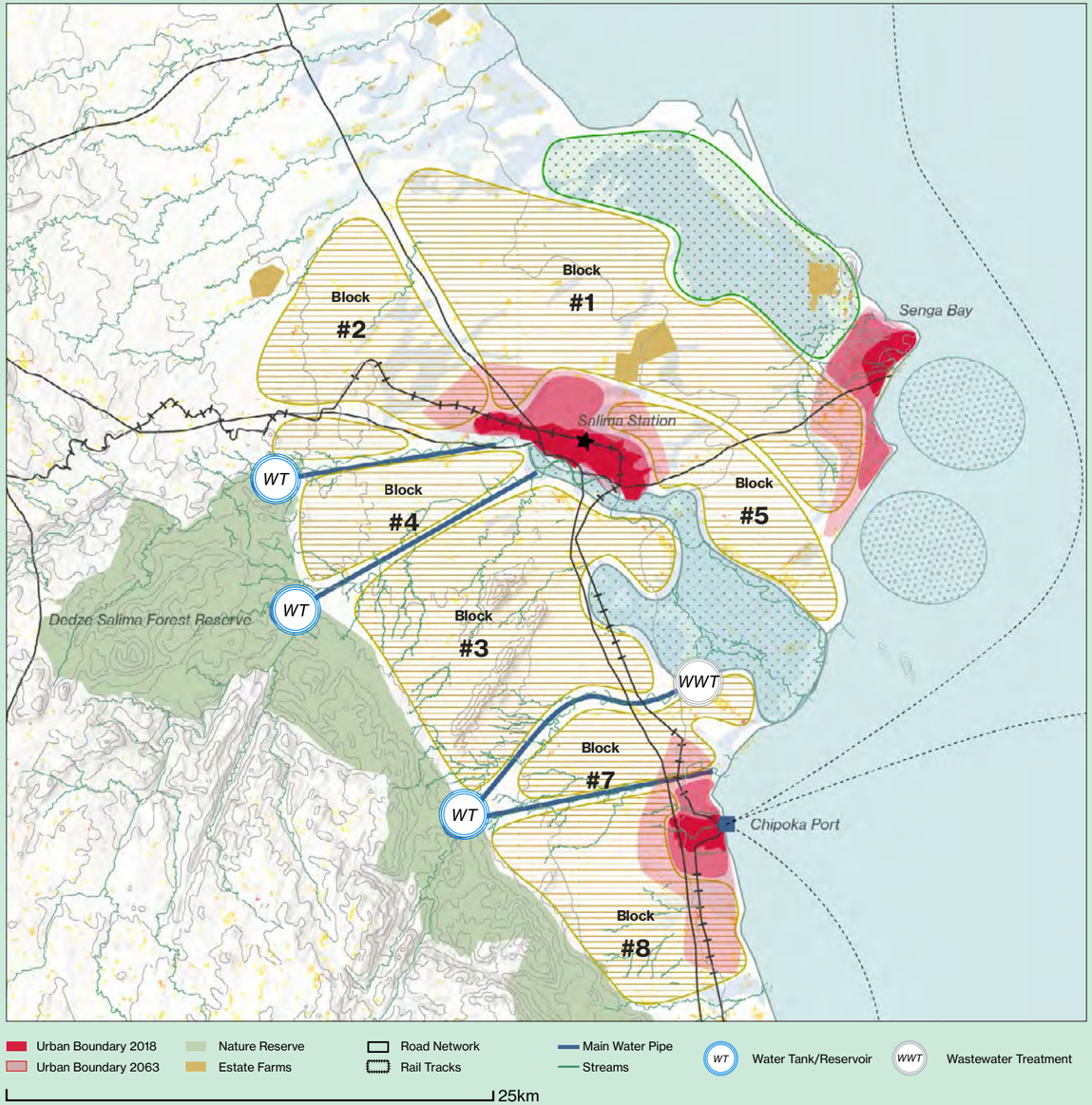
Here, other industries such as fishing and aquaculture as well as tourism would bring additional livelihood for the population.

	Base Scenario 2018	*Status Quo* - Sprawled 2063	Moderate Scenario 2063	Compact Scenario 2063
Total Surface Area (ha)	145,925	145,925	145,925	145,925
Arable Land (ha)	121,910	121,910	121,910	121,910
Non-Arable Land (Forest and Conservation Lands) (ha)	24,015	24,015	24,015	24,015
Crop Land / Small Farms (ha)	118,537	104,241	108,863	104,068
Crop Land / Commercial Farms (ha)	1,058	1,058	2,000	4,000
Settlement Area (urban footprint - ha)	2,315	16,611	11,074	13,842
Urban Density (people per - ha)	32.5	40.0	60.0	80.0
Percent Urban Population	22%	30%	40%	50%
Total Population	347,759	2,214,755	1,661,066	2,214,755
Urban Population	75,305	664,426	664,426	1,107,377
Rural Population	272,454	1,550,328	996,639	1,107,377
# of Households (total)	75,417	480,304	360,228	480,304
Household Members Ave.	4.61	4.61	4.61	4.61
# of Households (rural)	59,086	336,213	216,237	240,152
Land per Family Average (ha)	2.0	0.31	0.50	0.43

Salima/Chipoka
Logistics and industrial lakeside national center

Based on scenarios developed under this study, Salima area will grow from 372,202 inhabitants in 2018, to 920,170 in 2040; and 2,370,424 in 2063. Salima would develop to become the main urban, administrative and political center of the area, with Chipoka its port industrial city and Senga Bay the resort town. The lowlands would be protected and dedicated to wastewater treatment as well as rice or other cultivation while the highlands would be active for commercial agriculture.
The highest points along this stretch would have the water reservoirs that serve the agricultural lands as well as the urban centers of Salima and Chipoka.

Aerial view of Chipoka town center with the port at the center



Salima/Chipoka

Project clustering scheme

Urban Development

I5 Chipoka Transit-oriented Industrial and Commercial Development
TO5 Chipoka Commercial Boardwalk
TO4 MIP-1 Flagship: Malawi Lakeshore Tourism Development Program (Mangochi, Liwonde, Karonga, Nkhata Bay, Salima)

Infrastructure

T5 Admarc Salima Rehabilitation
T8 Chipoka Port Rehabilitation
T16 Nkaya Mchinji Rail Line Rehabilitation
T26 Chipoka Multi-modal Hub
T27 Senga Bay Jetty

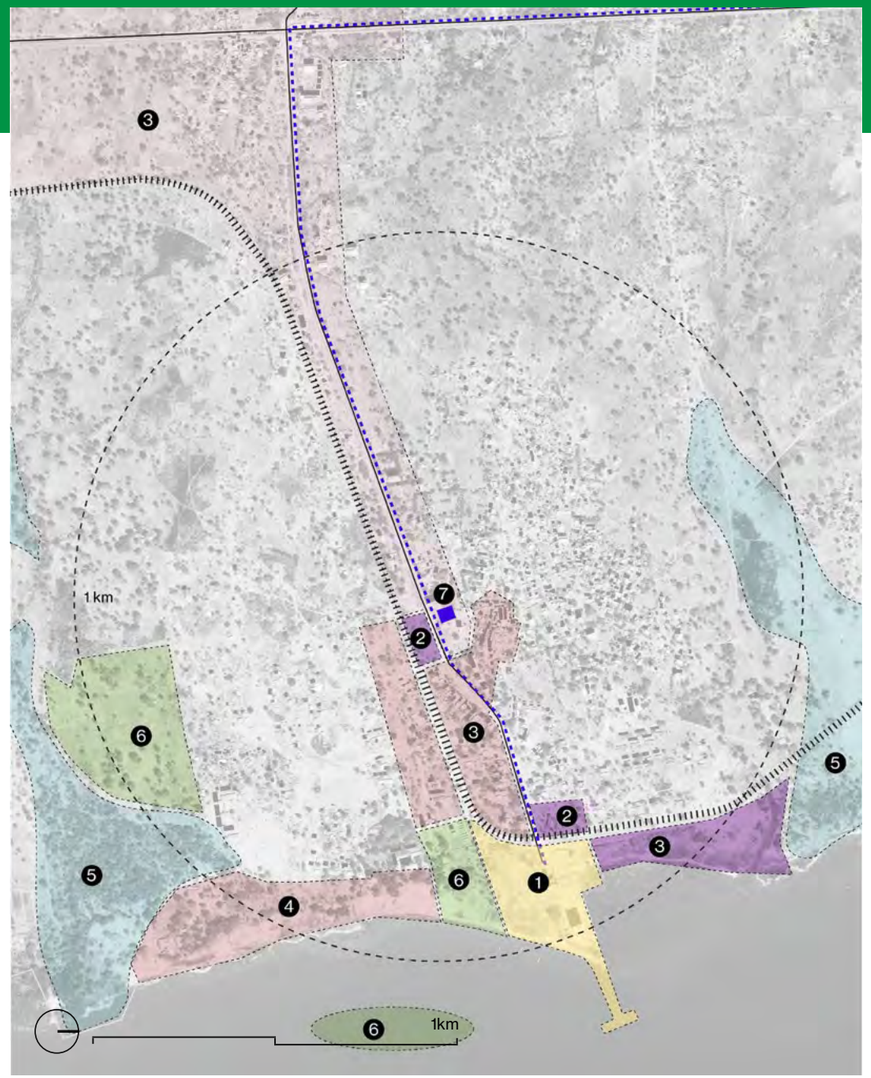
W8 MIP-1 Flagship: Salima-Lilongwe Water Supply Project
W11 Lilongwe Water Project/Diamphwe Multi-purpose dam
W24 Chipoka Town Water and Sanitation Project

Natural Resources

CC2 Salima/Chipoka Flood Zone Management and Green Infrastructure Plan
EP5 Thuma Forest Reserve and Ecosystem Management
EP6 Dedza-Salima Forest Reserve

F7 MIP-1 Flagship: Sustainable Aquaculture and Fisheries Development (Chipoka Fisheries)
A10 Exagris Nakondwa Estate
A16 Lifuwu Rice Scheme
A24 GBA:Nthola-Illora-Ngosi Irrigation Scheme
A31 Commercial and Small Farm Development for Salima/Chipoka

- Urban Footprint 2020
- Urban Footprint Projection
- Nature Reserves
- Agricultural Lands
- Water Resources
- Irrigation



Salima/Chipoka

Project clustering scheme - Project references

1- Chipoka Port Rehabilitation (T8)

Connects to: Mangochi, Monkey Bay, Nkhotakota, Nkhata Bay, Likoma, Chilumba ports in Malawi and Itungi, Mbamba Bay Ports in Tanzania

Fishing area: 3.8 Ha — Proposed FAR: 0.75
Freight area: 5.3 Ha

2- Chipoka Multi-modal Hub (T26)

31 km from Salima, 125 km from Lilongwe

Logistics station area: 9.5 Ha — Proposed FAR: 2
Passenger station area: 6.5 Ha

3- Chipoka Transit-oriented Commercial and Industrial Center Development (I5)

Existing market area: 6.8 Ha
Extension of commercial area: 43 Ha — Proposed FAR: 2
Industrial center area: 7.6 Ha — Proposed FAR: 2

4- Chipoka Commercial Boardwalk (TO5)

Area: 15 Ha — Proposed FAR: -

5- Salima/Chipoka Flood Zone Management and Green Infrastructure Plan (CC2)

Area: N/A

6- Chipoka Fishing and Aquaculture (F7)

Area: 119.5 Ha

7- Chipoka Town Water Supply and Sanitation Project (W24)

To serve 250,000 people (by 2040)

1 - Fishing port, Tema, Ghana

3 - Grandi fish processing plant, Reykjavík, Iceland

4 - Durban coastal boardwalk

6- Tilapia fish farming cages, Greece

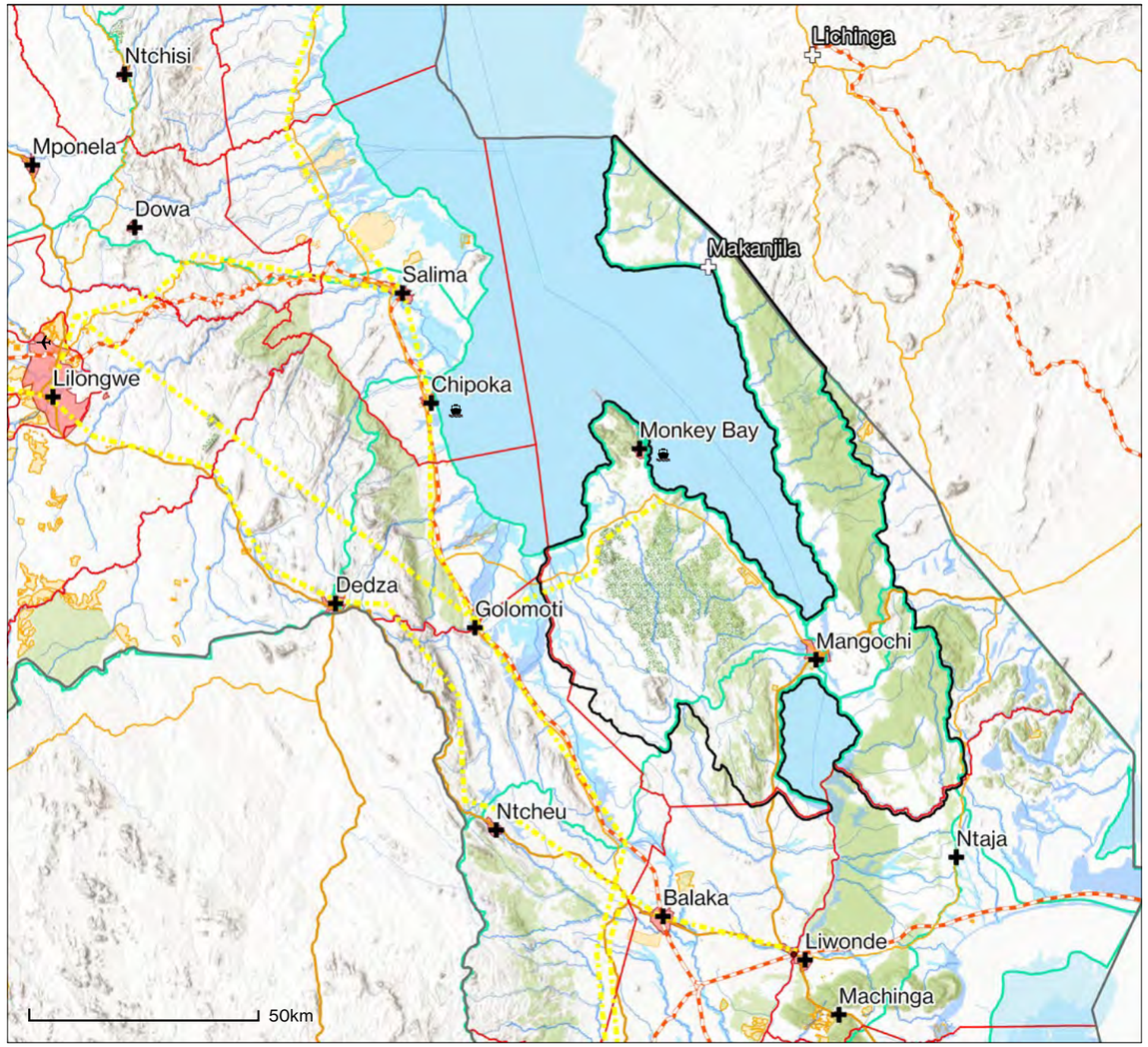
05 Mangochi / Monkey Bay
National Tourism Center

Beachfront Development: A case study from Florida. Photo Credit: Tammon, Pixabay.

Mangochi / Monkey Bay
District and watershed boundaries

The cities of Mangochi boma and Monkey Bay are both located along the Southern shores of Lake Malawi, in Mangochi district. Mangochi is the district administration headquarters and the larger city of the two, while Monkey Bay is located at the northern end of the Nankumba Peninsula, presenting a beautiful natural harbor currently used by the army as its main port facilities.

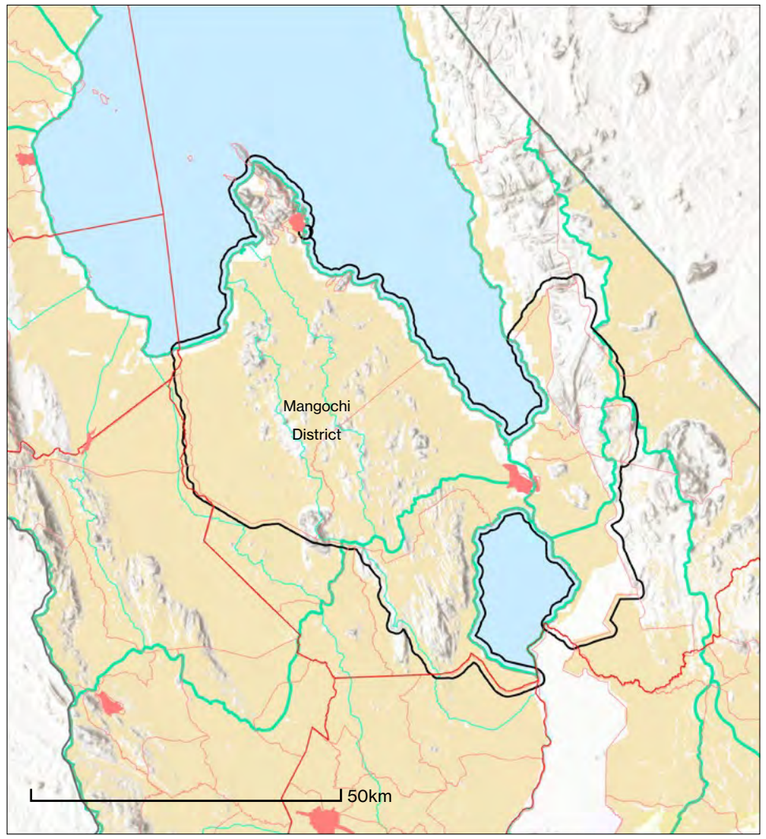
The pristine nature around Monkey Bay, with the development of a robust international conference and eco-tourism sector, could transform the area into the main tourism attraction of the country. Alongside tourism, industrial and economic zones could also be established with the development of ports both in Mangochi and Monkey bay, connecting to the Central and Northern regions of the country, as well as to



Data sources: RCMRD, Open Street Map; USGS / NASA SRTM DEM; Facebook Connectivity Lab; CIESIN, Columbia University; DigitalGlobe; Malawi Spatial Data Platform (MASDAP)

Mangochi/Monkey Bay

Land use scenario planning



DISTRICT	TA JURISDICTIONS
Mangochi	Mangochi Boma
Mangochi	Monkey Bay Town
Mangochi	TA Jalasi
Mangochi	TA Mbwana Nyambi
Mangochi	TA Chimwala
Mangochi	TA Chowe
Mangochi	TA Mponda
Mangochi	TA Nankumba
Mangochi	Lake Malawi National Park

WATERSHED UNITS
10A, 1A, 3A, 3B, 3C

The Table below uses projection scenarios to illustrate local land constraints for the Mangochi area. Year 2018 is taken as a base and three possible scenarios are projected for the year 2063, using the district's growth rate from the last decade.

First, a *status quo* 2063 scenario projects an urban density and urban population growth not too far from the 2018 trend. In this scenario, it becomes clear that as the population grows with an urban density of 50 people/ha, the urban settlement footprint would grow almost 11 times which would in turn have a negative impact on the availability of land per family, dropping from 1.8 ha/family to 0.31 ha/family. Second, the moderate scenario 2063 assumes a higher urban density of 60 people/ha, which would constrain the expansion of the settlement area and in turn increase the land per family average area to 0.49 ha.
Lastly, the compact scenario 2063 applies an even higher urban density of 80 people/ha, as well as a 50% of the population living in urban areas. This allows smallholder families to have access to 0.42/ha per family. Apart from dedicating land for small farms, the conservative and compact scenarios also increase the capacity for commercial farms from 660ha in 2018 to 1,000 ha in 2063 moderate scenario and 2,000 ha in 2063 compact scenario.

In conclusion, in order to maintain smallholder farming viability in rural areas, it is essential to make room for cities to grow as well as apply a high population density. However, even with a compact scenario, there is need to further urbanise, in order to make smallholder farming viable.

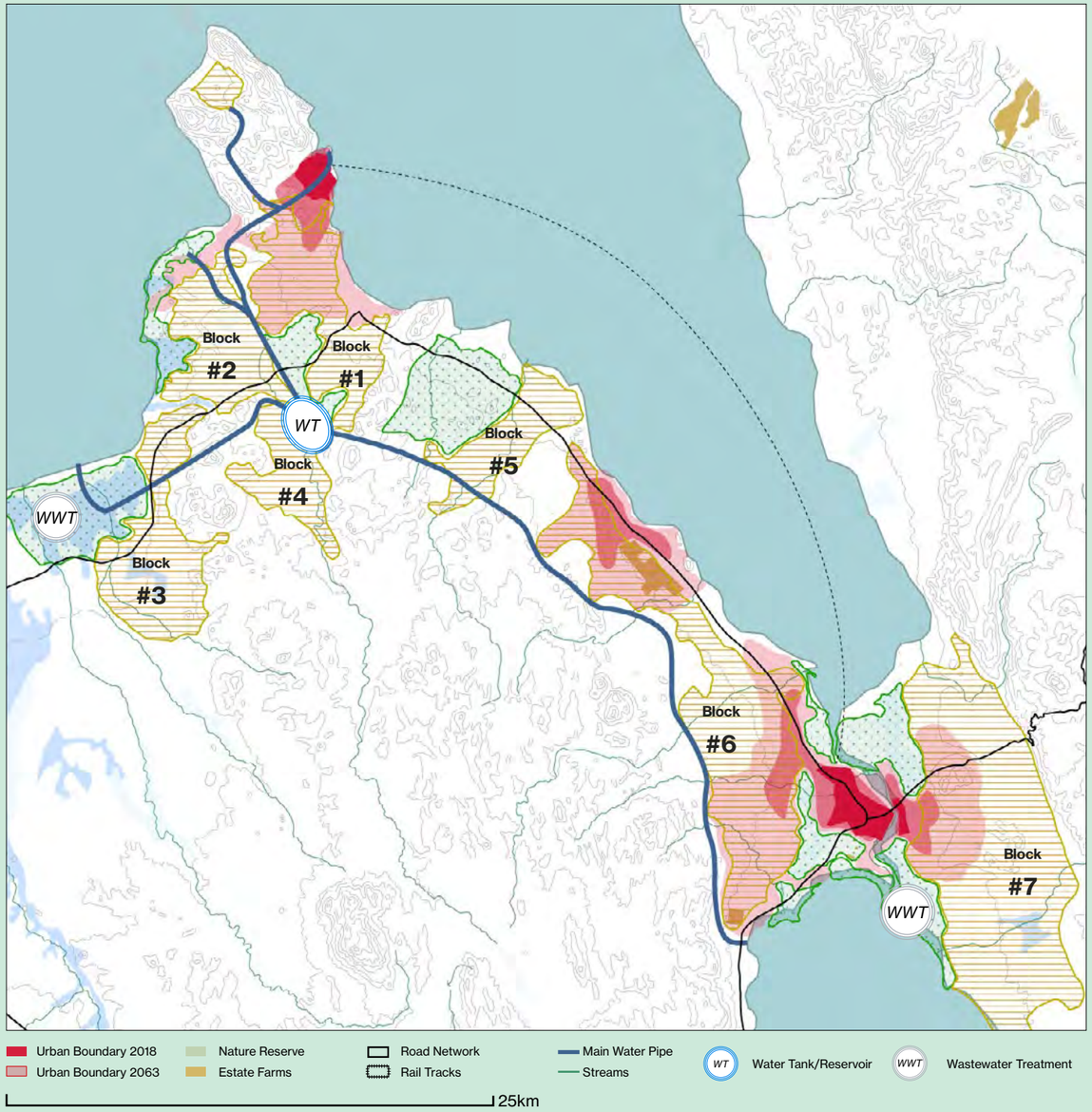
Here, other industries such as fishing and aquaculture as well as tourism would bring additional livelihood for the population.

	Base Scenario 2018	*Status Quo* - Sprawled 2063	Moderate Scenario 2063	Compact Scenario 2063
Total Surface Area (ha)	297,844	297,844	297,844	297,844
Arable Land (ha)	193,406	193,406	193,406	193,406
Non-Arable Land (Forest and Conservation Lands) (ha)	104,439	104,439	104,439	104,439
Crop Land / Small Farms (ha)	190,758	170,805	174,122	168,551
Crop Land / Commercial Farms (ha)	660	660	1,000	2,000
Settlement Area (urban footprint - ha)	1,988	21,941	18,284	22,855
Urban Density (people per - ha)	45.3	50.0	60.0	80.0
Percent Urban Population	16%	30%	40%	50%
Total Population	574,190	3,656,814	2,742,611	3,656,814
Urban Population	90,056	1,097,044	1,097,044.5	1,828,407
Rural Population	484,134	2,559,770	1,645,566.7	1,828,407
# of Households (total)	124,837	795,043	596,282.3	795,043
Household Members Ave.	4.60	4.60	4.60	4.60
# of Households (rural)	105,258	556,530	357,769	397,521
Land per Family Average (ha)	1.8	0.31	0.49	0.42

Mangochi/Monkey Bay
National tourism center

Based on scenarios developed under this study, the Mangochi area is projected to grow from 574,190 inhabitants in 2018, to 3,656,814 in 2063. Mangochi boma would continue and develop as the main urban, administrative and political center of the area, with Monkey Bay as its port industrial city as well as service center for the Nankumba Pennisual which would be developed as the main tourism attraction of the country, for both regional and international tourists. The lowlands of the area would be protected and dedicated to wastewater treatment as well as rice or other cultivation while the highlands would be active for commercial agricultural.
The highest points along this stretch would have the water reservoirs that serve the agricultural lands and the urban centers of Mangochi and Monkey Bay.

Aerial view of Monkey Bay town center with the port at the center



Mangochi/Monkey Bay

Project clustering scheme

☐ **Urban Development**

I1 MIP-1 Flagship: Development of Special Economic Zones
TO1 Cape Maclear Tourism
TO4 MIP-1 Flagship: Malawi Lakeshore Tourism Development Program (Mangochi, Liwonde, Karonga, Nkhata Bay, Salima)
I16 Monkey Bay Transit-oriented Industrial and Commercial Development

◯ **Infrastructure**

T35 Monkey Bay Port Development
T36 Mangochi Port Development

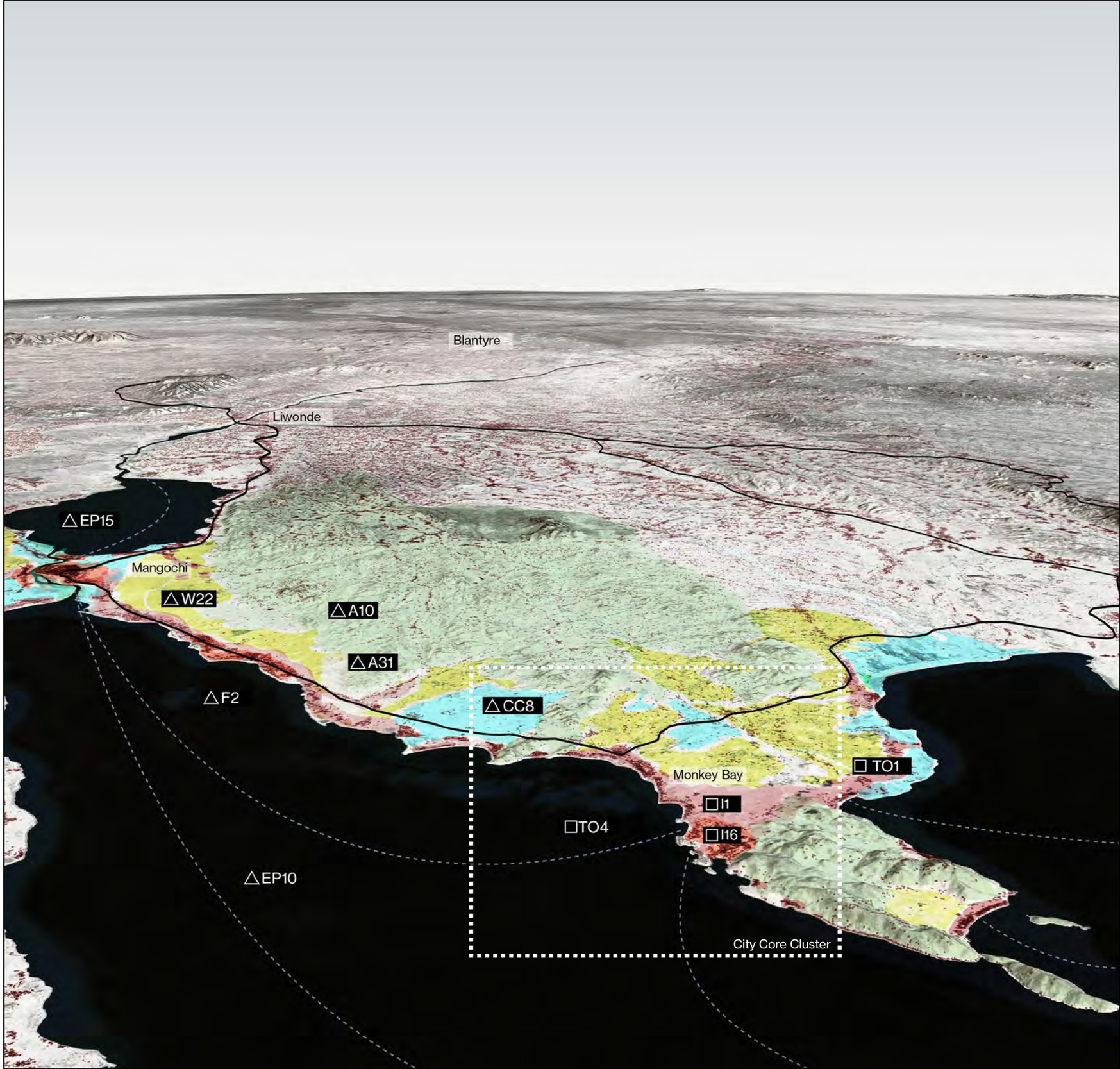
W22 Proposal for Extension of Mangochi Water Supply System to Lakeshore Areas

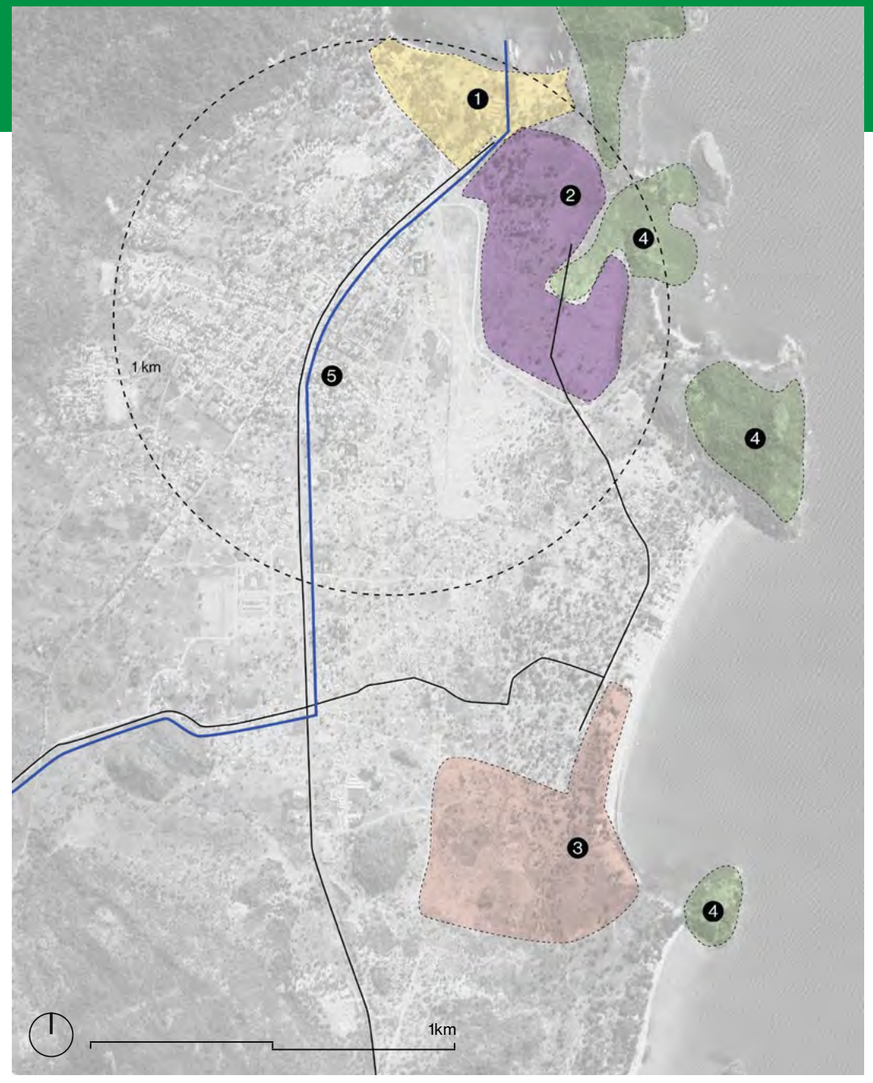
△ **Natural Resources**

CC8 Mangochi Flood Zone Management and Green Infrastructure Plan
EP10 Lake Malawi
EP15 Lake Malombe

F2 Maldeco Fisheries Development
A10 Exagris Nakondwa Estate
A31 Commercial and Small Farm Development for Mangochi/Monkey Bay

- Urban Footprint 2020
- Urban Footprint 2063
- Nature Reserves
- Agricultural Lands
- Water Resources
- Irrigation





Mangochi/Monkey Bay

Project clustering scheme - Project references

1- Monkey Bay Multi-modal Port Development (I1)
Connects to: Mangochi, Nkhotakota, Nkhata Bay, Likoma, Chipoka, Chilumba ports in Malawi and Itungi, Mbamba Bay Ports in Tanzania
Fishing: Area 20 Ha — Proposed FAR: 0.75

2- Monkey Bay Transit-oriented Mixed-Use Commercial Development (I16)
100 km from Liwonde
Logistics Station: Area - 40 Ha — Proposed FAR: 2

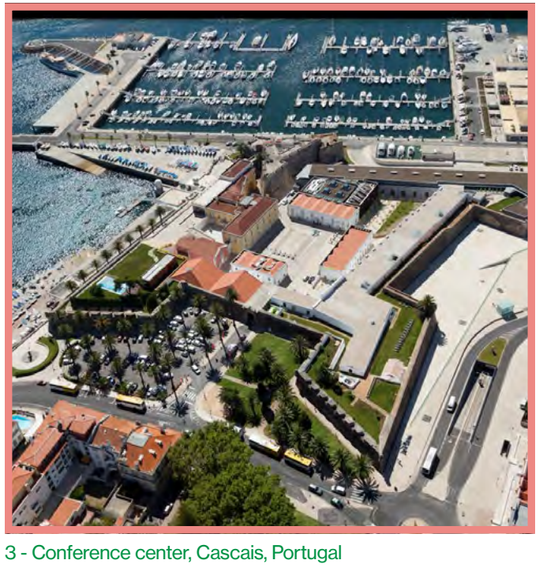
3- Monkey Bay Tourism Development Area - Conference Center
Area - 22 Ha — Proposed FAR: 2

4- Monkey Bay Green Infrastructure Plan (CC8)
Area - 55 Ha — Proposed FAR: -

5- Nankumba Peninsula Water Supply and Sanitation Project

1- Zanzibar shipping terminal


5 - Chief's camp, eco-tourism, Botswana


3 - Conference center, Cascais, Portugal

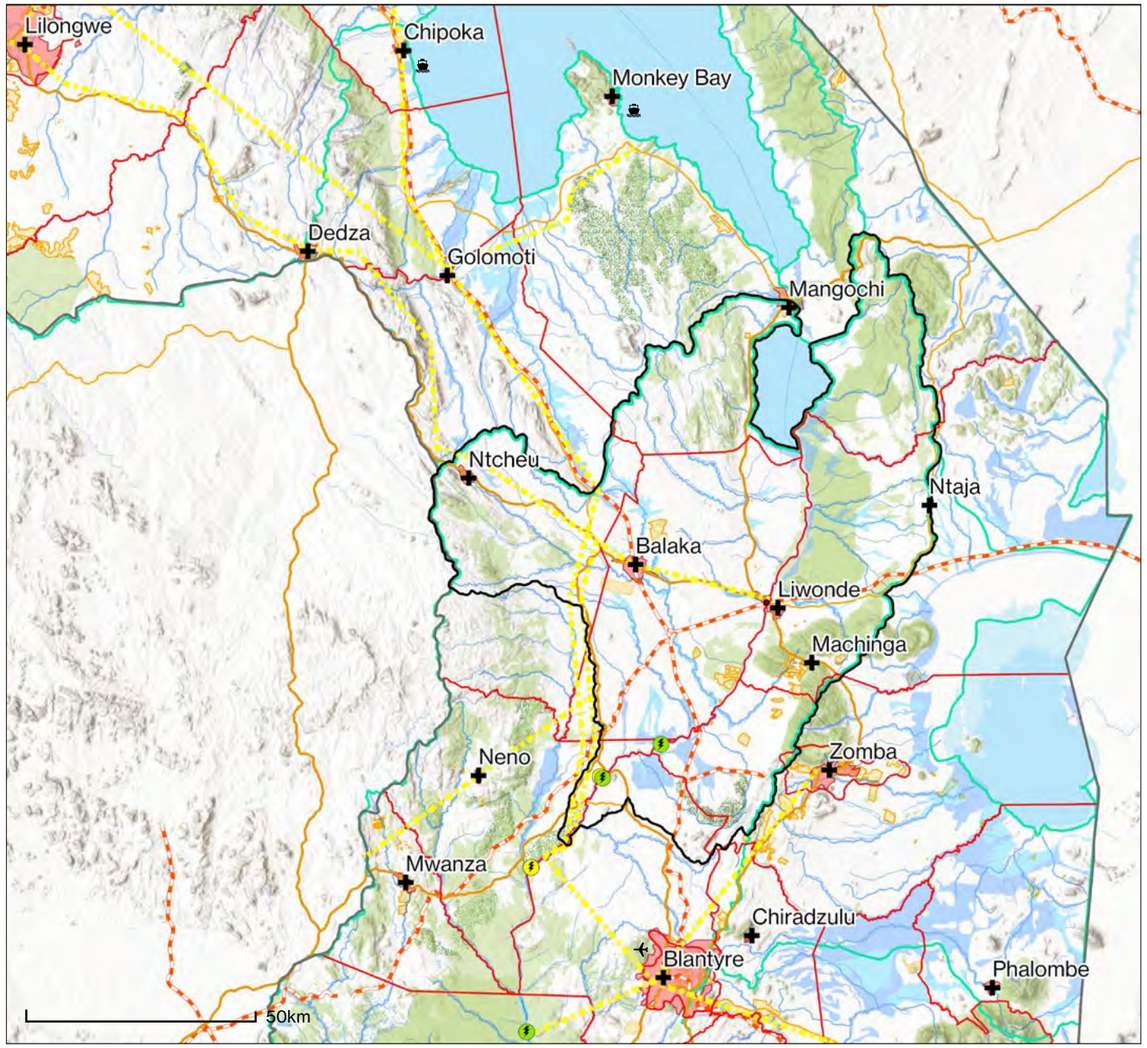

5 - Lake Malawi wildlife reserves

06 Liwonde
Commerical Agri-Center of the Upper Shire Area

A transit-oriented development: A case study from Singapore. Photo credit: Sing Studio, Shutterstock.

Liwonde
District and watershed boundaries

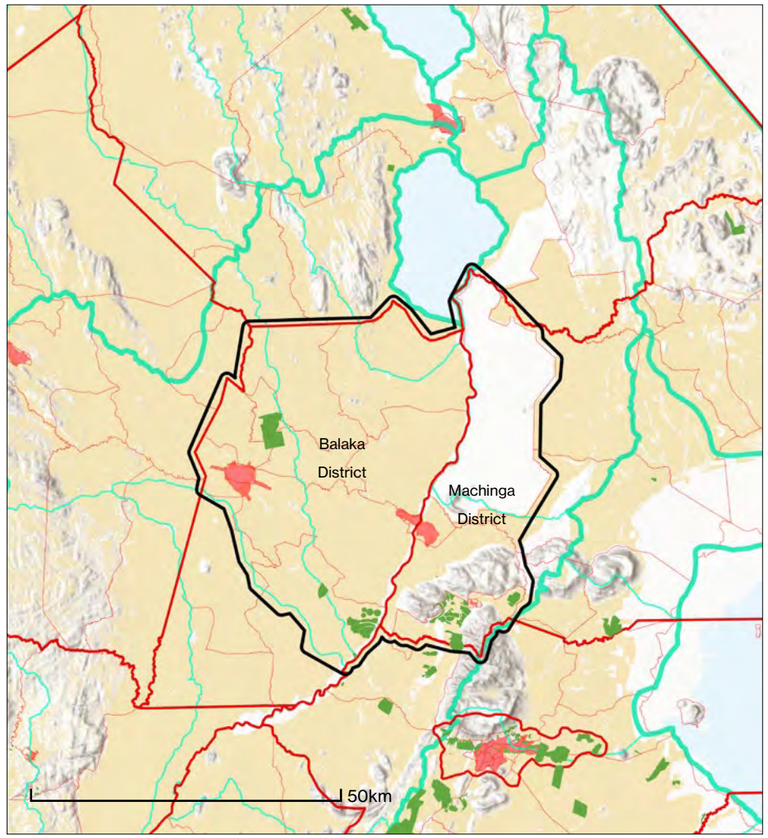
The town of Liwonde is situated at a critical regional crossroads, connecting nationally four districts (Balaka, Machinga, Mangochi and Zomba), and regionally situated on the Nacala corridor, holding the potential of becoming a great transportation and logistics hub, at the junction between two national highways and a rail line to Mozambique. Liwonde is also important as the staging area for tourists exploring the Liwonde National Park, by boat along the Shire River (all year around) or by vehicle from the southern entrance. Establishing an agro-industrial center at Liwonde would not only serve the upper Shire area, but also attract migrants from neighboring districts, who would otherwise look for opportunities



Data sources: RCMRD, Open Street Map; USGS / NASA SRTM DEM; Facebook Connectivity Lab; CIESIN, Columbia University; DigitalGlobe; Malawi Spatial Data Platform (MASDAP)

Liwonde

Land use scenario planning



DISTRICT	TA JURISDICTIONS
Balaka	Balaka Town
Balaka	Liwonde Town
Balaka	STA Kachenga
Balaka	STA Matola
Balaka	STA Toleza
Balaka	TA Amidu
Balaka	TA Chanthunya
Balaka	TA Kalembo
Balaka	TA Msamala
Balaka	TA Nkaya
Balaka	TA Sawali
Machinga	Liwonde National Park
Machinga	Liwonde Town
Machinga	Machinga Boma
Machinga	STA Nsanama
Machinga	TA Chamba
Machinga	TA Mlomba
Machinga	TA Nkula
Machinga	TA Sitola

WATERSHED UNITS
1A, 1R, 1S, 1B

The Table below uses projection scenarios to illustrate local land constraints for Liwonde area. Year 2018 is taken as a base and three possible scenarios are projected for the year 2063, using the district's growth rate from the last decade.

First, a *status quo* 2063 scenario projects an urban density and urban population growth not too far from the 2018 trend. In this scenario, it becomes clear that as the population grows with an urban density of 40 people/ha, the urban settlement footprint would grow almost 6 times which would in turn have a negative impact on the availability of land per family, dropping from 2 ha/family to 0.27 ha/family. Second, the moderate scenario 2063 assumes a higher urban density of 60 people/ha, which would constrain the expansion of the settlement area and in turn increase the land per family average area to 0.44 ha.
Lastly, the compact scenario 2063 applies an even higher urban density of 80 people/ha, as well as a 50% of the population living in urban areas. This allows smallholder families to have access to 0.38/ha per family. Apart from dedicating land for small farms, the moderate and compact scenarios also increase the capacity for commercial farms from 5,142 ha in 2018 to 10,284 ha in 2063 compact scenario.

In conclusion, in order to maintain smallholder farming viability in rural areas, it is essential to make room for cities to grow as well as apply a high population density. However, even with a compact scenario, there is need to further urbanise, in order to make smallholder farming viable.

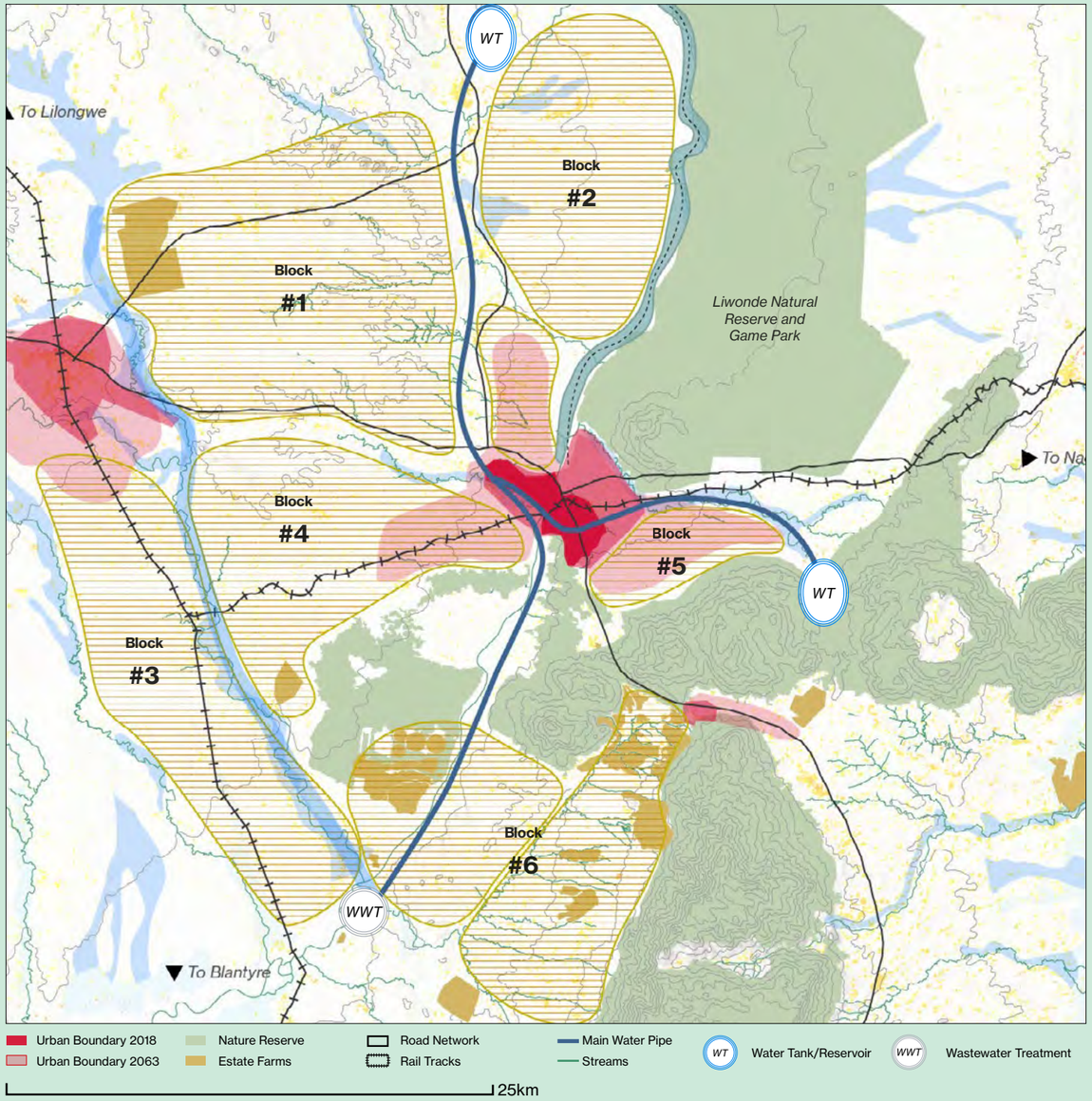
Here, other industries such as fishing and aquaculture, as well as tourism, would bring additional livelihood for the population.

	Base Scenario 2018	*Status Quo* - Sprawled 2063	Moderate Scenario 2063	Compact Scenario 2063
Total Surface Area (ha)	238,300	238,300	238,300	238,300
Arable Land (ha)	172,601	172,601	172,601	172,601
Non-Arable Land (Forest and Conservation Lands) (ha)	65,699	65,699	65,699	65,699
Crop Land / Small Farms (ha)	163,686	142,954	1451,122	141,896
Crop Land / Commercial Farms (ha)	5,142	5,142	5,142	10,284
Settlement Area (urban footprint - ha)	3,773	24,505	16,337	20,421
Urban Density (people per - ha)	28.2	40.0	60.0	80.0
Percent Urban Population	23%	30%	40%	50%
Total Population	468,842	3,267,359	2,450,519	3,267,359
Urban Population	106,332	980,207	980,207	1,633,679
Rural Population	362,510	2,287,151	1,470,331	1,633,679
# of Households (total)	108,469	755,920	566,940	755,920
Household Members Ave.	4.32	4.32	4.32	4.32
# of Households (rural)	83,869	529,144.26	340,167	377,960
Land per Family Average (ha)	2.0	0.27	0.44	0.38

Liwonde
Commercial agri-center of the Upper Shire Area

Based on scenarios developed under this study, Liwonde area will grow from 409,233 inhabitants in 2018, to 1,055,313 in 2040; and 2,841,142 in 2063. Liwonde urban would be controlled within its existing urban jurisdiction. If a port is possible at Liwonde, a multi-modal hub connecting port to rail would be established at this important intersection along the Nacala corridor. The Liwonde natural reserve would be extended to include an area south of Liwonde urban, while the rest of the flat lands would be dedicated to agricultural production. Two water reservoirs would serve Liwonde area from its north and east, and a wastewater treatment facility would be developed on the south.

Aerial view of Liwonde town with the Shire river crossing at the center of the city



Liwonde

Project clustering scheme

Urban Development

I10 Liwonde Transit-oriented Industrial and Commercial Development
I4 Malawi Fertilizer Company - Superfert

Infrastructure

T1 Tete-Nacala Rail Corridor
T4 Liwonde Multi-modal Port
T16 MIP-1 Flagship: Nkaya to Mchinji Rail Line Rehabilitation

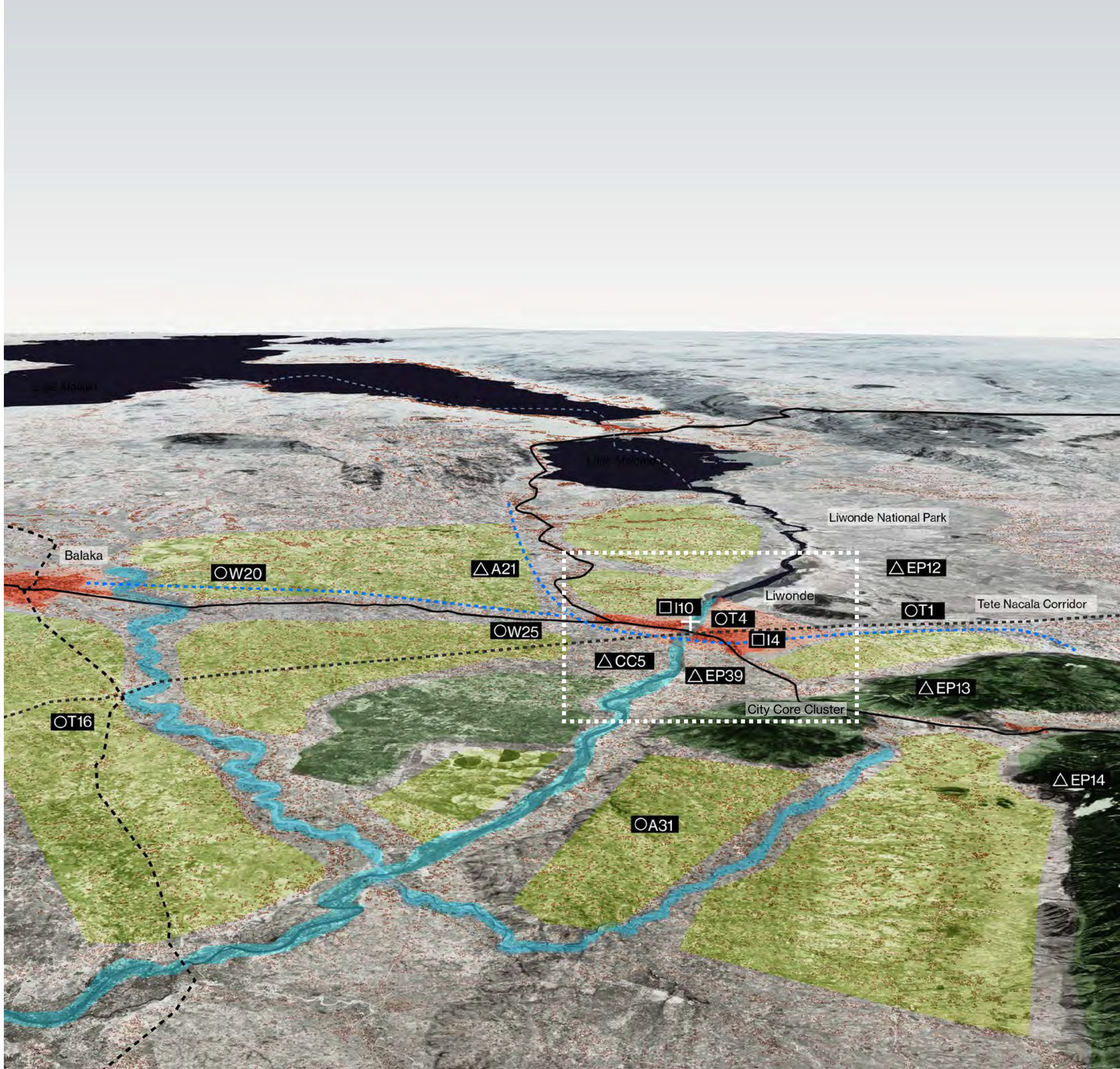
W20 Upgrading, Rehabilitation and Extension of Liwonde Water Supply Project (to include Balaka)
W25 Liwonde Town Water Supply and Sanitation

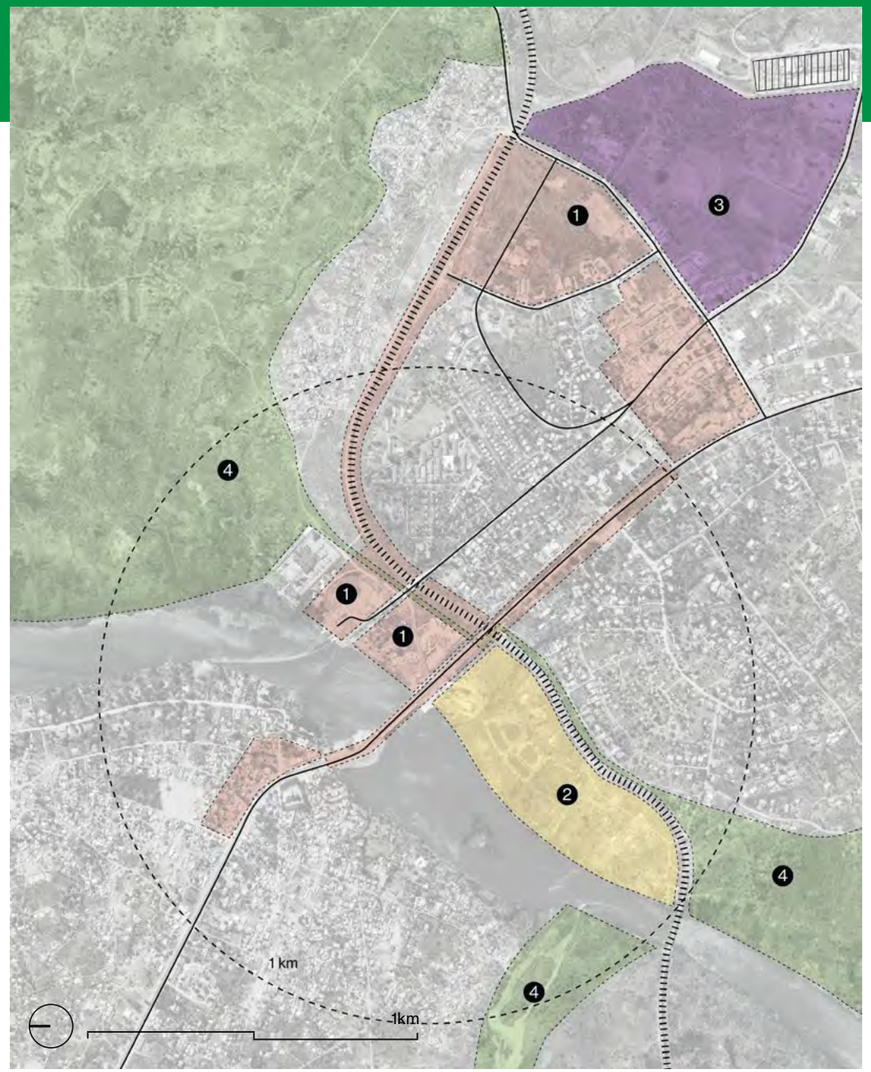
Natural Resources

EP12 Liwonde National Park
EP13 Liwonde Forest Reserve - Mongolwe Hills, Liwonde Forest Reserve, Chikala Hills
EP14 Zomba Malosa Forest Reserve
CC5 Liwonde Flood Zone Management and Green Infrastructure Plan

A21 Toleza Government Food Farm
A31 Commercial and Small Farm Development for Liwonde

- Urban Footprint 2020
- Urban Footprint Projection
- Nature Reserves
- Agricultural Lands
- Water Resources
- Irrigation





Liwonde

Project clustering scheme - Project references

1-Liwonde Multi-modal Port (T4)
Connects to: Mangochi, Monkey Bay, Nkhotakota, Nkhata Bay, Likoma, Chilumba ports in Malawi and Itungi, Mbamba Bay Ports in Tanzania
Logistics Station Area: 37 Ha Proposed FAR: 2
Passenger Station Area: 3 Ha

2-Liwonde Transit-oriented Commercial and Industrial Center Development (I10)
80 km from Blantyre, 200 km from Lilongwe
Existing Market Area: 18 Ha
Extension of Com. Center Area: 23 Ha Proposed FAR: 0.75

3- Liwonde Transit-oriented Industrial Development (I10)
Industrial Center Area: 35 Ha Proposed FAR: 0.75

4- Liwonde Flood Zone Management and Green Infrastructure Plan (CC5)
Area: -


1- Multi-modal station, Casablanca, Morocco


2- Aqaba SEZ, Jordan


3- Iloilo province, Philippines

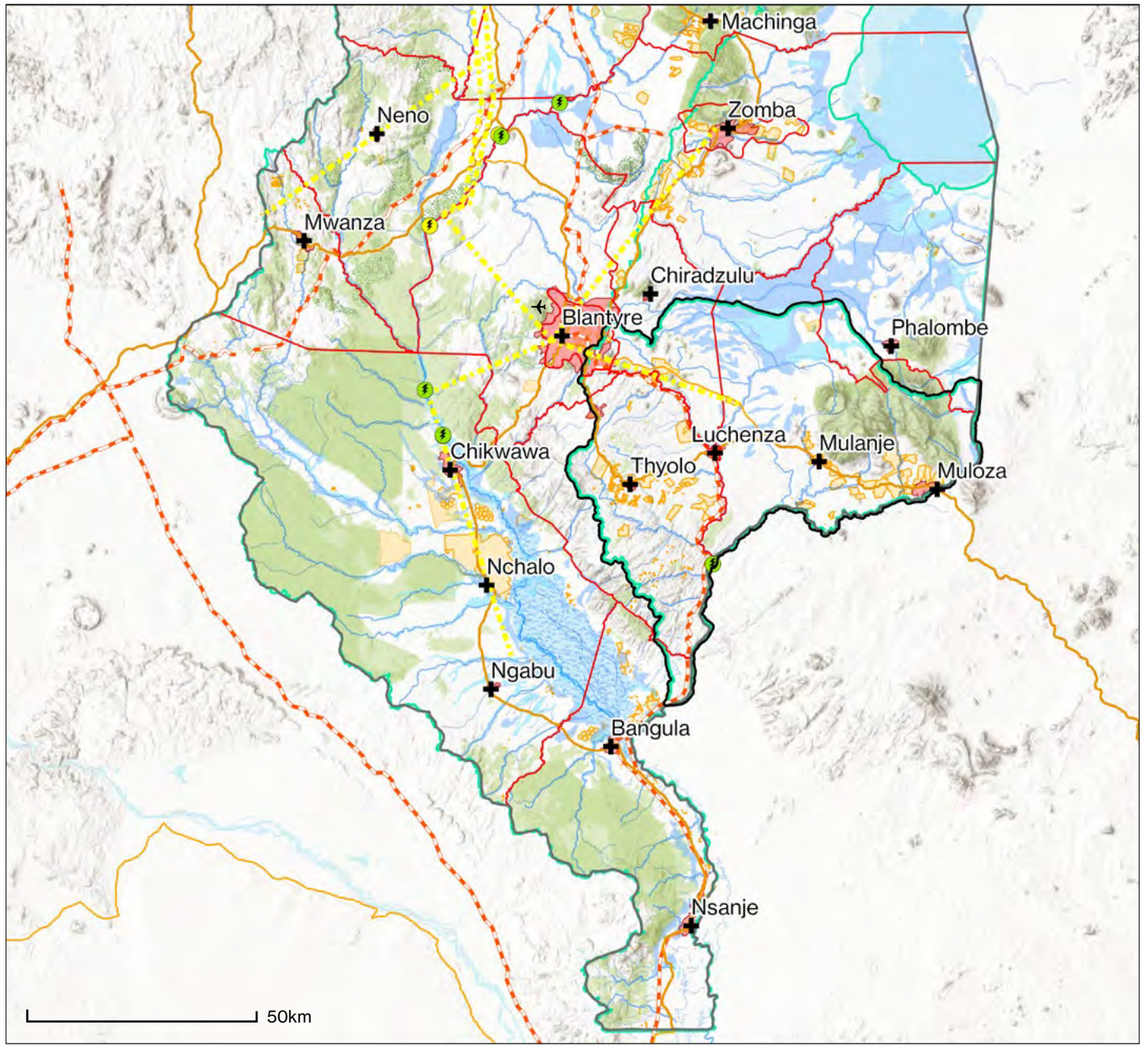

4- Green infrastructure research center, Shanghai, China

07 Luchenza
Agri-Industrial Hub for the Greater Blantyre Area

An industrial and logistics zone:A case study from Bucharest. Photo credit: CTPark Bucharest.

Luchenza
District and watershed boundaries

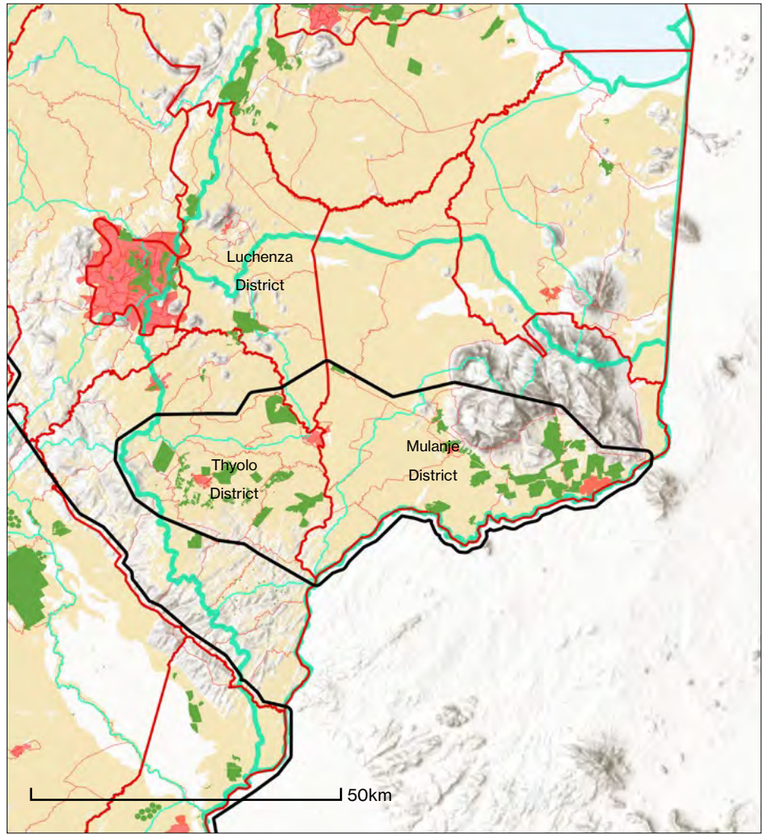
Luchenza is a town in Thyolo district, Southern region of Malawi. It is strategically located along the rail line, in great proximity to Blantyre. Locally, Luchenza is situated along an urbanised ridge-line threading the towns of Thyolo, Mulanje and Muloza. While the surrounding plateau is highly suitable for agriculture development, Luchenza is also identified as an opportunity to establish a critical industrial node to service Thyolo and Mulanje and reinforce existing road links to the border crossing in Muloza and further to the ports in Mozambique. Luchenza is also connected via rail to Bangula and Nsanje, the most southern urban areas in the country. Developing an agro-industrial center at Luchenza would assist in servicing the southern region and alleviating population growth pressure from Blantyre.



Data sources: RCMRD, Open Street Map; USGS / NASA SRTM DEM; Facebook Connectivity Lab; CIESIN, Columbia University; DigitalGlobe; Malawi Spatial Data Platform (MASDAP)

Luchenza

Land use scenario planning



DISTRICT	TA JURISDICTIONS
Chiradzulu	TA Nkalo
Mulanje	Mulanje Boma
Mulanje	Mulanje Mountain Reserve
Mulanje	STA Sunganinzeru
Mulanje	STA Tombondiya
Mulanje	TA Chikumbu
Mulanje	TA Laston Njema
Mulanje	TA Mabuka
Mulanje	TA Nkanda
Mulanje	TA Nthiramanja
Thyolo	Luchenza Town
Thyolo	STA Tombondiya
Thyolo	TA Chimaliro
Thyolo	TA Kapichi
Thyolo	TA Nanseta
Thyolo	TA Nchilamwela
Thyolo	TA Ngolongoliwa
Thyolo	Thyolo Boma

WATERSHED UNITS
14A, 14B, 14C

The table below uses projection scenarios to illustrate local land constraints for Luchenza area. Year 2018 is taken as a base and three possible scenarios are projected for the year 2063, using the district's growth rate from the last decade.

First, a *status quo* 2063 scenario projects an urban density and urban population growth not too far from the 2018 trend. In this scenario, it becomes clear that as the population grows with an urban density of 40 people/ha, the urban settlement footprint would grow almost 9 times which would in turn have a negative impact on the availability of land per family, dropping from 0.6 ha/family to 0.16 ha/family. Second, the compact scenario 2063 assumes a higher urban density of 60 people/ha, which would constrain the expansion of the settlement area and in turn increase the land per family average area to 0.27 ha.
Lastly, the compact scenario 2063 applies an even higher urban density of 80 people/ha, as well as a 50% of the population living in urban areas. This allows smallholder families to have access to 0.19/ha per family. Apart from dedicating land for small farms, the conservative and compact scenarios also increase the capacity for commercial farms from 16,345 ha in 2018 to 32,690 ha in 2063 compact scenario.

In conclusion, in order to maintain smallholder farming viability in rural areas, it is essential to make room for cities to grow as well as apply a high population density. However, even with a compact scenario, there is need to further urbanise, in order to make smallholder farming viable.

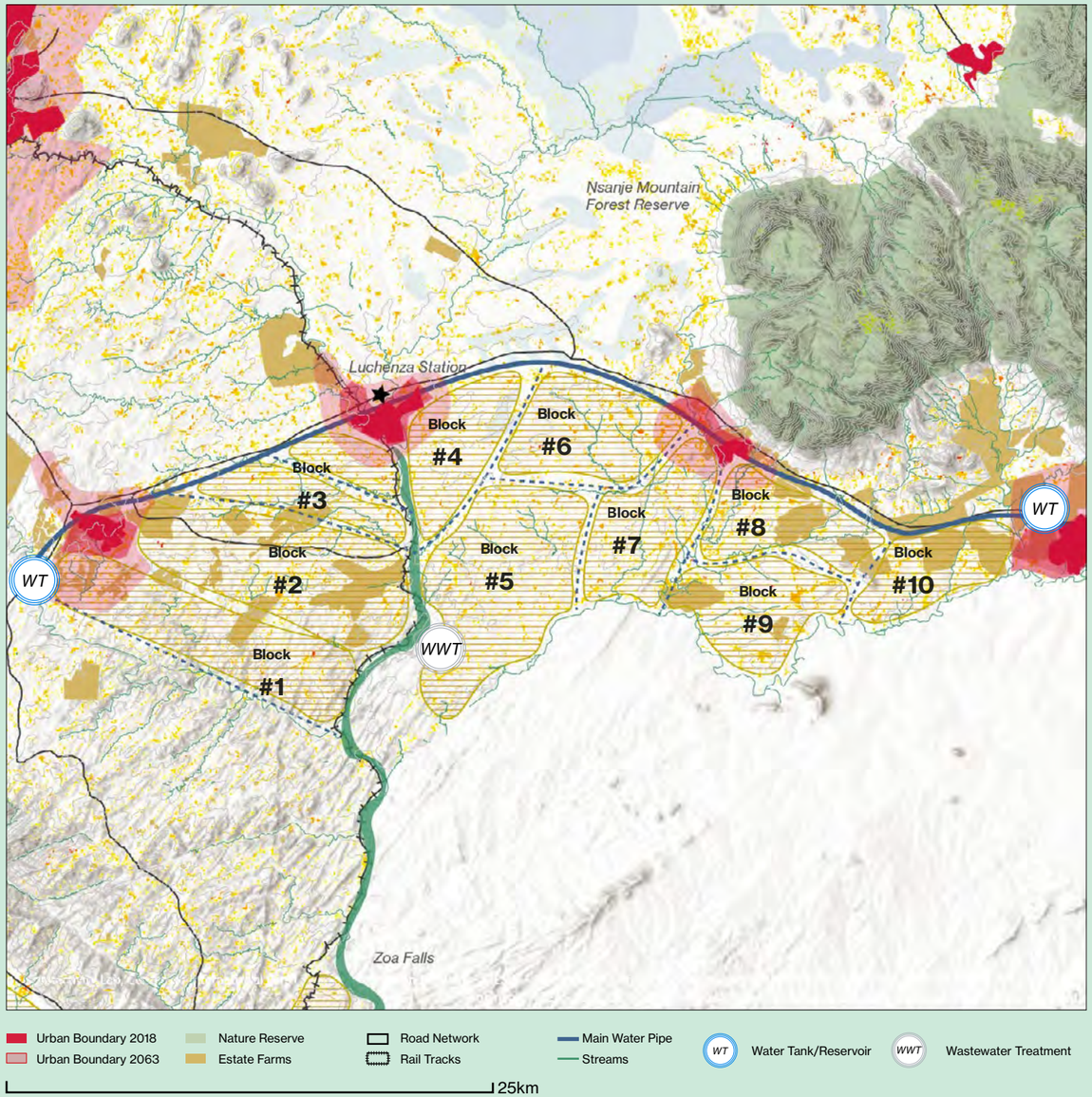
Here, other industries such as fishing and aquaculture, as well as tourism, would bring additional livelihood for the population.

	Base Scenario 2018	*Status Quo* - Sprawled 2063	Moderate Scenario 2063	Compact Scenario 2063
Total Surface Area (ha)	149,400	149,400	149,400	149,400
Arable Land (ha)	116,232	116,232	116,232	116,232
Non-Arable Land (Forest and Conservation Lands) (ha)	33,168	33,168	33,168	33,168
Crop Land / Small Farms (ha)	97,641	78,025	85,312	65,323
Crop Land / Commercial Farms (ha)	16,345	16,345	16,345	32,690
Settlement Area (urban footprint - ha)	2,246	21,862	14,5575	18,219
Urban Density (people per - ha)	32.8	40.0	60.0	80.0
Percent Urban Population	10%	30%	40%	50%
Total Population	737,893	2,914,964.9	2,186,223	2,914,964
Urban Population	73,619	874,489.5	874,489	1,457,482
Rural Population	664,274	2,040,475.4	1,311,734	1,457,482
# of Households (total)	177,456	701,020.4	525,765	701,020
Household Members Ave.	4.16	4.16	4.16	4.16
# of Households (rural)	159,751	490,714	315,459	350,510
Land per Family Average (ha)	0.6	0.16	0.27	0.19

Luchenza
Agri-industrial hub for Greater Blantyre

Based on scenarios developed under this study, Luchenza area will grow from 890,028 inhabitants in 2018, to 1,742,217 in 2040; and 3,515,957 in 2063. A main water pipeline is proposed to run along the main road connecting Luchenza to Thyolo and Muloza, serving both their urban centers and the agricultural lands south of it. A wastewater treatment area is proposed at the southern edge along the border. As Luchenza is the rail point between Bangula and Blantyre, it would serve the surrounding centers with services.

Aerial view of Luchenza town at the intersection of the railway and the river



Luchenza

Project clustering scheme

□ **Urban Development**

I15 Luchenza Transit-oriented Industrial and Commercial Development
TO2 Integrated Cable Car Resort on Mount Mulanje

○ **Infrastructure**

T17 MIP-1 Flagship: Limbe-Marka Rail Line Rehabilitation
T28 Luchenza Multi-modal Station
T29 M2 road from Blantyre to Muloza

W7 Construction of New Water Source from Likhubula River in Mulanje to Blantyre
W26 Luchenza, Thyolo, Muloza and Mulanje Water Supply and Sanitation Project
E13 Zoa Falls Hydro-electric Dam

△ **Natural Resources**

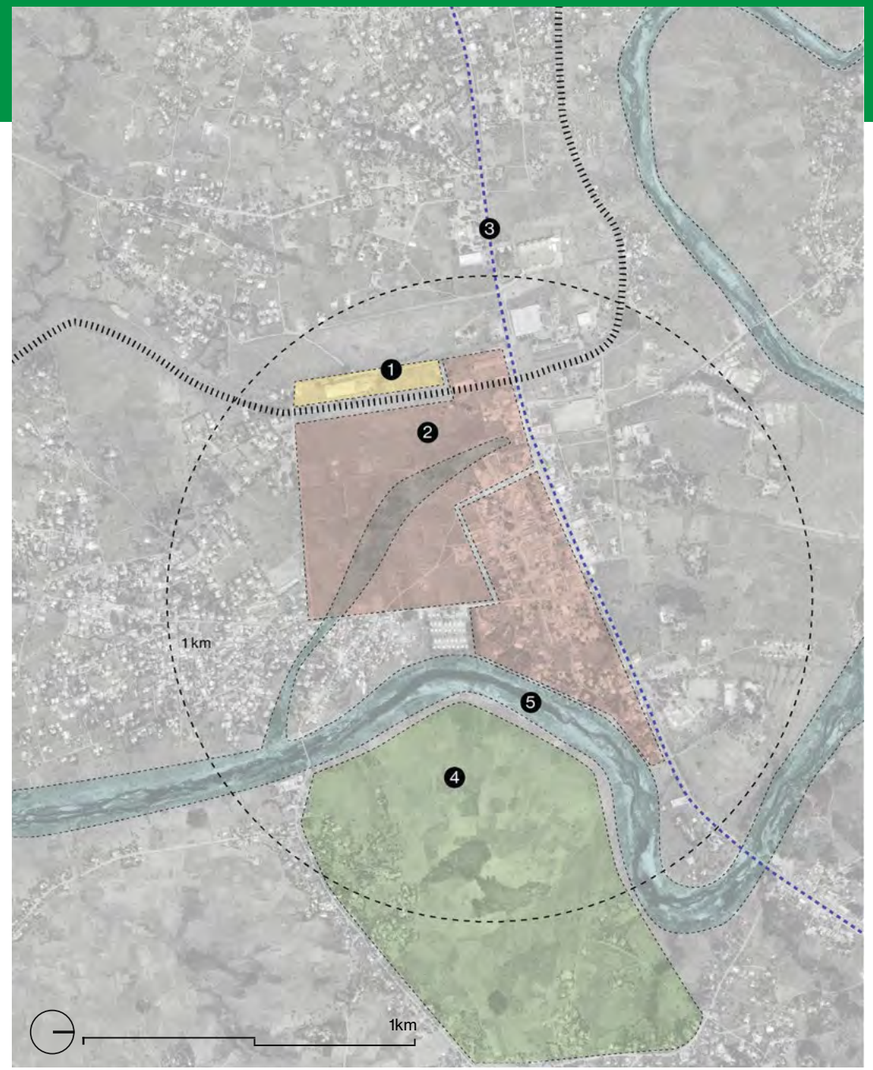
EP17 Mulanje Mountain Forest Reserve
EP32 Tuchila River Buffer Zone
EP33 Makade River Buffer Zone

A22 Sanjika Estate
A31 Commercial and Small Farm Development for Luchenza

- Urban Footprint 2020
- Urban Footprint Projection
- Nature Reserves
- Agricultural Lands
- Water Resources
- Irrigation

Luchenza

Project clustering scheme - Project references



1- Luchenza Multi-modal Station (T28)
Connects to: Blantyre, Bangula stations.
Station Area: 3.5 Ha Proposed FAR: 2

2- Luchenza Transit-oriented Commercial and Industrial Center Development (I15)
45 km from Blantyre
Existing Market Area: 12 Ha
Extension of Com. Center Area: 40 Ha Proposed FAR: 0.75

3- Luchenza, Thyolo, Muloza, and Mulanje Water Supply and Sanitation Project (W26)
Project Area: -

4- Commercial and Small Farm Development for Luchenza (A31)
Area: 70 Ha

5- Tuchila River Buffer Zone (EP32)
Area: -

1- Train station, Mbeya, Tanzania

2- Morowali industrial district, Central Sulawesi, Indonesia

4- Agricultural co-op, Kfar Baruch, Israel

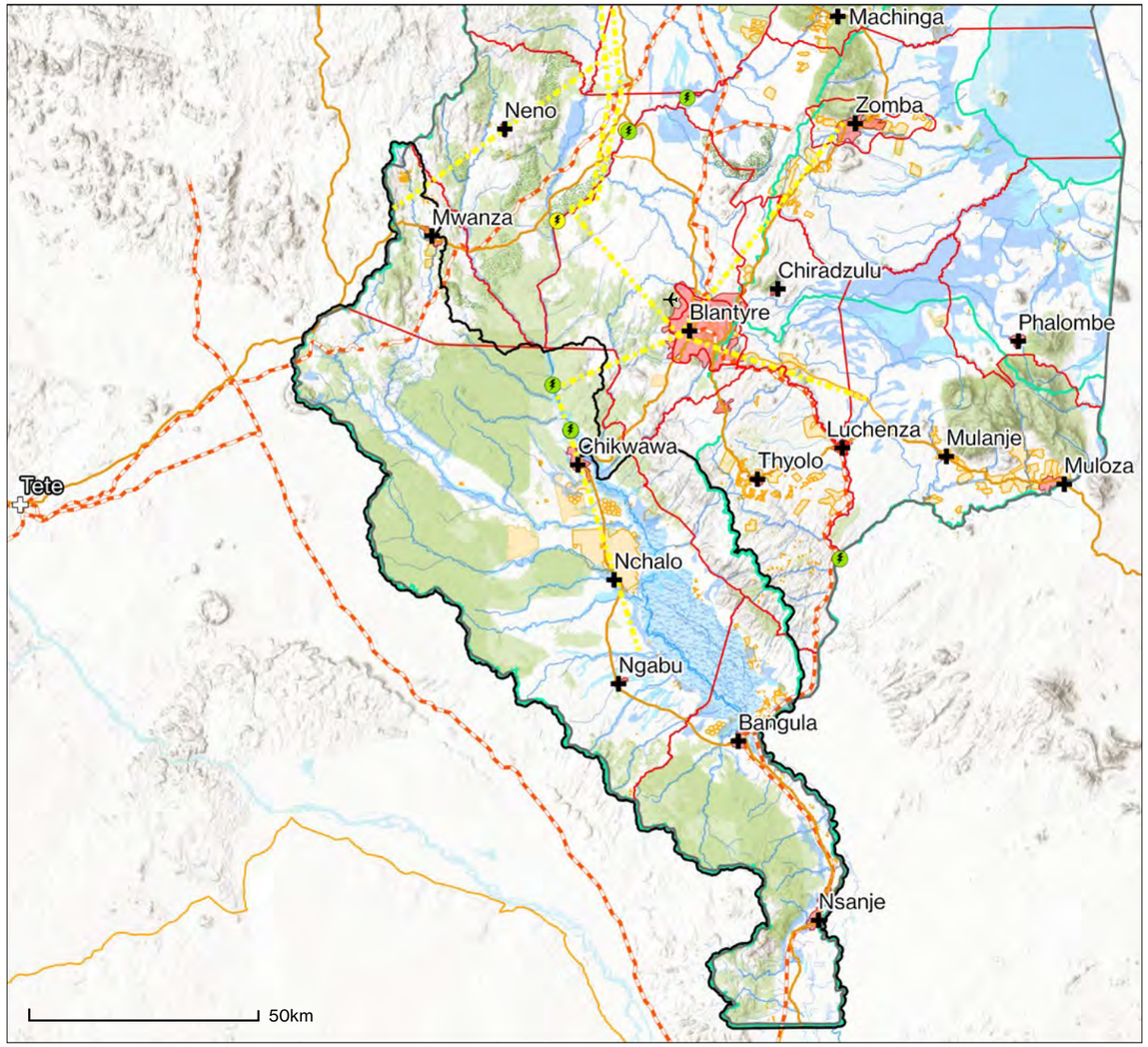
5- Urban wetland, Harbin, China

08 Bangula
Southern Gateway City

A wetland park development: A case study from Harbin, China. Photo Credit: Kongjian Yu, Turenscape

Bangula
District and watershed boundaries

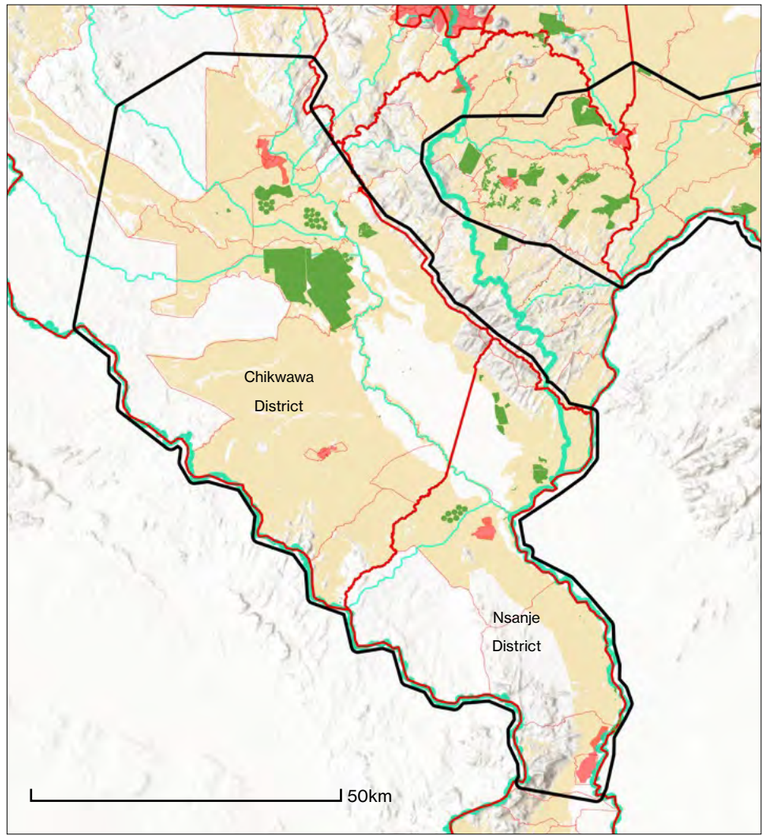
Bangula is located along the lower Shire river and near the confluence of Ruo river and Shire, positioned at a strategic intersection between rail and river port. In addition to the rail line running north to south through Luchenza, the main highway between Blantyre and Nsanje runs through Bangula. The town of Bangula is planned as the southernmost point of the Lower Shire Valley Transformation Program (ongoing development), and hence could well serve as a critical anchor and economic engine for development of the valley at large, well connected and servicing the neighboring towns of Ngabu, Nchalo and Chikwawa. Bangula also sits at the southern edges of the Elephant Marsh, a critical ecological area for large land mammals, fish habitat and migratory birds, and by that could become a point of attraction for tourists from the region and beyond.



Data sources: RCMRD, Open Street Map; USGS / NASA SRTM DEM; Facebook Connectivity Lab; CIESIN, Columbia University; DigitalGlobe; Malawi Spatial Data Platform (MASDAP)

Bangula

Land use scenario planning



DISTRICT	TA JURISDICTIONS
Chikwawa	Chikwawa Boma
Chikwawa	STA Masache
Chikwawa	STA Ndakwela
Chikwawa	TA Kasisi
Chikwawa	TA Katunga
Chikwawa	TA Lundu
Chikwawa	TA Makhwira
Chikwawa	TA Maseya
Chikwawa	TA Mlilima
Chikwawa	TA Ngabu
Chikwawa	TA Ngowe
Nsanje	Mwabvi Game Reserve
Nsanje	Nsanje Boma
Nsanje	STA Masache
Nsanje	TA Mbenje
Nsanje	TA Mlolo
Nsanje	TA Ngabu
Nsanje	TA Tengani

WATERSHED UNITS
14D, 1B, 1E, 1F, 1G, 1H, 1K, 1L

The Table below uses projection scenarios to illustrate local land constraints for Bangula area. Year 2018 is taken as a base and three possible scenarios are projected for the year 2063, using the district's growth rate from the last decade.

First, a *status quo* 2063 scenario projects an urban density and urban population growth not too far from the 2018 trend. In this scenario, it becomes clear that as the population grows with an urban density of 30 people/ha, the urban settlement footprint would grow almost 5 times which would in turn have a negative impact on the availability of land per family, dropping from 1.8 ha/family to 0.58 ha/family. Second, the moderate scenario 2063 assumes a higher urban density of 60 people/ha, which would constrain the expansion of the settlement area and in turn increase the land per family average area to 0.93 ha.
Lastly, the compact scenario 2063 applies an even higher urban density of 80 people/ha, as well as a 50% of the population living in urban areas. This allows smallholder families to have access to 0.79/ha per family. Apart from dedicating land for small farms, the conservative and compact scenarios also increase the capacity for commercial farms from 16,113 ha in 2018 to 32,226 ha in 2063 compact scenario.

In conclusion, in order to maintain smallholder farming viability in rural areas, it is essential to make room for cities to grow as well as apply a high population density. However, even with a compact scenario, there is need to further urbanise, in order to make smallholder farming viable.

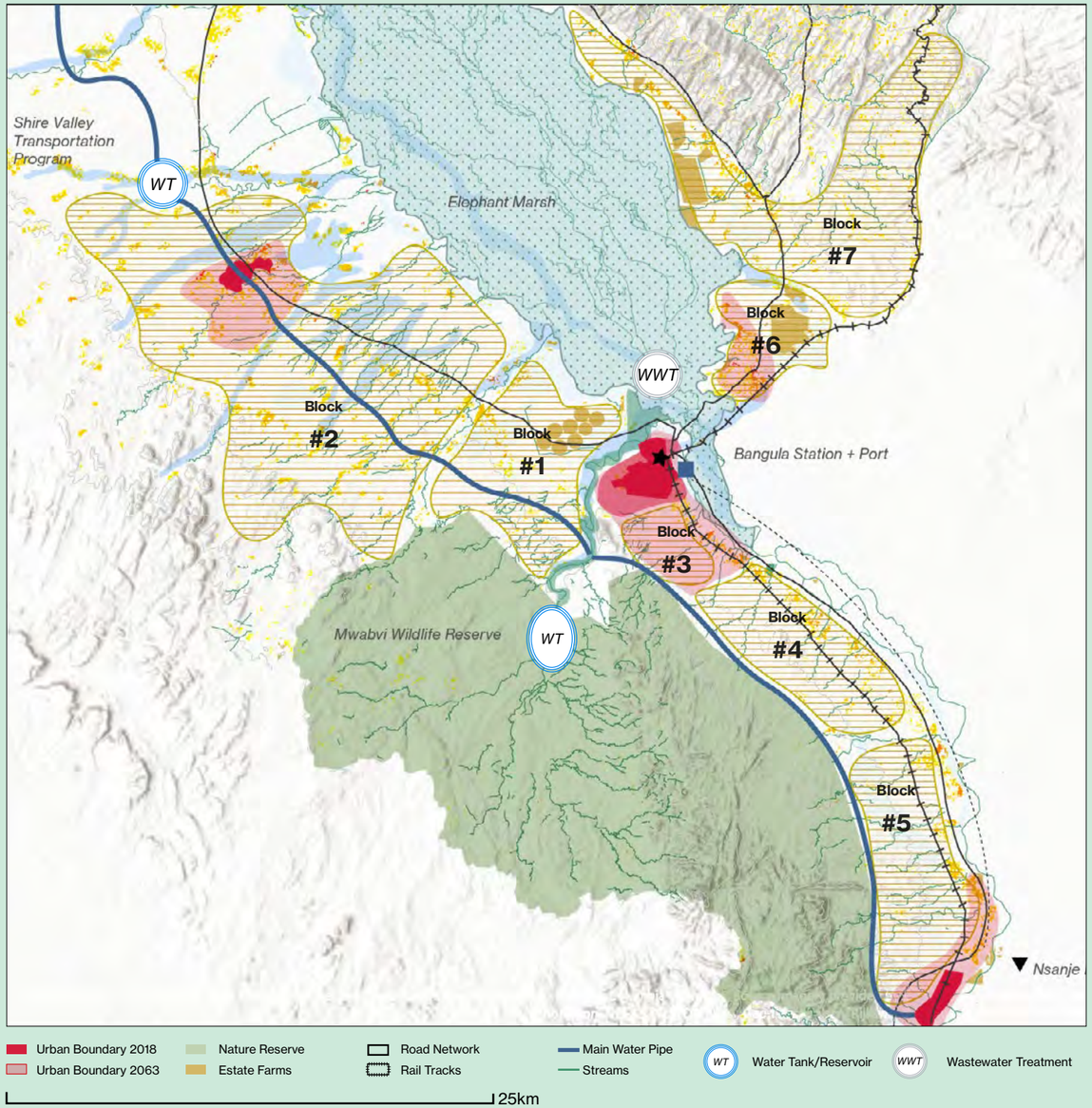
Here, other industries such as fishing and aquaculture, as well as tourism, would bring additional livelihood for the population.

	Base Scenario 2018	*Status Quo* - Sprawled 2063	Moderate Scenario 2063	Compact Scenario 2063
Total Surface Area (ha)	481,200	481,200	481,200	481,200
Arable Land (ha)	253,899	253,899	253,899	253,899
Non-Arable Land (Forest and Conservation Lands) (ha)	227,301	227,301	227,301	227,301
Crop Land / Small Farms (ha)	237,786	214,066	219,996	206,848
Crop Land / Commercial Farms (ha)	16,113	16,113	16,113	32,226
Settlement Area (urban footprint - ha)	4,560.9	23,720	17,790	14,825
Urban Density (people per - ha)	25.7	30.0	40.0	80.0
Percent Urban Population	16%	30%	40%	50%
Total Population	711,268	2,371,978	1,778,983	2,371,978
Urban Population	117,111	711,593	711,593	1,185,989
Rural Population	594,157	1,660,384	1,067,390	1,185,989
# of Households (total)	157,177	524,163	393,122	524,163
Household Members Ave.	4.53	4.53	4.53	4.53
# of Households (rural)	131,298	366,914	235,873	262,081
Land per Family Average (ha)	1.8	0.58	0.93	0.79

Bangula
Southern gateway city

Based on scenarios developed under this study, Bangula area will grow from 222,641 inhabitants in 2018, to 375,149 in 2040; and 647,296 in 2063. An inland port and a railway intersection would potentially make Bangula a logistical hub in the Lower Shire Area. A proposed water reservoir at the edge of the reserve would serve Bangula center as well as the adjacent agricultural lands. If the LSVT pipe would be extended, it could connect to the Bangula water reservoir. An eco-corridor along the stream connecting the Mwabwi Wildilfe Reserve to the Elephant Marsh is proposed to protect the ecosystem and contribute to the eco-tourism in the area. A wastewater treatment area is proposed along the river.

Aerial view of Bangula town showing the marsh and the shire river on the top



Bangula

Project clustering scheme

Urban Development

I11 Bangula Transit-oriented Industrial and Commercial Development
T7 Development of Nsanje World Inland Port
T21 Ngabu Bus Depot and Produce Market

Infrastructure

T17 MIP-1 Flagship: Limbe-Marka Rail Line Rehabilitation
T30 Bangula Multi-Modal Port
T31 Bangula Bridge Reconstruction S151
T34 M1 road from Blantyre to Nsanje

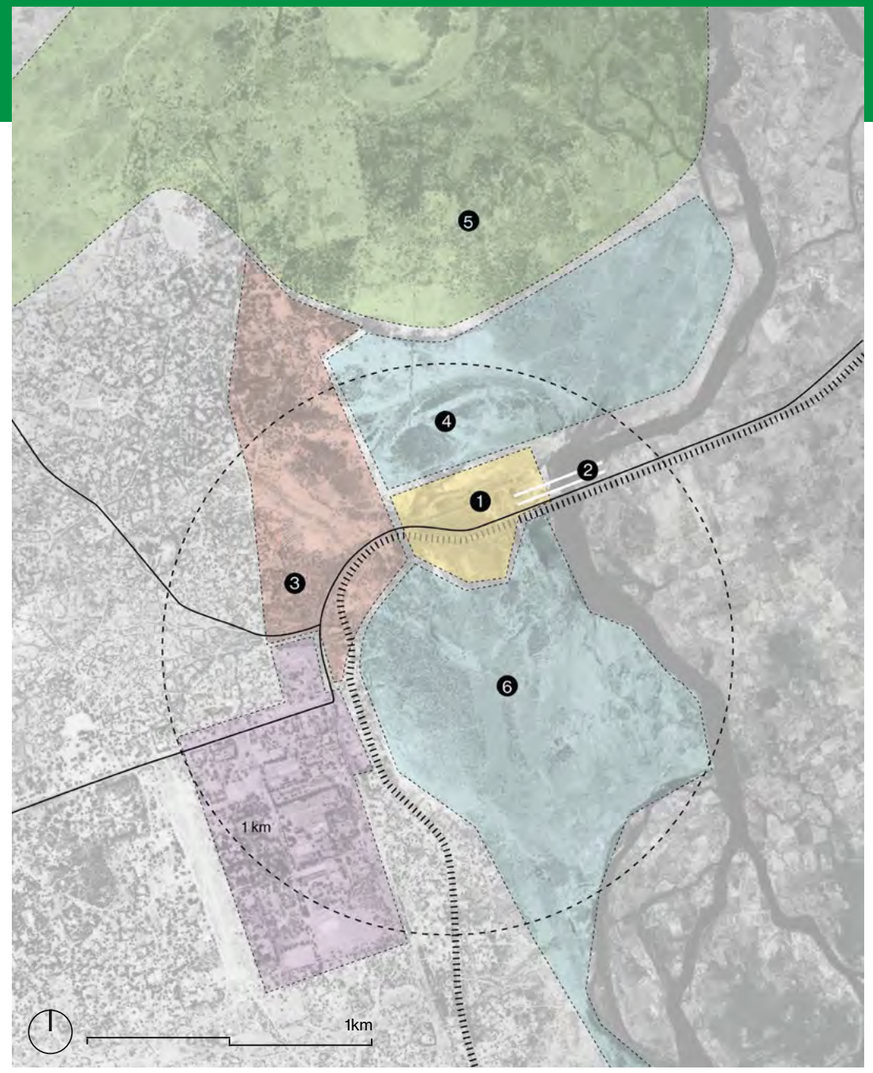
W5 MIP-1 Flagship: Shire Valley Transformation Programme
W27 Extension of LSVTP to reach Bangula
W29 Bangula Town Water Supply and Sanitation Project
E13 Zoa Falls Hydro-electric Dam

Natural Resources

EP8 Mwabvi Game Reserve
EP9 Elephant Marsh Protection
EP26 Eco-corridor between Mwabvi Game Reserve and the Elephant Marsh
EP36 Tomaninjobi Pool
CC6 Bangula Flood Zone Management and Green Infrastructure Plan

A23 GBI: Mwana Na Njovu Chikwawa District
F11 MIP-1 Flagship: Sustainable Aquaculture and Fisheries Development (Bangula Fisheries)
A3 Kaombe Sugar Estate
A31 Commercial and Small Farm Development for Bangula

- Urban Footprint 2020
- Urban Footprint Projection
- Nature Reserves
- Agricultural Lands
- Water Resources
- Irrigation



Bangula

Project clustering scheme - Project references

1- Bangula Multi-modal Port (T30)
Connects to: Nsanje Port, Luchenza station.
Station Area: 11 Ha Proposed FAR: 2

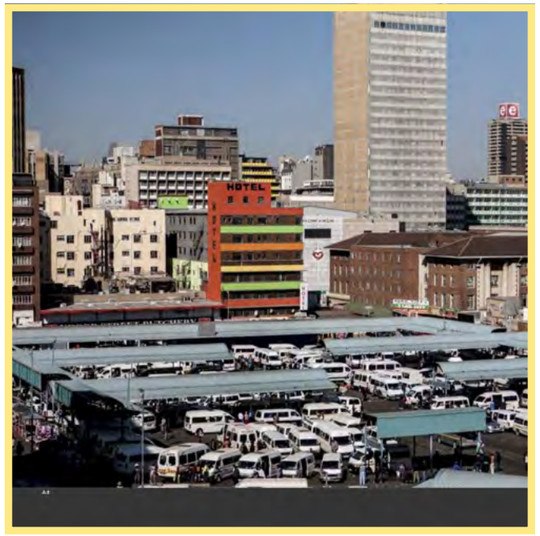
2- Bangula Bridge Reconstruction S151 (T31)
Length: -

3- Bangula Transit-oriented Commercial and Industrial Center Development (I11)
133 km from Blantyre
Existing Market Area: 11 Ha
Extension of Com. Center Area: 40 Ha Proposed FAR: 0.75

4- Bangula Fisheries Development (F11)
Area: 125 Ha

5- Eco-Corridor between Mwabvi Game Reserve and Elephant Marsh (EP26)
Area: -

6- Bangula Flood Zone Management and Green Infrastructure Plan (CC6)
Area: -



1- Mixed-use transit oriented development in Lagos, Nigeria

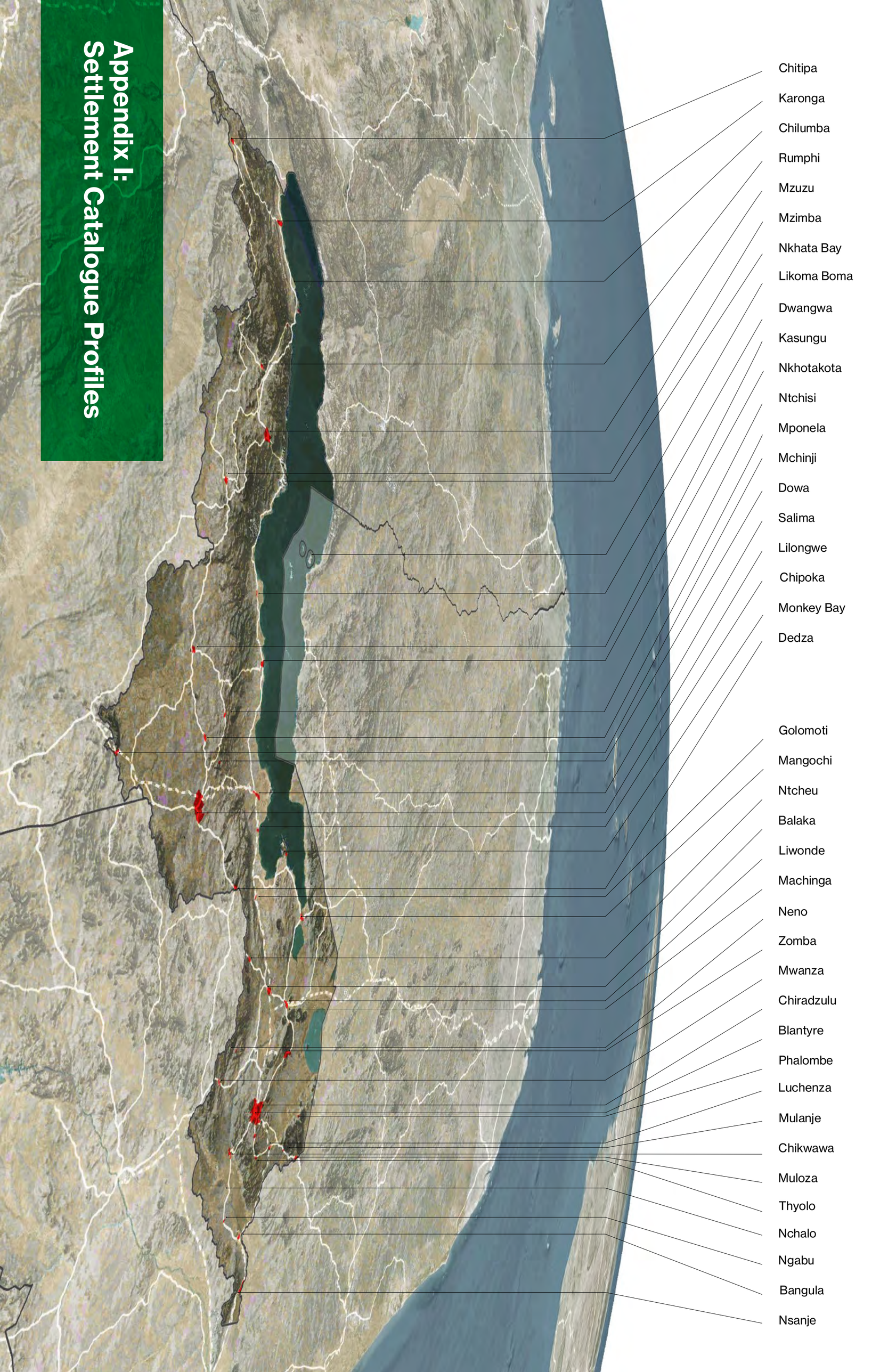
4- Main stream aquaculture, Australia

3- Tourism boardwalk, Alamine, Egypt

6- Urban wetland, Colombo, Sri Lanka

APPENDIX I
SETTLEMENT CATALOGUE PROFILE

Appendix I: Settlement Catalogue Profiles



Catalogue Settlements list 2020

Balaka Town
Bangula
Blantyre City
Chikwawa Boma
Chilumba
Chipoka Urban
Chiradzulu Boma
Chitipa Boma
Dedza Boma
Dowa Boma
Dwangwa
Golomoti
Karonga Town
Kasungu Town
Likoma Boma
Lilongwe City
Liwonde Town
Luchenza Town
Machinga Boma
Mangochi Town
Mchinji Boma
Monkey Bay Urban
Mponela Town
Mulanje Boma
Muloza
Mwanza Boma
Mzimba Boma
Mzuzu City
Nchalo
Neno Boma
Ngabu Urban
Nkhata Bay Boma
Nkhotakota Boma
Nsanje Boma
Ntcheu Boma
Ntchisi Boma
Phalombe Boma
Rumphi Boma
Salima Town
Thyolo Boma
Zomba City

Profiles

Each settlement was profiled based on a combination of statistical and spatial information. The profiles provide an account of matters which relate to the settlements existing conditions as well as indications of opportunities as identified by various policies and programs. Those opportunities are largely evident through physical proximities to projects and assets we have mapped through a wide variety of sources. The main purpose of these profiles is to visualize the main characteristics a settlement and its surrounding holds, and by that allow for an informed process of comparison and ranking between settlements. The profiles help the decision-making process in infrastructure planning and investments, as well as urbanization policies, which in turn help maximize impact across scales and geographies.

For a comprehensive description of the profile, please read guidelines on Chapter Four.

The main elements of the profiles are:

- Arial imagery zoom on settlement core
- A list of select projects and assets
- Population distribution and growth trends
- Jurisdiction and land tenure
- Natural resources
- Fishing and Aquaculture
- Transportation
- Tourism
- Climate change and resiliency
- Mining
- Population projections
- Ranking on:
  - urban potential
  - Land suitability
  - Connectivity

Balaka

District: Balaka

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	2,206
Settlement Population 2018	60,150
Settlement Density	27
25 km radius	
Population 2018	480,012
Urban/Rural Ratio	12/88

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	1224.3
Population within Jurisdictional Boundary	36,308
Density in Jurisdictional Boundary	29.66
Estates (within 25 km radius) (ha)	1,609

Natural Resources (25 km radius)

Agricultural Land Suitability	164,417
Conservation Area	-
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	-

Transportation

Lake Port	-
Rail	1
Major Road	1
Airport	-

Tourism

Attractions	No

Climate Change and Resiliency

Flood Risk	Low

Mining

Active Licence	Yes

Projects and Assets in a 25 km radius

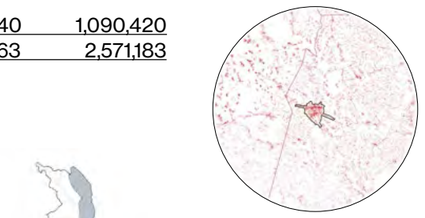
Flagship Projects
T16: MIP-1: Nkaya to Mchinji Rail Line Rehabilitation

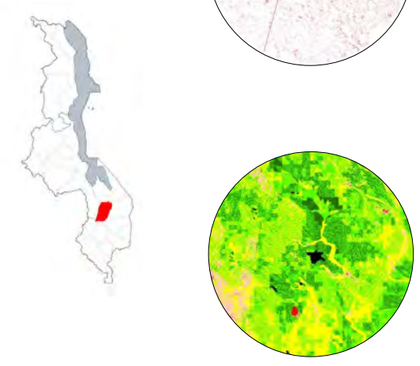
Mining Projects
M18: Lynnas Africa Limited (Rare earth mine)
M20: Plinth Mining Group (Limestone and Rock Aggregate)

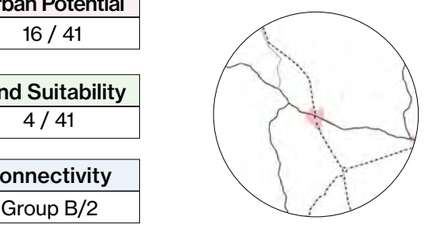
Mineral Resources
M29: Marble

Population Projections

Growth rate	3.8%
by 2040	136,639
by 2063	322,193
by 2040	1,090,420
by 2063	2,571,183



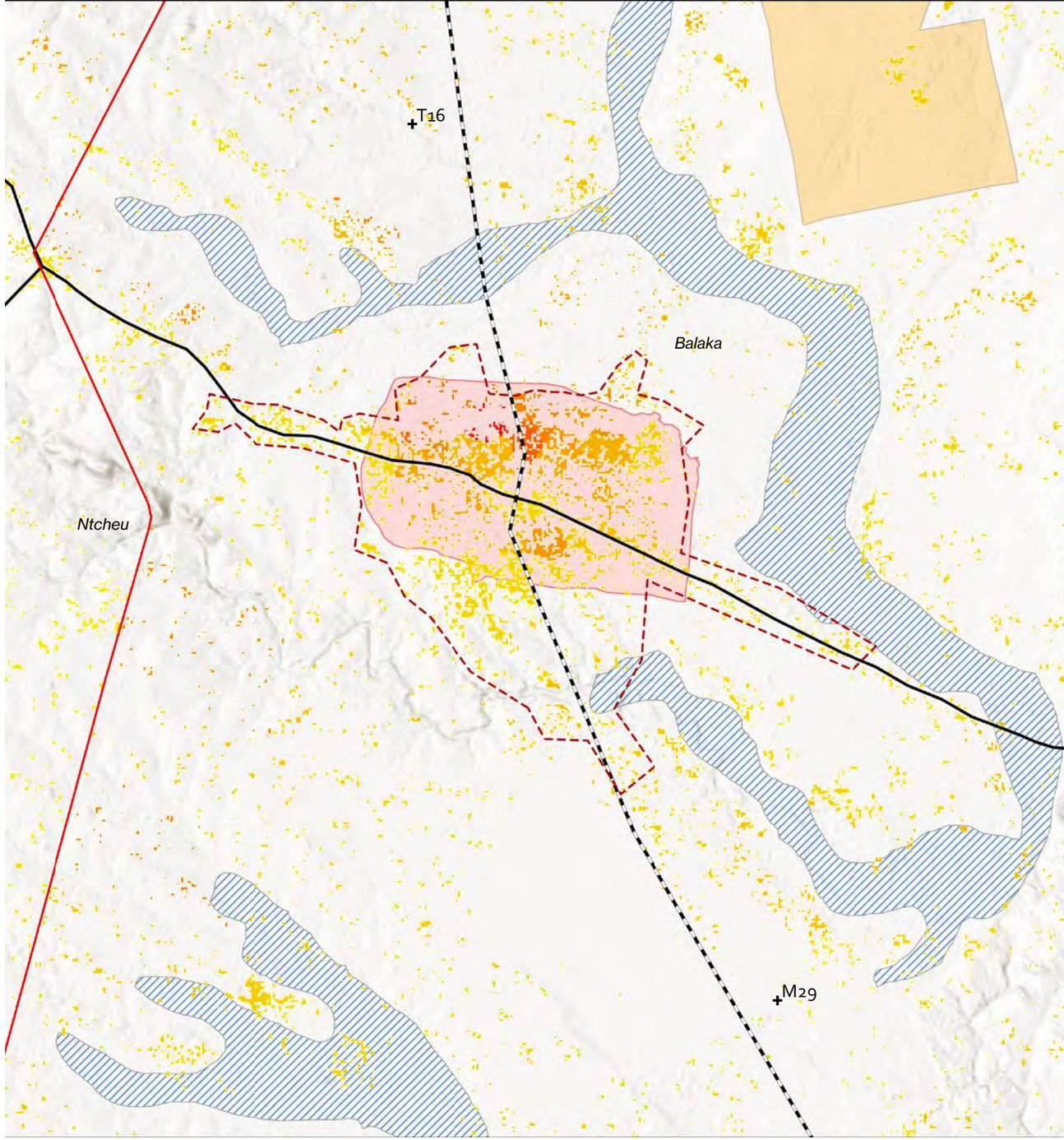




Urban Potential
16 / 41

Land Suitability
4 / 41

Connectivity
Group B/2



Bangula

District: Chikwawa

Projects and Assets in a 25 km radius

Flagship Projects
A23: GBI - Mwananjovu Chikwawa Project
W2: Shire Valley Transformation Programme

Mining Projects/ Mineral Resources
M23: Mwabvi Coal Mine
M24: Crown Minerals
M29: Agate, Coal

Agriculture Projects
A3: Kaombe Sugar Estate
A31: Commercial and Small Farm Development for Bangula

Fisheries Projects
F11: Bangula Fisheries

Natural Assets
EP8: Mwabvi Game Reserve
EP9: Elephant Marsh
EP26: Eco-corridor between Mwabvi Game Reserve & Elephant Marsh

Industry Projects
I11: Bangula Transit-oriented Industrial/Commercial Center Development

Climate Change Projects
CC6: Bangula Flood Zone Management & Green Infrastructure Plan

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	813
Settlement Population 2018	16,501
Settlement Density	20
25 km radius	
Population 2018	222,641
Urban/Rural Ratio	7/93

Jurisdiction and Land Tenure

Traditional Jurisdictional Area (ha)	N/A
Population within Jurisdictional Boundary	N/A
Density in Jurisdictional Boundary	N/A
Estates (within 25 km radius) (ha)	1,609

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	71,126
Conservation Area	-
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	Yes

Transportation

Lake Port	-
Rail	1
Major Road	1
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

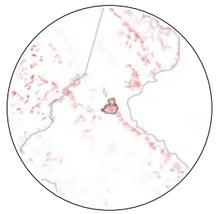
Flood Risk	High

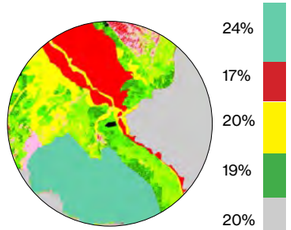
Mining

Active Licence	Yes

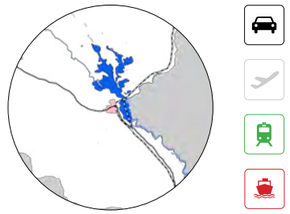
Population Projections

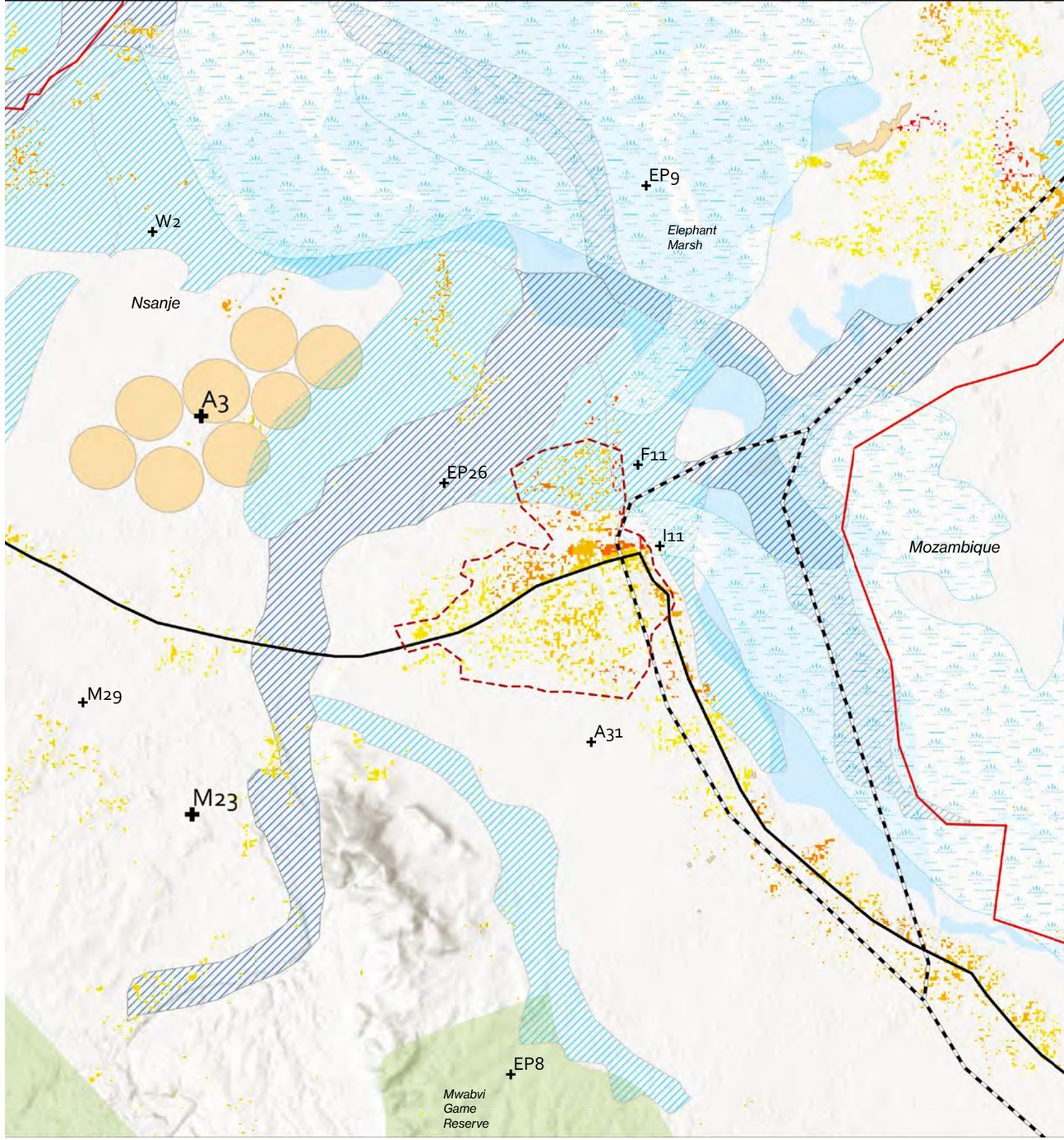
Growth rate	2.4%
by 2040	27,804
by 2063	47,974
by 2040	375,149
by 2063	647,296





Urban Potential	23 / 41
Land Suitability	26 / 41
Connectivity	Group A/1.75





Blantyre

District: Blantyre

Projects and Assets in a 25 km radius

Flagship Projects
T17: MIP-1: Limbe to Marka Rail Line Rehabilitation
T13: Expansion and Rehabilitation of Airports
W4: Construction of New Water Sources from Likhubula River in Mulane to Blantyre
I1: MIP-1: Special Economic Zones Proposal

Water Projects
W19: Completion of Upgrading and Rehabilitation of Mudi Pumping Station, Water Treatment Works and Accessories

Agriculture Projects
A5: Kamponji Enterprises Limited

Industry Projects
I2: Blantyre Industrial District

Mining Projects/ Mineral Resources
M17: Shayona Cement Corporation (Iron ore)
M29: Brickclay

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	19,694
Settlement Population 2018	847,073
Settlement Density	43
25 km radius	
Population 2018	1,508,448
Urban/Rural Ratio	56/44

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	24,049
Population within Jurisdictional Boundary	798,384
Density in Jurisdictional Boundary	33.2
Estates (within 25 km radius) (ha)	4,610

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	118,834
Conservation Area	-
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	-

Transportation

Lake Port	-
Rail	1
Major Road	1
Airport	1

Tourism

Attractions	No

Climate Change and Resiliency

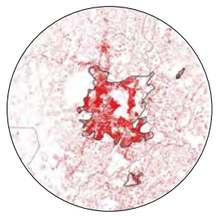
Flood Risk	Low

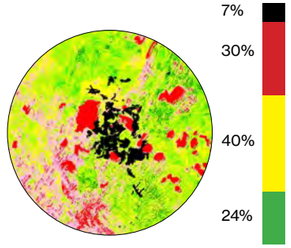
Mining

Active Licence	Yes

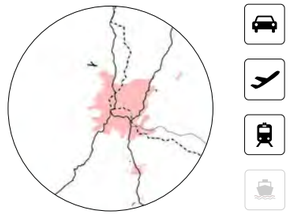
Population Projections

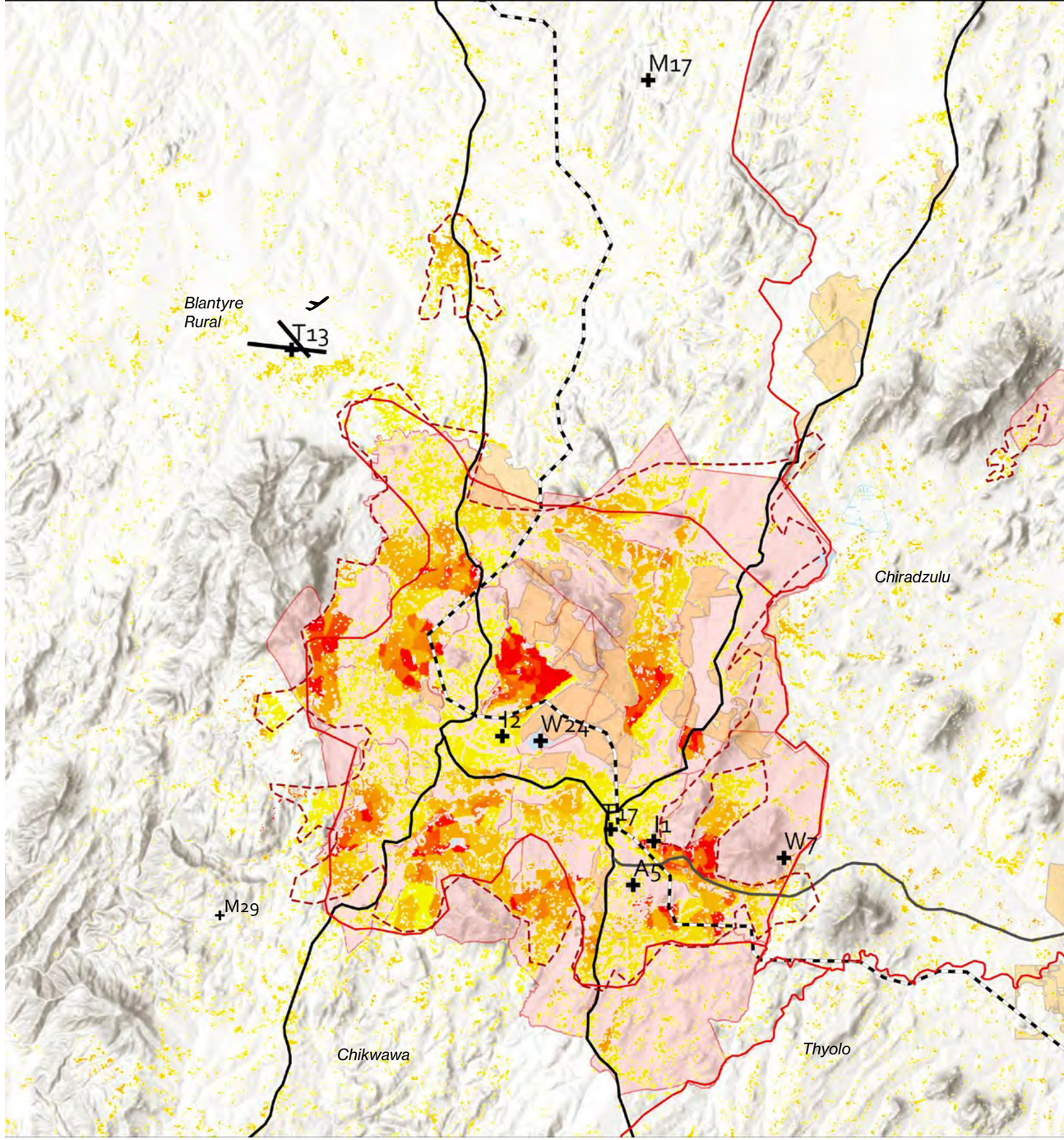
Growth rate	2.3%
by 2040	1,396,962
by 2063	2,356,808
by 2040	2,487,678
by 2063	4,196,950





Urban Potential	1 / 41
Land Suitability	22 / 41
Connectivity	Group A/3





Dwangwa

District: Nkhotakota

Projects and Assets in a 25 km radius

Water Projects
W17: Rehabilitation and Expansion of Water Schemes - Dowa, Dwangwa, Salima, Nkhota-kota and Ntchisi

Agriculture Projects
A2: Dwangwa Sugar Estate

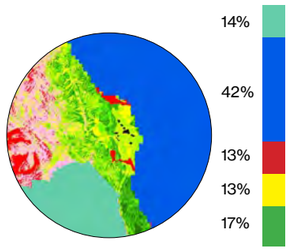
Mineral Resources
M29: Gold

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	395
Settlement Population 2018	24,310
Settlement Density	61
25 km radius	
Population 2018	128,917
Urban/Rural Ratio	18/82

Population Projections

Growth rate	3.1%
by 2040	27,804
by 2063	47,974
by 2040	375,149
by 2063	647,296



Jurisdiction and Land Tenure

Traditional Jurisdictional Area (ha)	N/A
Population within Jurisdictional Boundary	N/A
Density in Jurisdictional Boundary	N/A
Estates (within 25 km radius) (ha)	-

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	48,883
Conservation Area	28,350
Water Resources	82,071

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	Yes

Transportation

Lake Port	-
Rail	-
Major Road	1
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

Flood Risk	High

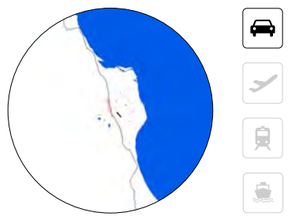
Mining

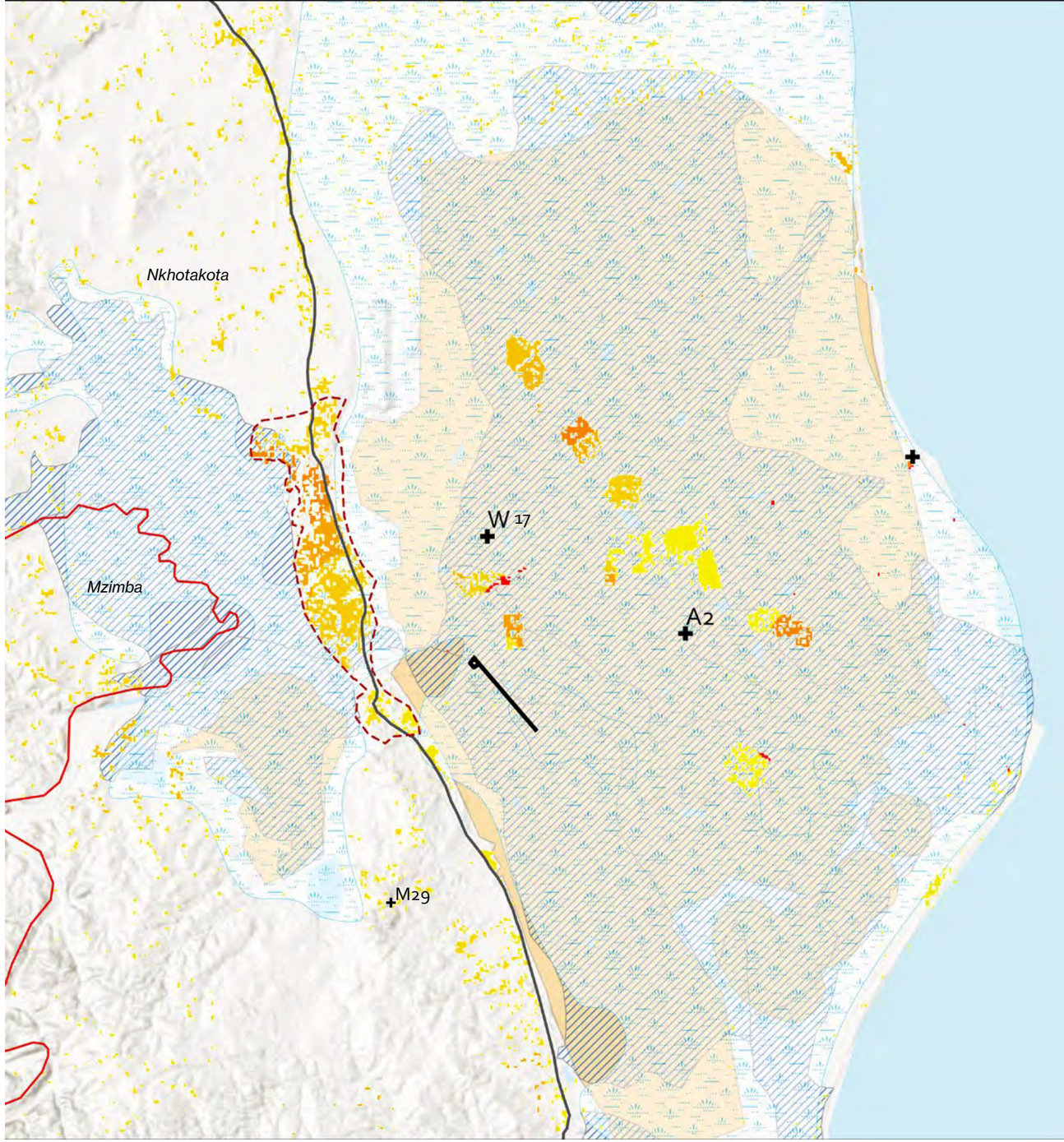
Active Licence	No

Urban Potential
9 / 41

Land Suitability
27 / 41

Connectivity
Group C





Chikwawa

District: Chikwawa

Projects and Assets in a 25 km radius

Flaghship Projects
W2: Shire Valley Transformation Programme

Agriculture Projects
A15: Kasinthula Cane Growers

Environmental Protection Projects
EP9: Elephant Marsh

Energy Projects
E21: Kapichira Power Plant

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	1,281
Settlement Population 2018	22,789
Settlement Density	18
25 km radius	
Population 2018	348,594
Urban/Rural Ratio	6/94

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	803
Population within Jurisdictional Boundary	6,114
Density in Jurisdictional Boundary	7.6
Estates (within 25 km radius) (ha)	14,111

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	87,226
Conservation Area	43,489
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	Yes

Transportation

Lake Port	-
Rail	-
Major Road	1
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

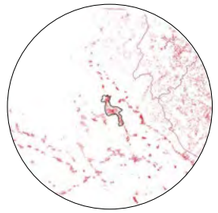
Flood Risk	High

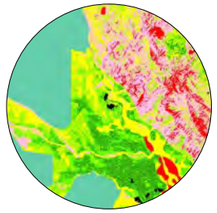
Mining

Active Licence	No

Population Projections

Growth rate	3.1%
by 2040	42,742
by 2063	82,493
by 2040	653,819
by 2063	1,261,861

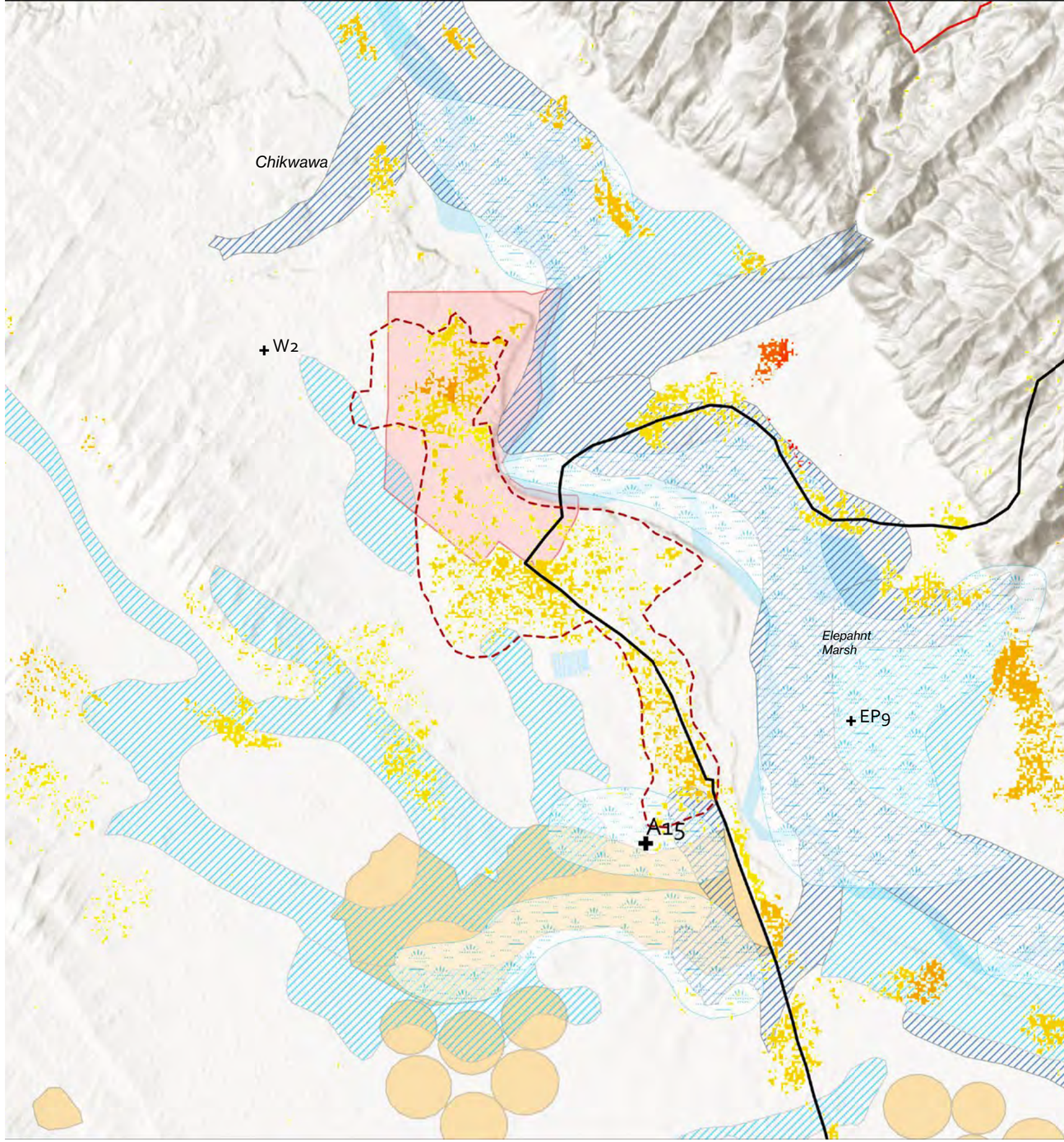




Urban Potential
26 / 41

Land Suitability
18 / 41

Connectivity
Group C



Chilumba

District: Karonga

Projects and Assets in a 25 km radius

Flaghship Projects
T12: MIP-1: Construction and Rehabilitation of Ports and Jetties

Transportation Projects
T6: Mbeya to Chilumba

Environmental Protection Projects
EP10: Lake Malawi

Mining Projects
Active Coal Mining
Uranium Exploration

Energy Projects
E22: Wovwe Power Station

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	366
Settlement Population 2018	8,269
Settlement Density	22.5
25 km radius	
Population 2018	118,587
Urban/Rural Ratio	7/93

Jurisdiction and Land Tenure

Traditional Jurisdictional Area (ha)	N/A
Population within Jurisdictional Boundary	N/A
Density in Jurisdictional Boundary	N/A
Estates (within 25 km radius) (ha)	-

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	31,411
Conservation Area	17,258
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	Yes

Transportation

Lake Port	1
Rail	-
Major Road	1
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

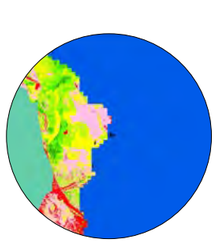
Flood Risk	Low

Mining

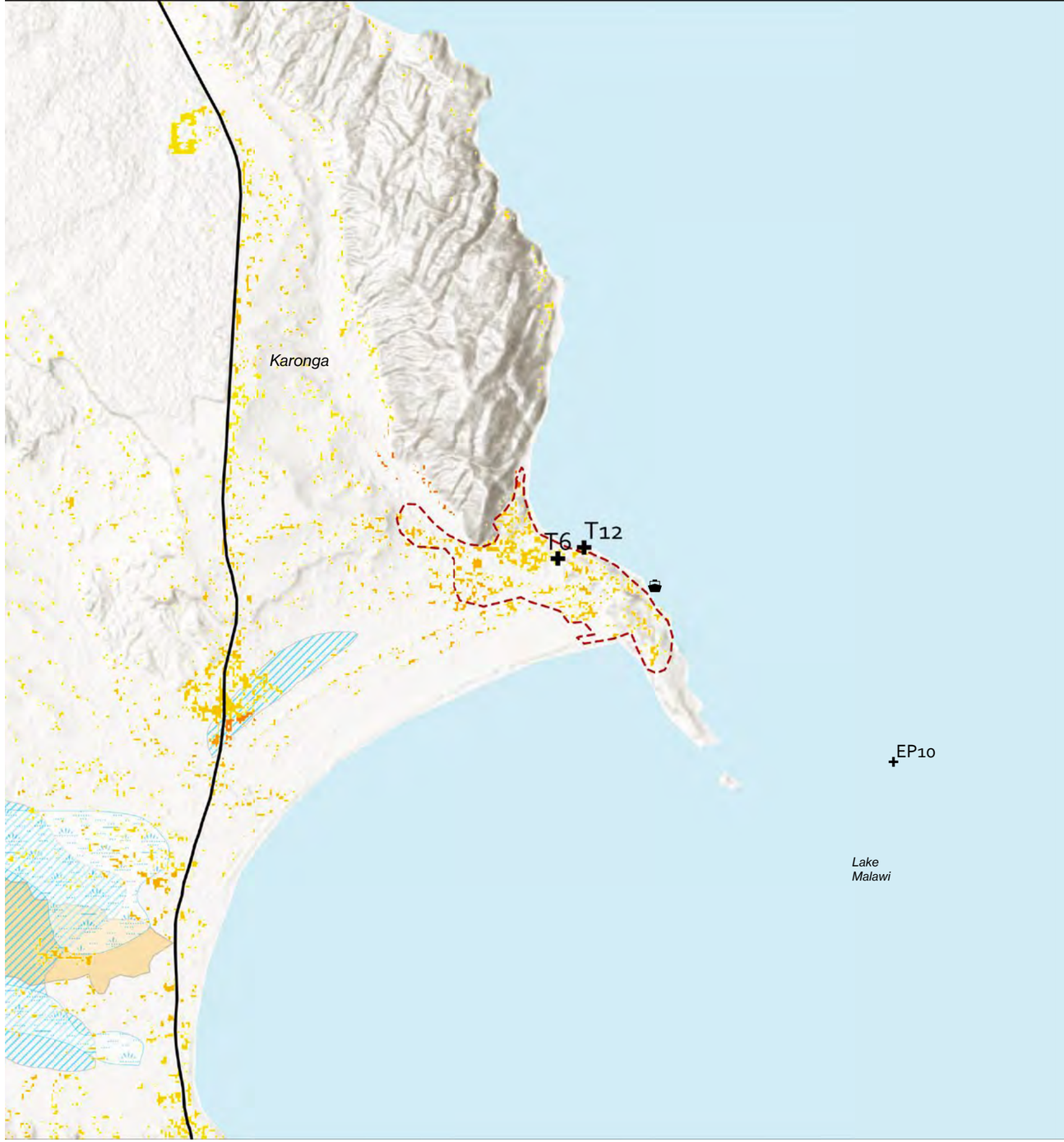
Active Licence	Yes

Population Projections

Growth rate	3.8%
by 2040	18,763
by 2063	44,244
by 2040	269,388
by 2063	635,210



Urban Potential	25 / 41
Land Suitability	38 / 41
Connectivity	Group A/1.75



Chipoka

District: Salima

Projects and Assets in a 25 km radius

Flaghship Projects
T8: Construction and Rehabilitation of Ports and Jetties

Tourism Projects
TO3: Integrated Resort in Salima
TO4: MIP-1: Malawi Lakeshore Tourism Development
TO5: Chipoka Commercial Boardwalk

Environmental Protection Projects
EP10: Lake Malawi
EP6: Dedza-Salima Forest Reserve Eco-system Rehabilitation

Transportation Projects
T16: Nkaya to Mchinji Rail Line Rehabilitation

Agriculture Projects
A31: Commercial and Small Farm Development for Salima/Chipoka

Industry Projects
I5: Chipoka Transit-oriented Industrial/Commercial Center Development

Fisheries Projects
F7: MIP-1:Chipoka Fsheries Development

Climate Change Projects
CC2: Salima Green Infrastructure Flood Zone Management

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	546
Settlement Population 2018	8,262
Settlement Density	15
25 km radius	
Population 2018	295,985
Urban/Rural Ratio	3/97

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	1,124
Population within Jurisdictional Boundary	6,395
Density in Jurisdictional Boundary	5.6
Estates (within 25 km radius) (ha)	54

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	48,441
Conservation Area	22,394
Water Resources	76,296

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	Yes

Transportation

Lake Port	1
Rail	1
Major Road	1
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

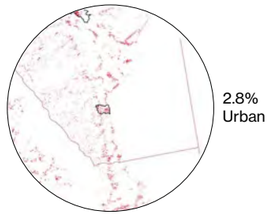
Flood Risk	High

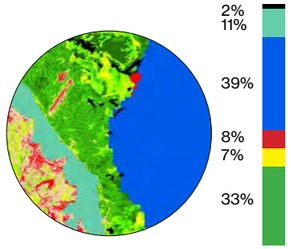
Mining

Active Licence	No

Population Projections

Growth rate	4.2%
by 2040	20,425
by 2063	52,617
by 2040	731,744
by 2063	1,885,024

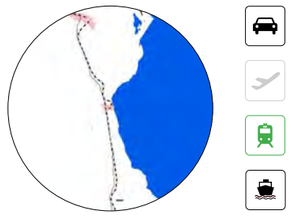


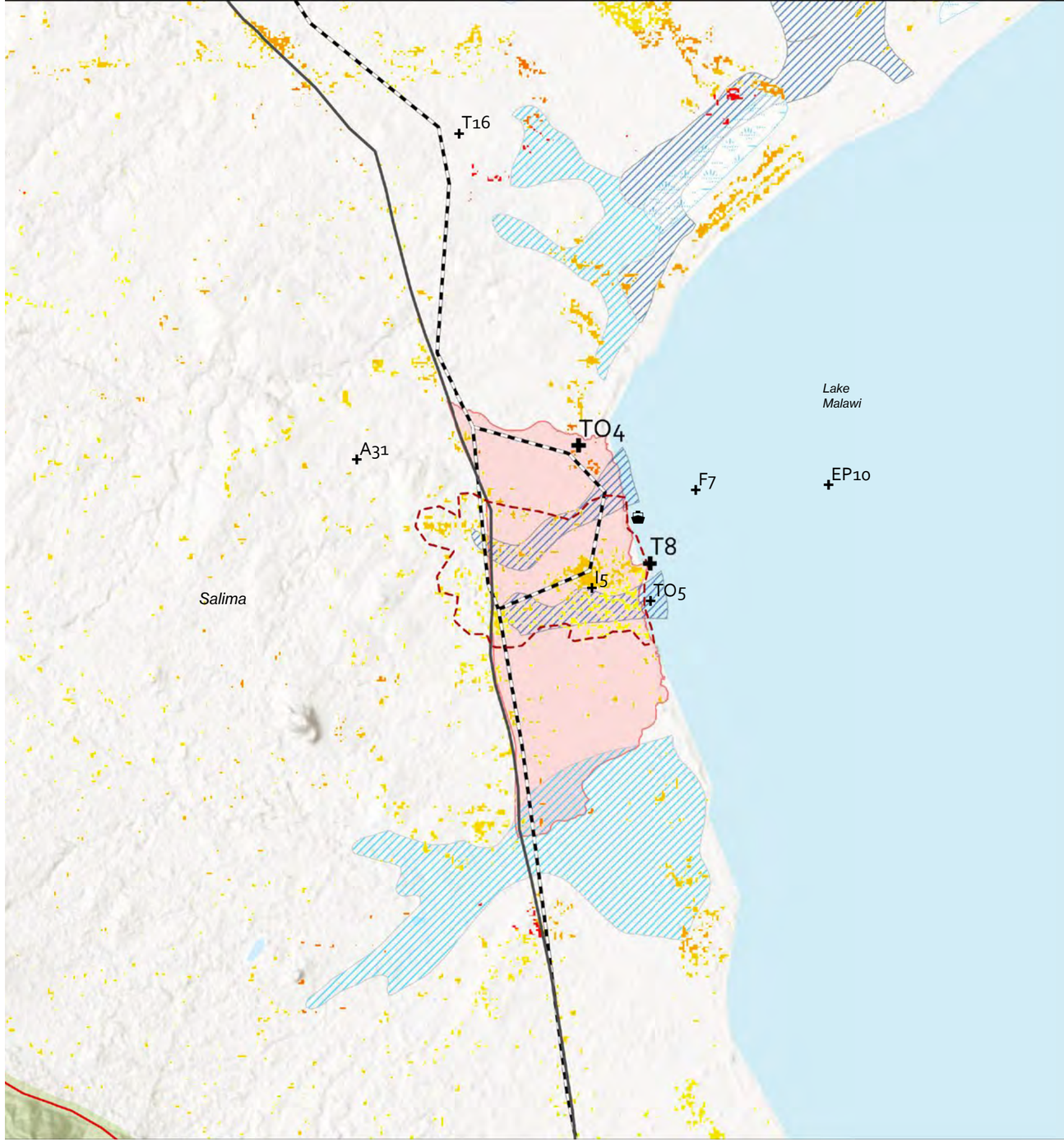


Urban Potential
33 / 41

Land Suitability
13 / 41

Connectivity
Group A/2.5





Chiradzulu

District: Chiradzulu

Projects and Assets in a 25 km radius

Flaghship Projects
T17: MIP-1: Limbe to Marka Rail Line Rehabilitation
T13: Expansion and Rehabilitation of Airports
W4: Construction of New Water Sources from Likhubula River in Mulanje to Blantyre

Mining Projects
M17: Iron Ore

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	148
Settlement Population 2018	5,801
Settlement Density	39
25 km radius	
Population 2018	1,601,900
Urban/Rural Ratio	1/99

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	368
Population within Jurisdictional Boundary	2,961
Density in Jurisdictional Boundary	-
Estates (within 25 km radius) (ha)	-

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	133,528
Conservation Area	43,389
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	-

Transportation

Lake Port	-
Rail	-
Major Road	-
Airport	-

Tourism

Attractions	No

Climate Change and Resiliency

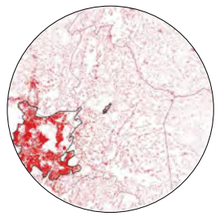
Flood Risk	No

Mining

Active Licence	Yes

Population Projections

Growth rate	4.2%
by 2040	9,774
by 2063	16,865
by 2040	2,699,196
by 2063	4,657,291



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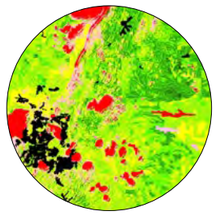

7%
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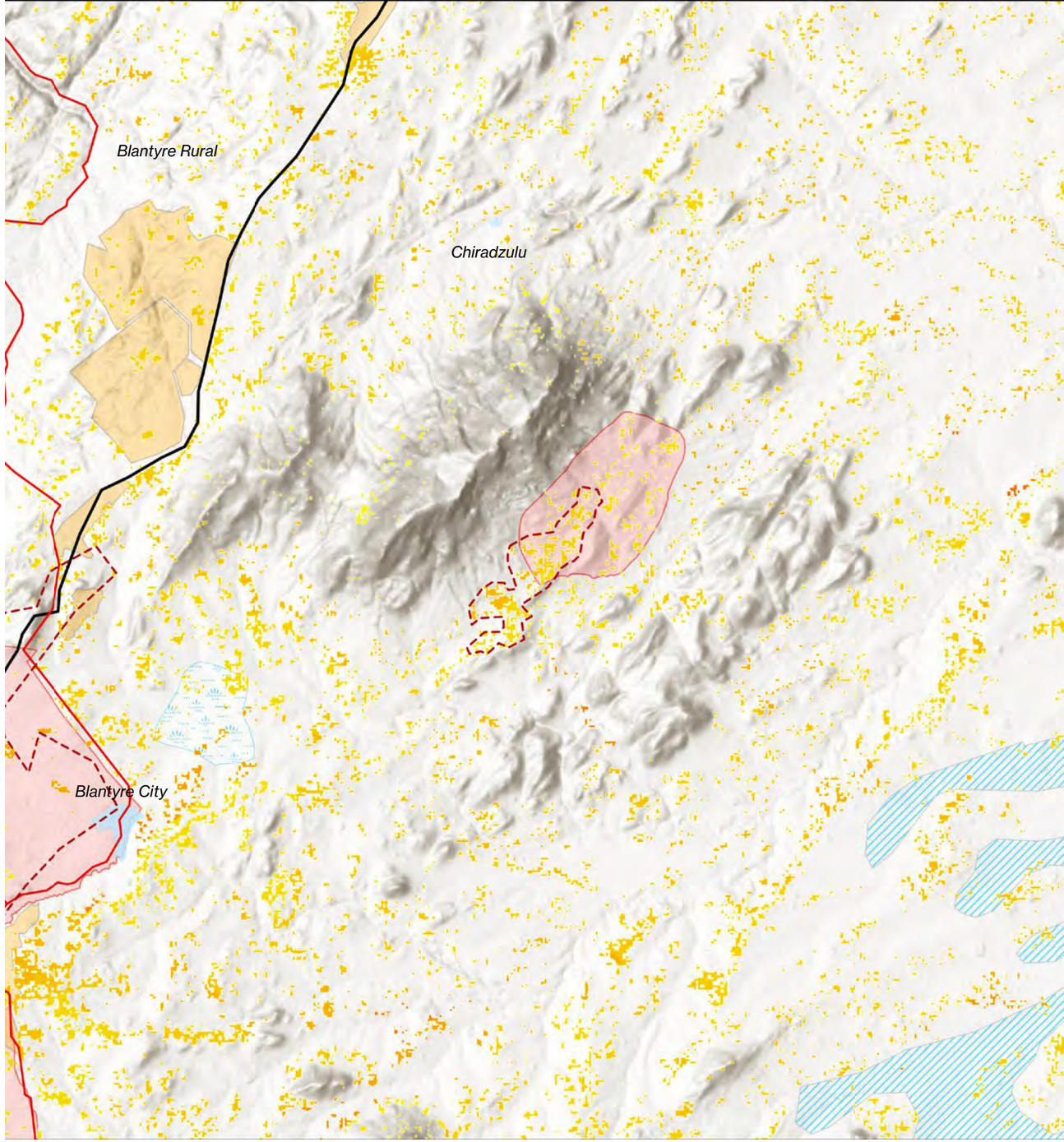
42%

Urban Potential
40 / 41

Land Suitability
10 / 41

Connectivity
Group D



0 2.5 5 Km

Water Features
Natural Reserves
Settlement Footprint
Estate Farms
Road Network
Rail Tracks
Port Facility
Airport facility
Urban Jurisdiction
District Boundary
Exceptional Floods
Frequent Floods
Marshes
Settlement Pattern

Chitipa

District: Chitipa

Projects and Assets in a 25 km radius

Water Projects
W1: MIP-1: Songwe River Basin Development Program

Mining Projects / Mineral Resources
M2: Granite, Sodalite
M29: Kaolinite

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	1,123
Settlement Population 2018	30,071
Settlement Density	27
25 km radius	
Population 2018	143,581
Urban/Rural Ratio	21/79

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	850
Population within Jurisdictional Boundary	17,743
Density in Jurisdictional Boundary	20
Estates (within 25 km radius) (ha)	-

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	70,956
Conservation Area	-
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	-

Transportation

Lake Port	-
Rail	-
Major Road	1
Airport	-

Tourism

Attractions	No

Climate Change and Resiliency

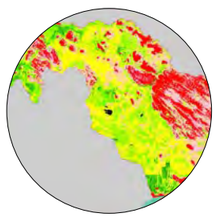
Flood Risk	Low

Mining

Active Licence	Yes

Population Projections

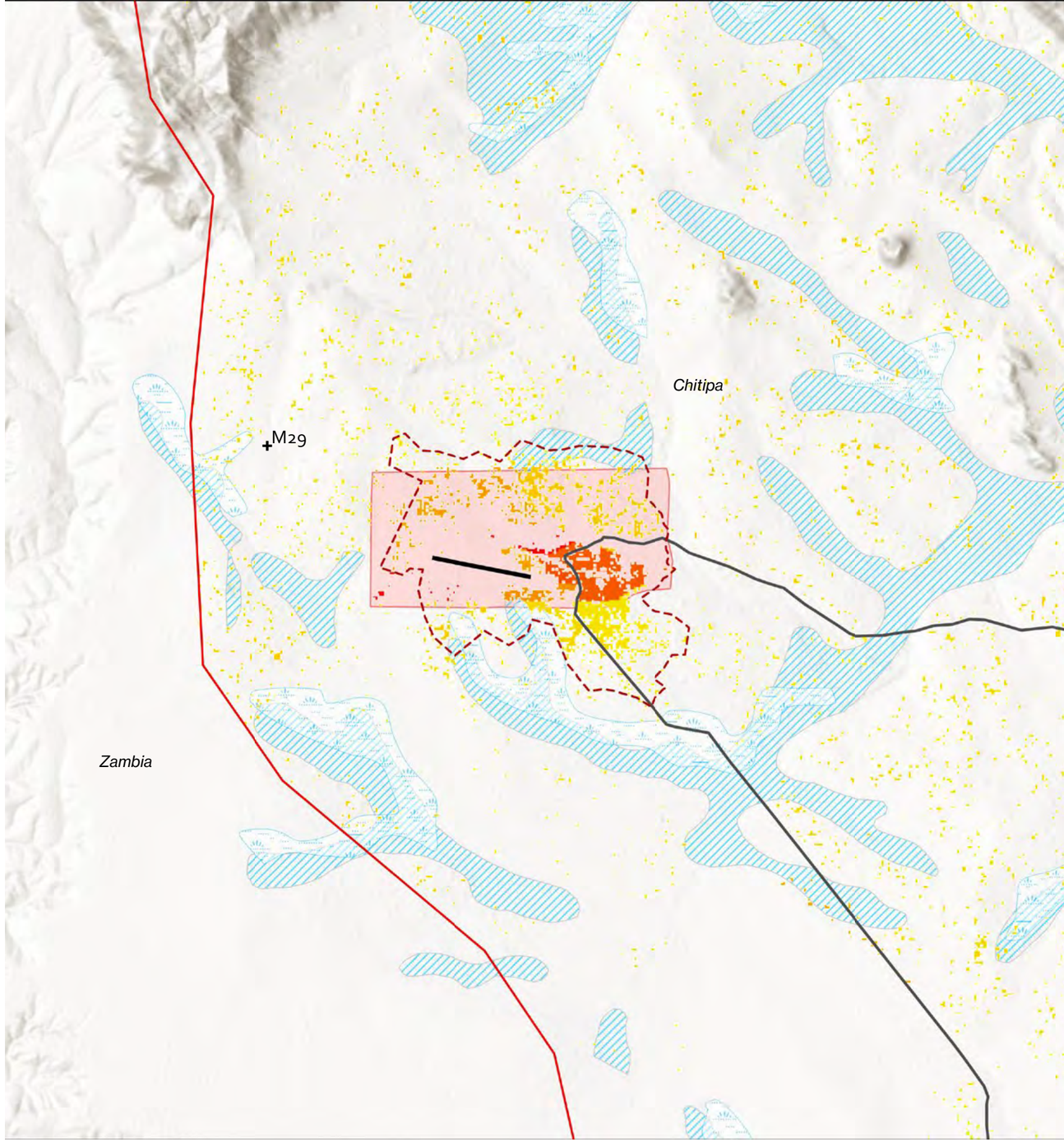
Growth rate	3.3%
by 2040	61,426
by 2063	129,617
by 2040	293,294
by 2063	618,887



Urban Potential
6 / 41

Land Suitability
34 / 41

Connectivity
Group B/1.5



Dedza

District: Dedza

Projects and Assets in a 25 km radius

Water Projects
W15: Development of Multi-purpose Dams and Integration of Water Supply Schemes for Kasungu, Mponela, Ntcheu, Mchinji and Dedza Towns

Natural Resources Projects
EP6: Dedza-Salima Forest Reserve Eco-system Rehabilitation Project

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	1,113
Settlement Population 2018	31,875
Settlement Density	28
25 km radius	
Population 2018	349,761
Urban/Rural Ratio	9/91

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	2003.8
Population witin Jurisdictional Boundary	30,928
Density in Jurisdictional Boundary	15.5
Estates (within 25 km radius) (ha)	1,026

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	72,200
Conservation Area	15,005
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	-

Transportation

Lake Port	-
Rail	-
Major Road	1
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

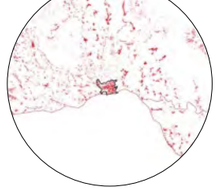
Flood Risk	Low

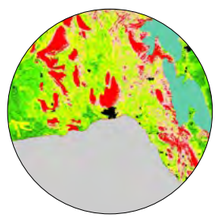
Mining

Active Licence	No

Population Projections

Growth rate	3.3%
by 2040	65,111
by 2063	137,393
by 2040	714,460
by 2063	1,507,599

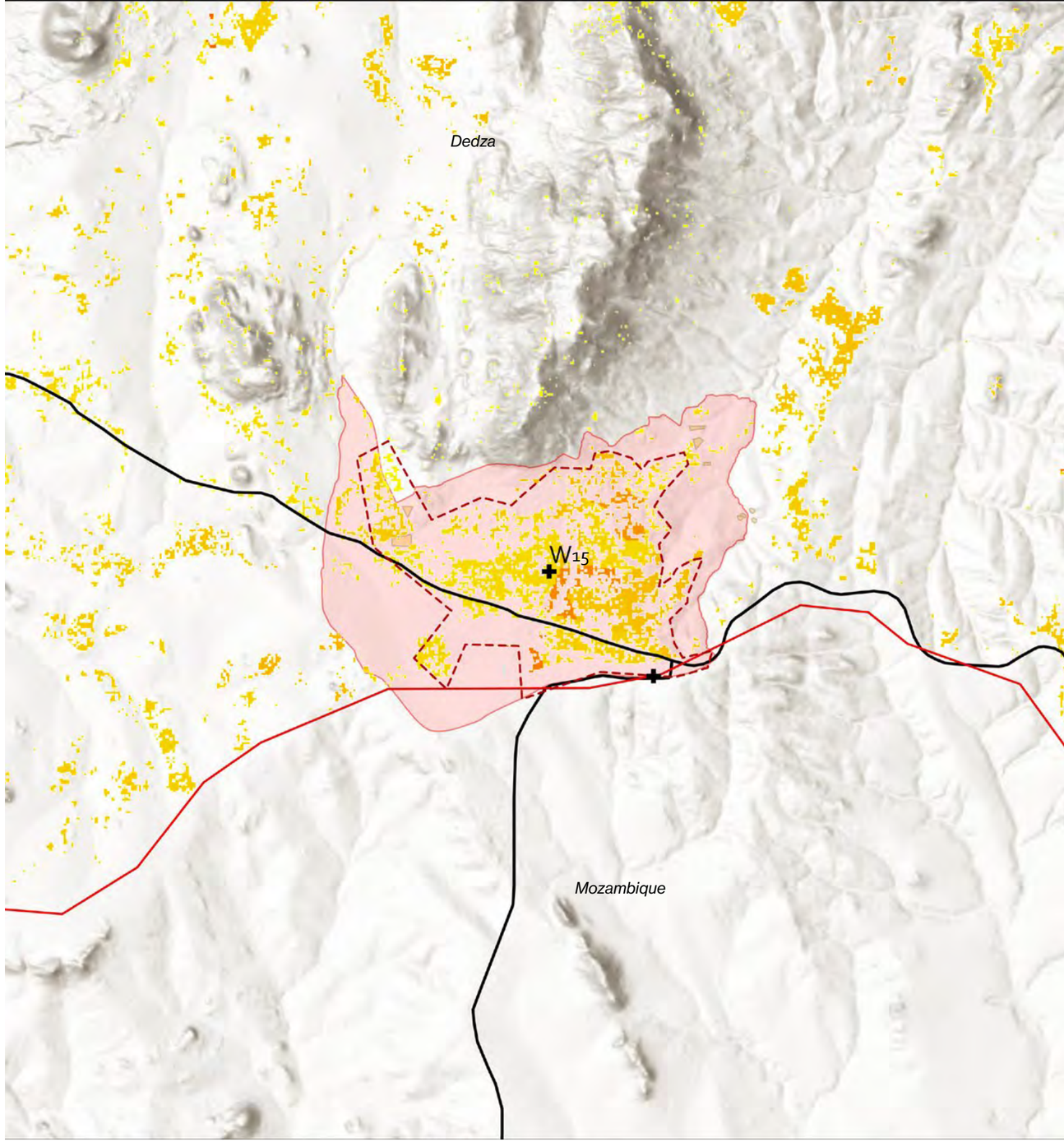




Urban Potential
21 / 41

Land Suitability
28 / 41

Connectivity
Group C



Dowa

District: Dowa

Poplation Distribution and Growth Trends

Settlement Footprint 2018 (ha)	376.5
Settlement Population 2018	8,790
Settlement Density	23
25 km radius	
Population 2018	571,758
Urban/Rural Ratio	2/98

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	513.5
Population witin Jurisdictional Boundary	7,135
Density in Jurisdictional Boundary	14
Estates (within 25 km radius) (ha)	36

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	130,942
Conservation Area	-
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	-

Transportation

Lake Port	-
Rail	-
Major Road	1
Airport	-

Tourism

Attractions	No

Climate Change and Resiliency

Flood Risk	Low

Mining

Active Licence	Yes

Projects and Assets in a 25 km radius

Flagship Projects
T14: Expansion and Rehabilitation of Airports

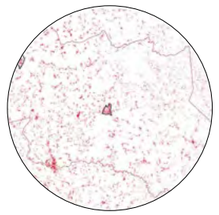
Water Projects
W17: Rehabilitation and Expansion of Water Schemes (Dowa, Dwangwa, Salima, Nkhotakota, Ntchisi)

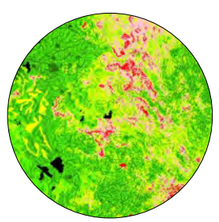
Mining Projects/Mineral Resources
M15: Graphite
M29: Lead

Population Projections

Growth rate	3.8%
by 2040	19,967
by 2063	47,083

by 2040	1,298,835
by 2063	3,062,620

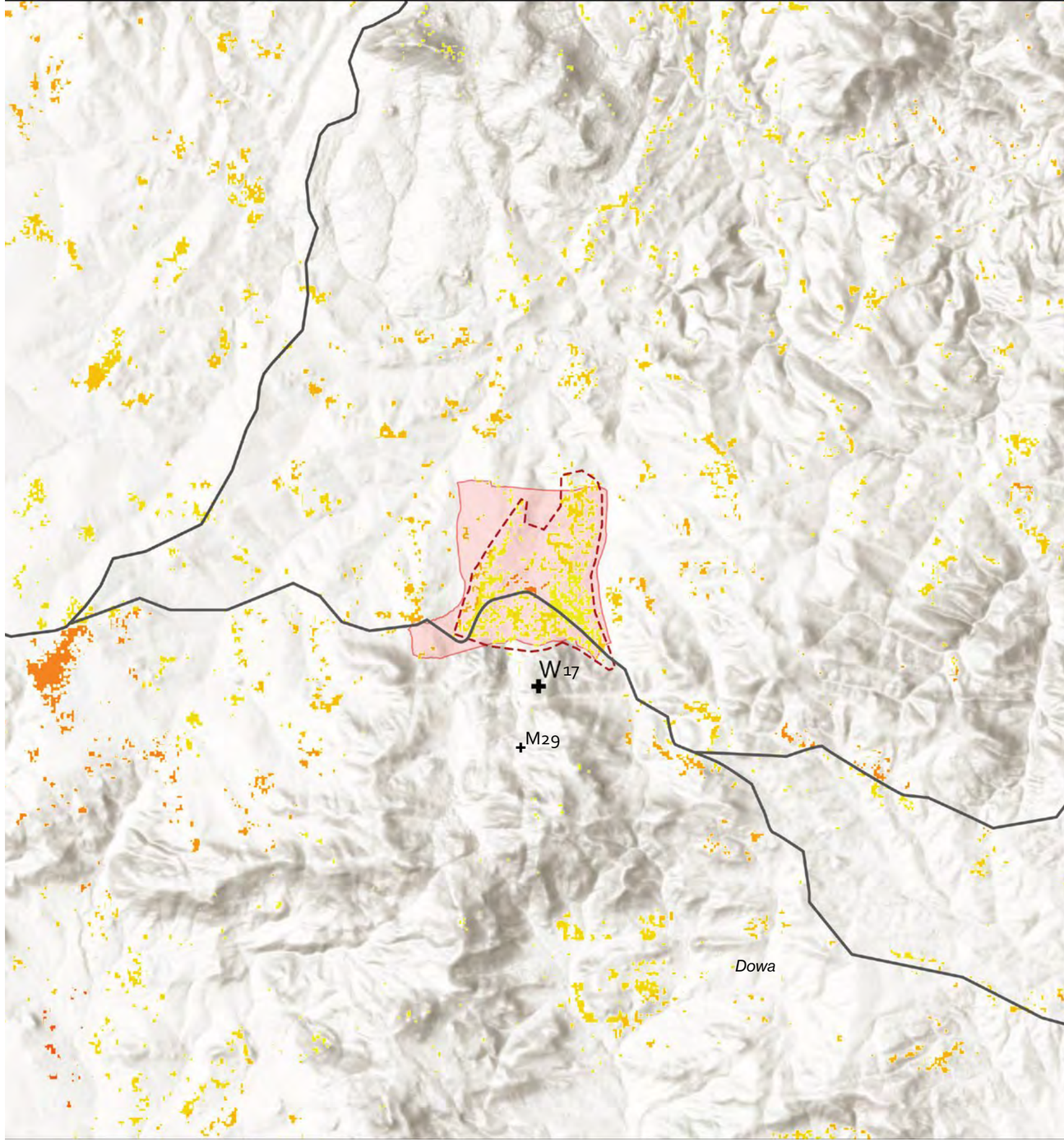




Urban Potential
38 / 41

Land Suitability
5 / 41

Connectivity
Group C



Golomoti

District: Ntcheu

Projects and Assets in a 25 km radius

Energy Projects
E1: Solar Photovoltaic (PV) Project in the Golomoti

Fisheries Projects
F1: Chambo Fisheries

Environmental Protection Projects
EP11: Mua-Livulezi F. Reserve

Transportation Projects
T16: Nkaya to Mchinji Rail Line Rehabilitation

Mineral Resources
M29: Marble

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	313.8
Settlement Population 2018	12,225
Settlement Density	38
25 km radius	
Population 2018	348,179
Urban/Rural Ratio	3/97

Jurisdiction and Land Tenure

Traditional Jurisdictional Area (ha)	N/A
Population witin Jurisdictional Boundary	N/A
Density in Jurisdictional Boundary	N/A
Estates (within 25 km radius) (ha)	-

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	103,144
Conservation Area	12,633
Water Resources	7,147

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	Yes

Transportation

Lake Port	-
Rail	1
Major Road	1
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

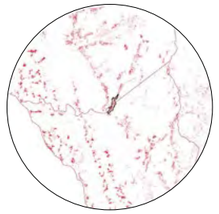
Flood Risk	Low

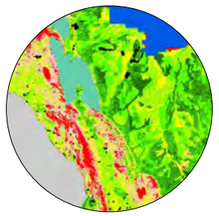
Mining

Active Licence	No

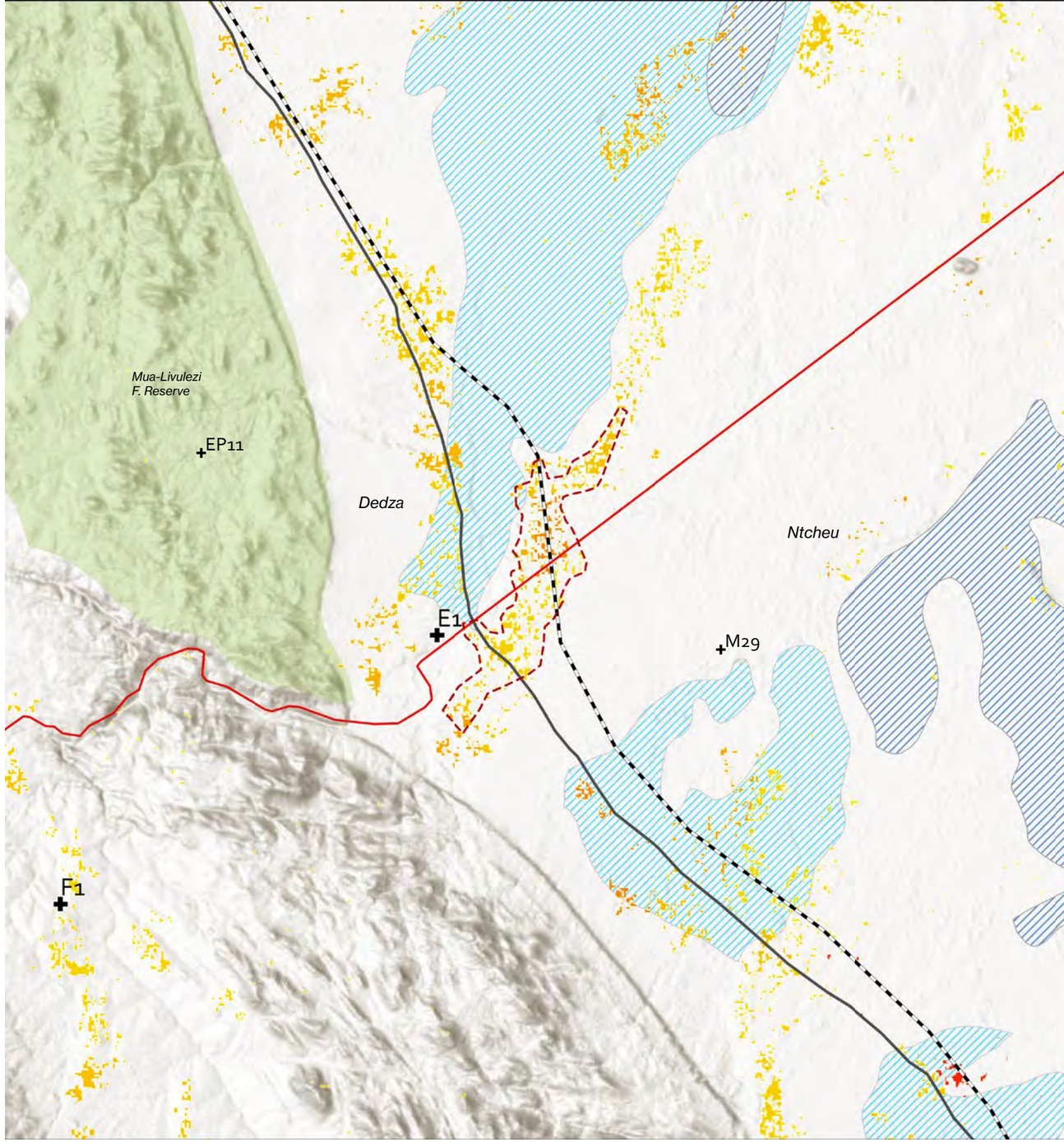
Population Projections

Growth rate	4%
by 2040	28,972
by 2063	71,408
by 2040	825,155
by 2063	2,033,775





Urban Potential	31 / 41
Land Suitability	8 / 41
Connectivity	Group B/2



Karonga

District: Karonga

Projects and Assets in a 25 km radius

Flagship Projects
A24: GBI: Nthola-Illora-Ngosi Irrigation Scheme

Water Projects
W13: Karonga Town Water Supply and Sanitation Project
W1: Songwe River Basin Development Program

Transportation Projects
T6: Mbeya to Chilumba
T19: Karonga Passenger Port Facity Development
T22: Karonga Multi-modal Hub
T23: Karonga Airport Development

Mining Projects
M1,3,4,5,6: Coal, Uranium

Environmental Protection Projects
EP10: Lake Malawi

Agriculture Projects
A31: Commercial and Small Farm Development for Karonga

Fisheries Projects
F8: Karonga Fisheries Development

Climate Change Projects
CC3: Karonga Flood Zone Management and Green Infrastructure

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	2,378.5
Settlement Population 2018	59,613
Settlement Density	25
25 km radius	
Population 2018	204,194
Urban/Rural Ratio	30/70

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	4,425
Population witin Jurisdictional Boundary	61,609
Density in Jurisdictional Boundary	14
Estates (within 25 km radius) (ha)	3,708

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	43,964
Conservation Area	-
Water Resources	90,352

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	Yes

Transportation

Lake Port	-
Rail	-
Major Road	1
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

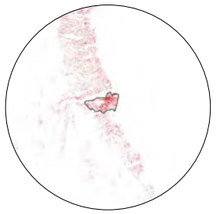
Flood Risk	Low

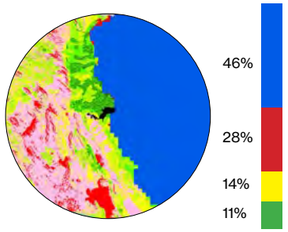
Mining

Active Licence	Yes

Population Projections

Growth rate	3.8%
by 2040	135,419
by 2063	319,316
by 2040	463,857
by 2063	1,093,764

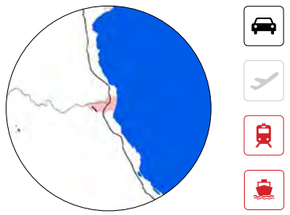


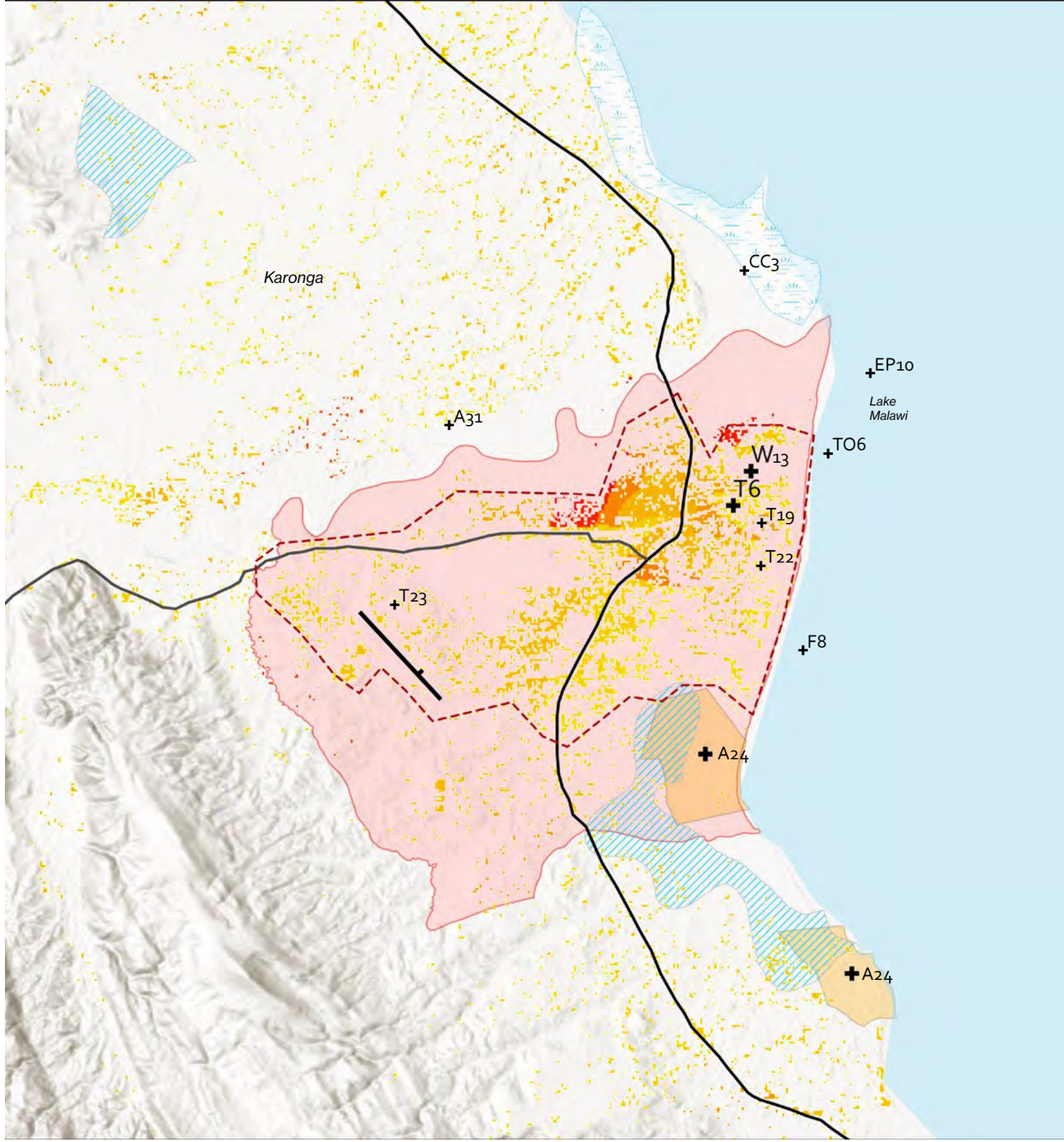


Urban Potential
4 / 41

Land Suitability
33 / 41

Connectivity
Group A/1.5





Kasungu

District: Kasungu

Projects and Assets in a 25 km radius

Water Projects
W8: MIP-1: Dwangwa Multi-purpose Dam
W15: Development of Multipurpose Dams and Integration of Water Supply Schemes for Kasungu, Mponela, Ntcheu, Mchinji and Dedza Towns

Environmental Protection Projects
EP30: Kasungu National Park
EP24: Bua River Rehabilitation
EP25: Dwangwa River Rehabilitation

Agriculture Projects
A12: Press Agriculture Estates
A31: Commercial and Small Farm Development for Karonga

Climate Change Projects
CC7: Kasungu Green Infrastructure Plan

Industry Projects
I14: Kasungu Transit-oriented industrial /Commercial center Development

Transportation Projects
T24: Kasungu Airport Rehabilitation

Mineral Resources
M15: Tijan Mining Company

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	1,393
Settlement Population 2018	54,466
Settlement Density	39
25 km radius	
Population 2018	373,567
Urban/Rural Ratio	15/85

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	3,722
Population witin Jurisdictional Boundary	58,653
Density in Jurisdictional Boundary	15
Estates (within 25 km radius) (ha)	10,899

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	134,319
Conservation Area	8,843
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	Yes

Transportation

Lake Port	-
Rail	-
Major Road	1
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

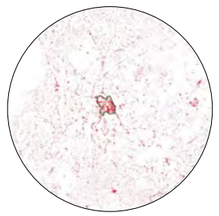
Flood Risk	Low

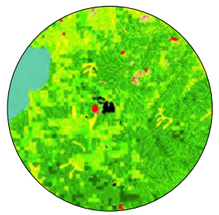
Mining

Active Licence	No

Population Projections

Growth rate	3.5%
by 2040	116,094
by 2063	256,118
by 2040	796,262
by 2063	1,756,645

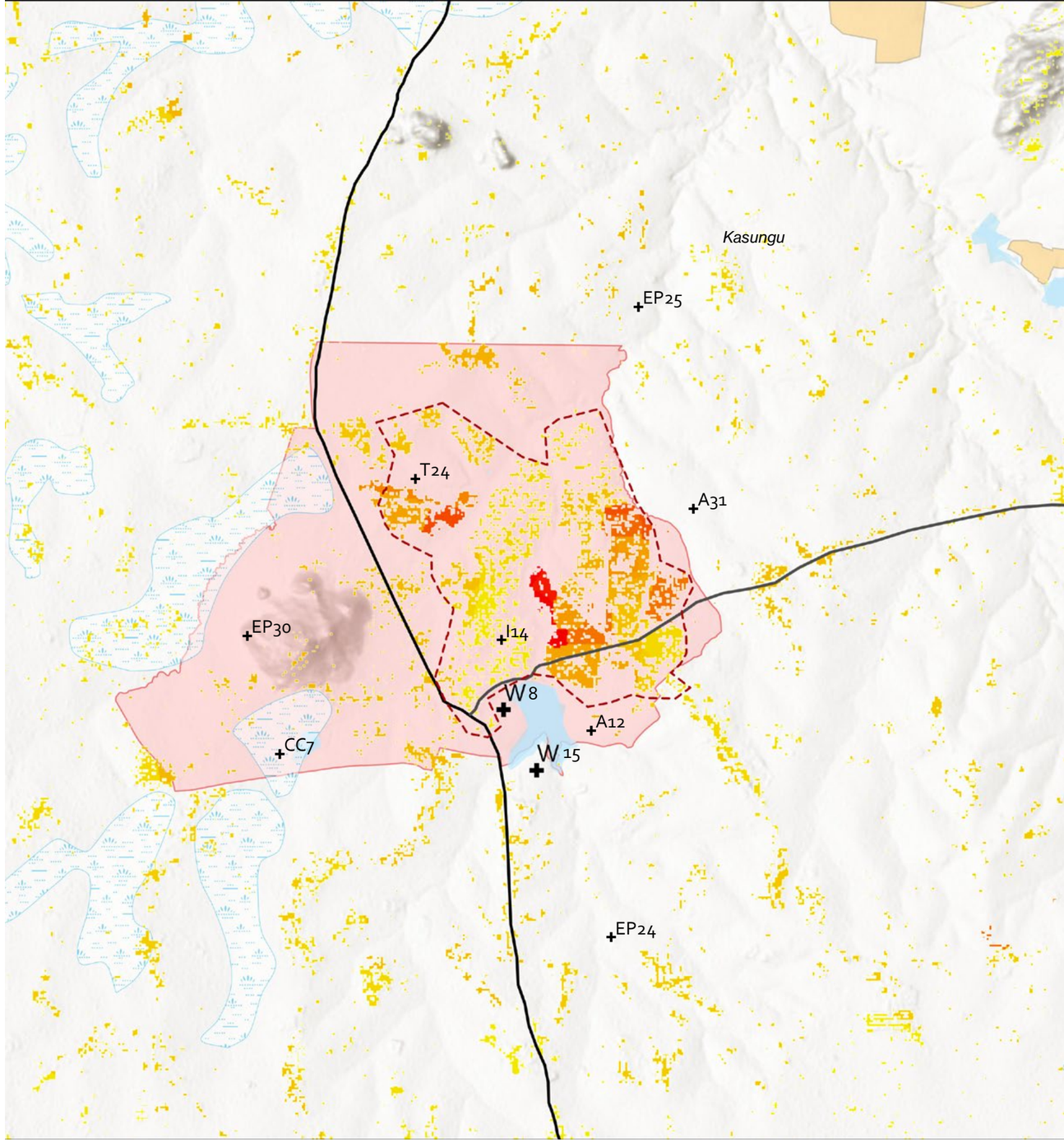




Urban Potential
13 / 41

Land Suitability
1 / 41

Connectivity
Group B/1.5



Likoma

District: Likoma

Projects and Assets in a 25 km radius

Flagship Projects
T9: Construction and Rehabilitation of Ports and Jetties

Tourism Projects
TO9: Likoma Activity Center

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	28
Settlement Population 2018	1,323
Settlement Density	47
25 km radius	
Population 2018	50,056
Urban/Rural Ratio	2/88

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	132
Population witin Jurisdictional Boundary	1,323
Density in Jurisdictional Boundary	10
Estates (within 25 km radius) (ha)	-

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	-
Conservation Area	-
Water Resources	133,500

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	Yes

Transportation

Lake Port	1
Rail	-
Major Road	-
Airport	1

Tourism

Attractions	Yes

Climate Change and Resiliency

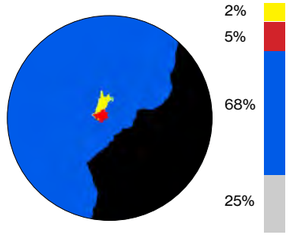
Flood Risk	Low

Mining

Active Licence	No

Population Projections

Growth rate	3.6%
by 2040	2,880
by 2063	6,497
by 2040	108,986
by 2063	245,835



Urban Potential
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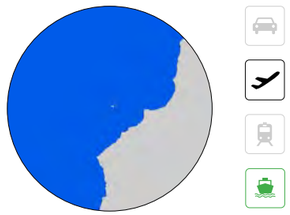
Land Suitability
41 / 41

Connectivity
Group B/1.5



Lilongwe

District: Lilongwe

Projects and Assets in a 25 km radius

Flagship Projects
T14: Expansion and Rehabilitation of Airports
W5: Lake Malawi Water Supply Project
I1: MIP-1: Special Economic Zones Proposal

Water Projects
W7: Lilongwe Water and Sanitation Project
W17: Rehabilitation and Expansion of Water Schemes (Dowa, Dwangwa, Salima, Nkhotakota, Ntchisi)

Agriculture Projects
A4: Kapani
A10: Exagris Africa Estates
A9: Afri-Oils
A7: Nyama World Limited

Energy Projects:
E17: Solar Power Plant Project - Lilongwe Water Board

Mineral Resources
M29: Brickclay

Tourism Projects
TO11 River Boardwalk Lilongwe

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	16,644
Settlement Population 2018	826,149
Settlement Density	50
25 km radius	
Population 2018	1,679,151
Urban/Rural Ratio	50/50

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	40,334
Population witin Jurisdictional Boundary	981,052
Density in Jurisdictional Boundary	24
Estates (within 25 km radius) (ha)	16,579

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	124,876
Conservation Area	12,633
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	-

Transportation

Lake Port	-
Rail	1
Major Road	1
Airport	1

Tourism

Attractions	Yes

Climate Change and Resiliency

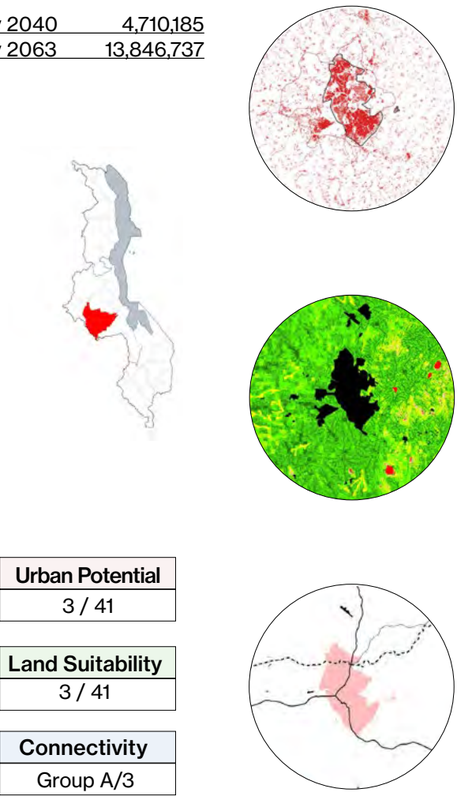
Flood Risk	Low

Mining

Active Licence	No

Population Projections

Growth rate	4.8%
by 2040	2,317,429
by 2063	6,812,650
by 2040	4,710,185
by 2063	13,846,737



Urban Potential
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Land Suitability
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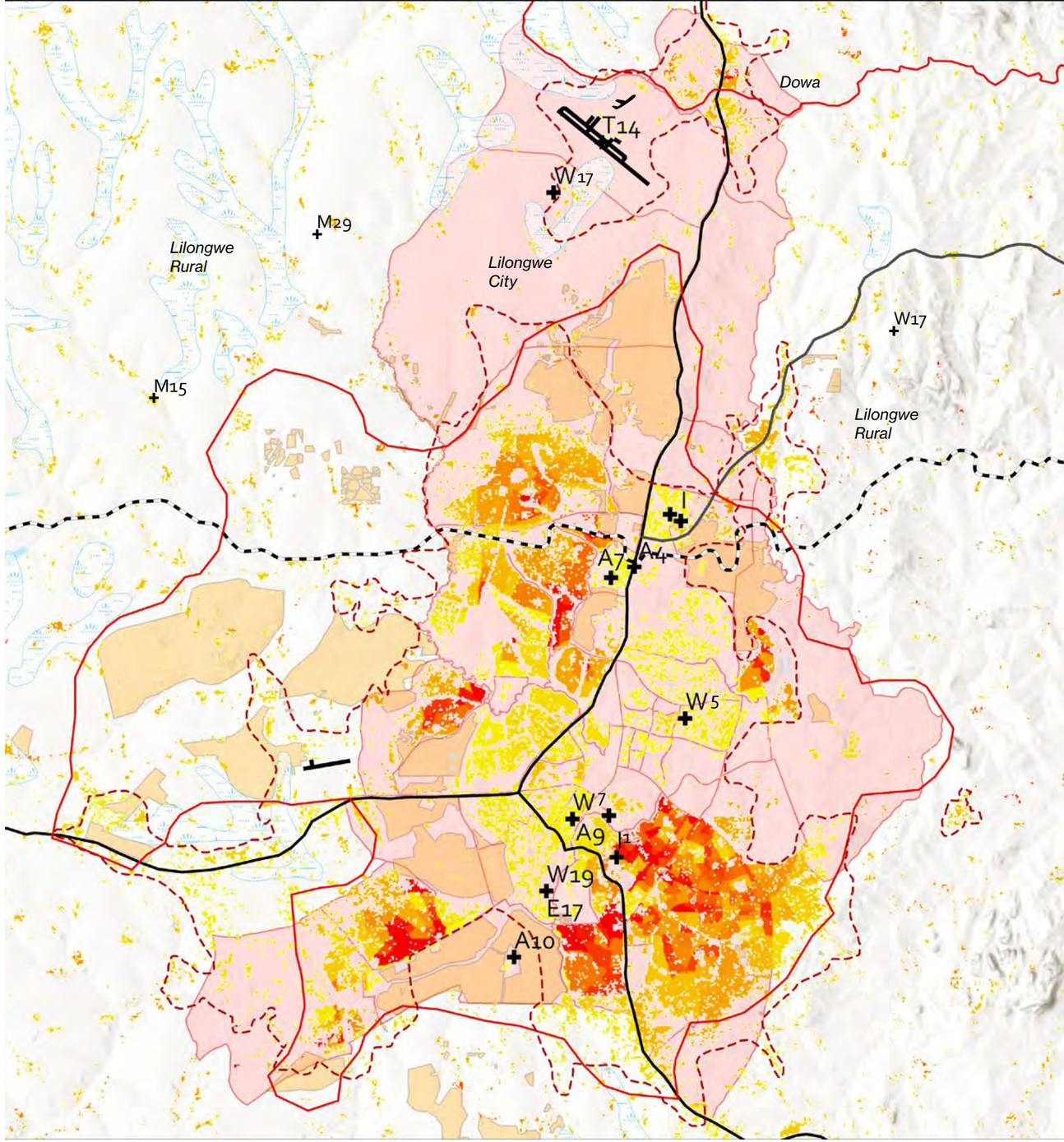
Connectivity
Group A/3



Liwonde

District: Machinga and Balaka

Projects and Assets in a 25 km radius

Flagship Projects
T16: Nkaya to Mchinji Rail Line Rehabilitation

Transportation Projects
T4: Liwonde Port Development

Water Projects
W20: Upgrading Rehabilitation and Extension of Liwonde Water Supply Project to include Balaka

Industry Projects
I4: Malawi Fertilizer Company - Superfert
I10: Liwonde Transit-oriented Commercial/Industrial Center Development

Environmental Protection Projects
EP12: Liwonde National Park
EP13: Liwonde Forest Reserve

Agriculture Projects
A31: Commercial and Small Farm Development for Liwonde

Tourism Projects
TO12: Shire River Waterfront

Climate Chang Projects
CC5: Liwonde Flood Zone Management and Green Infrastructure Plan

Population Distribution and Growth Trends

Settlement Footprint 2020 (ha)	1,488
Settlement Population 2018	44,349
Settlement Density	30
25 km radius	
Population 2018	409,233
Urban/Rural Ratio	11/89

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	3,706
Population within Jurisdictional Boundary	36,421
Density in Jurisdictional Boundary	9.83
Estates (within 25 km radius) (ha)	5,002

Natural Resources (25 km radius)

Agricultural Land Suitability	115,683
Conservation Area	56,317
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	Yes

Transportation

Lake Port	-
Rail	1
Major Road	1
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

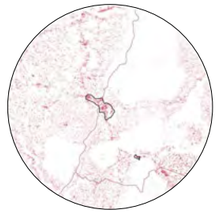
Flood Risk	Medium

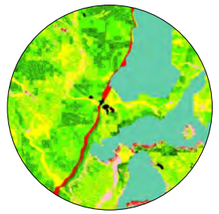
Mining

Active Licence	No

Population Projections

Growth rate	4.4%
by 2040	114,365
by 2063	307,897
by 2040	1,055,313
by 2063	2,841,142





Urban Potential
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Land Suitability
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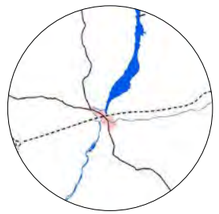
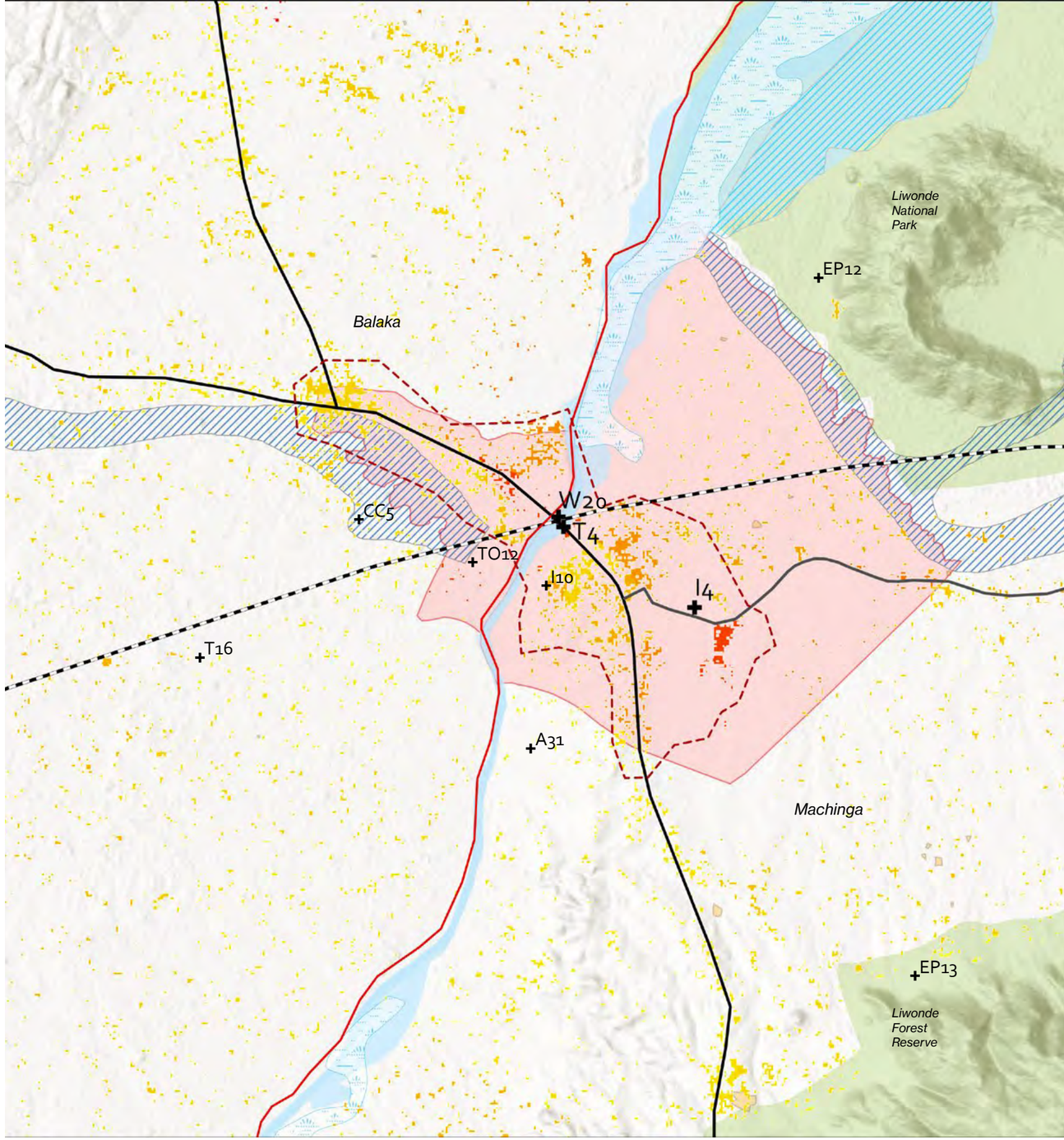
Connectivity
Group A/2.25





Luchenza

District: Thyolo and Mulanje

Projects and Assets in a 25 km radius

Flagship Projects
W4: Construction of New Water Sources from Likhubula River in Mulanje to Blantyre

Energy Projects
E13: Zoa Falls

Industry Projects
I15: Luchenza Transit-oriented Industrial/Commercial Center Development

Transportation Projects
T28: Luchenza multi-modal station
T29: M2 road from Blantyre to Muloza

Environmental Protection Projects
EP32: Tuchila River Buffer Zone

Tourism Projects
TO2: Integrated Cable Car Resort on Mount Mulanje

Mining Projects
M25: Rock Aggregate

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	593
Settlement Population 2018	17,629
Settlement Density	30
25 km radius	
Population 2018	890,028
Urban/Rural Ratio	2/98

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	1,019
Population witin Jurisdictional Boundary	12,600
Density in Jurisdictional Boundary	12
Estates (within 25 km radius) (ha)	3,084

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	144,035
Conservation Area	3,549
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	-

Transportation

Lake Port	-
Rail	1
Major Road	1
Airport	-

Tourism

Attractions	-

Climate Change and Resiliency

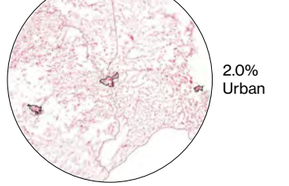
Flood Risk	Low

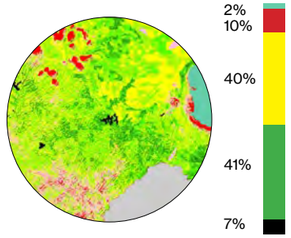
Mining

Active Licence	No

Population Projections

Growth rate	3.1%
by 2040	34,507
by 2063	69,641
by 2040	1,742,185
by 2063	3,515,957





Urban Potential
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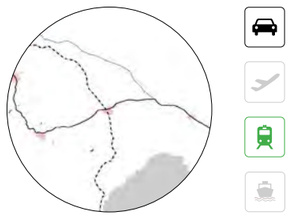
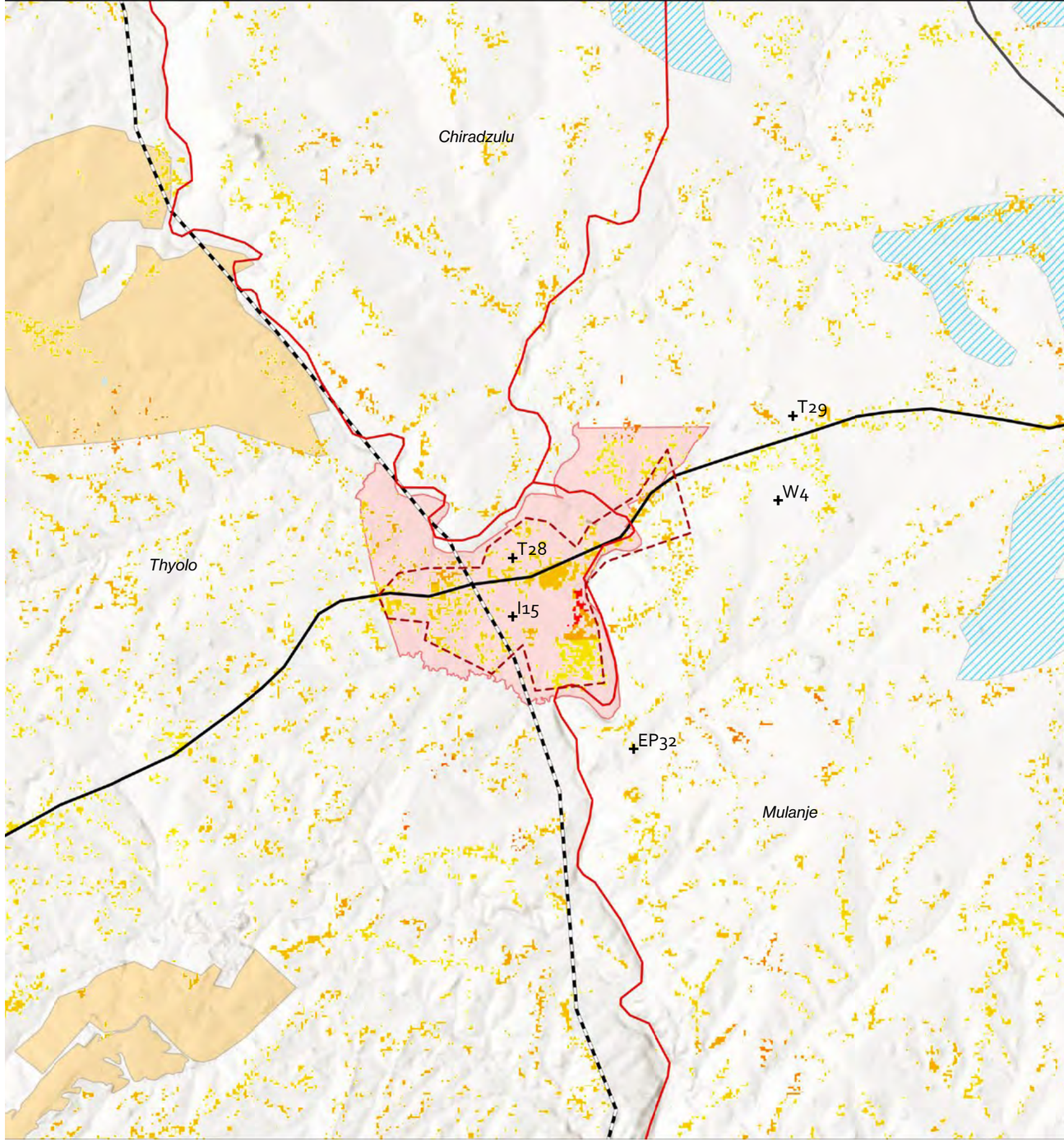
Land Suitability
12 / 41

Connectivity
Group B/1.5





Machinga

District: Machinga

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	77.7
Settlement Population 2018	1,833
Settlement Density	23.5
25 km radius	
Population 2018	592,152
Urban/Rural Ratio	0/100

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	240
Population witin Jurisdictional Boundary	1,833
Density in Jurisdictional Boundary	7,6
Estates (within 25 km radius) (ha)	-

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	104,688
Conservation Area	60,900
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	Yes

Transportation

Lake Port	-
Rail	-
Major Road	1
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

Flood Risk	Low

Mining

Active Licence	No

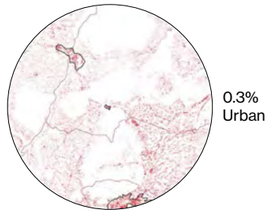
Projects and Assets in a 25 km radius

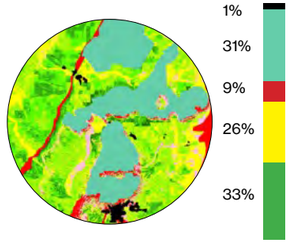
Environmental Protection Projects
EP13: Liwonde Forest Reserve
EP14: Zomba Malosa Forest

Mining Projects/ Mineral Resources
M19, 20: Limestone and Rock Aggregate
M29: Marble

Population Projections

Growth rate	4.9%
by 2040	5,250
by 2063	15,778
by 2040	1,696,266
by 2063	5,079,182





Urban Potential
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Land Suitability
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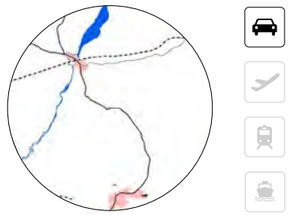
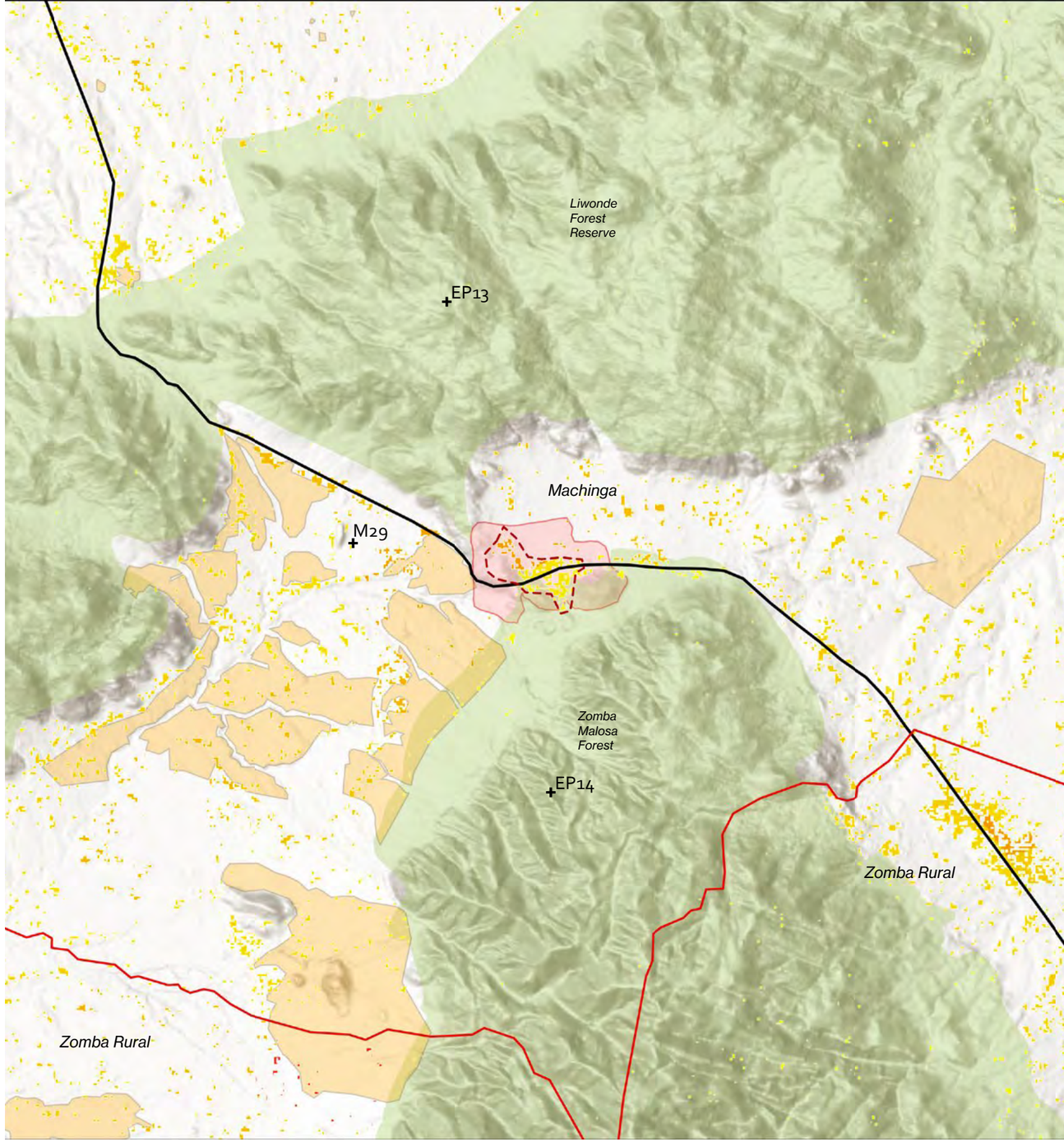
Connectivity
Group C





Mangochi

District: Mangochi

Projects and Assets in a 25 km radius

Flagship Projects
GBI: Malombe Scheme in Mangochi

Water Projects
W22: Proposal for Extension of Mangochi Water Supply System to Lakeshore Areas

Agriculture Projects
A10: Exagris Africa Estates

Environmental Protection Projects
EP15: Lake Malombe
EP10: Lake Malawi
EP36: Phirilongwe Forest Reserve
EP35: Mangochi Forest Reserve

Tourism Projects
TO1: Cape maclear Resort Project

Fisheries and Aquaculture Projects
F2: Maldeco Aquaculture Farm

Transportation Projects
T35: Monkey Bay Port Development
T36: Mangochi Port Development

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	1,380
Settlement Population 2018	75,101
Settlement Density	54.3
25 km radius	
Population 2018	388,423
Urban/Rural Ratio	19/81

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	1,125
Population witin Jurisdictional Boundary	52,613
Density in Jurisdictional Boundary	46.7
Estates (within 25 km radius) (ha)	688

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	61,980
Conservation Area	37,513
Water Resources	47,275

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	Yes

Transportation

Lake Port	-
Rail	-
Major Road	1
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

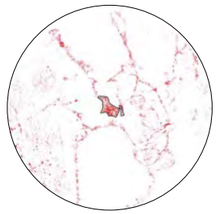
Flood Risk	High

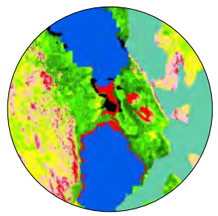
Mining

Active Licence	No

Population Projections

Growth rate	4.4%
by 2040	193,667
by 2063	521,396
by 2040	1,001,649
by 2063	2,696,667





Urban Potential
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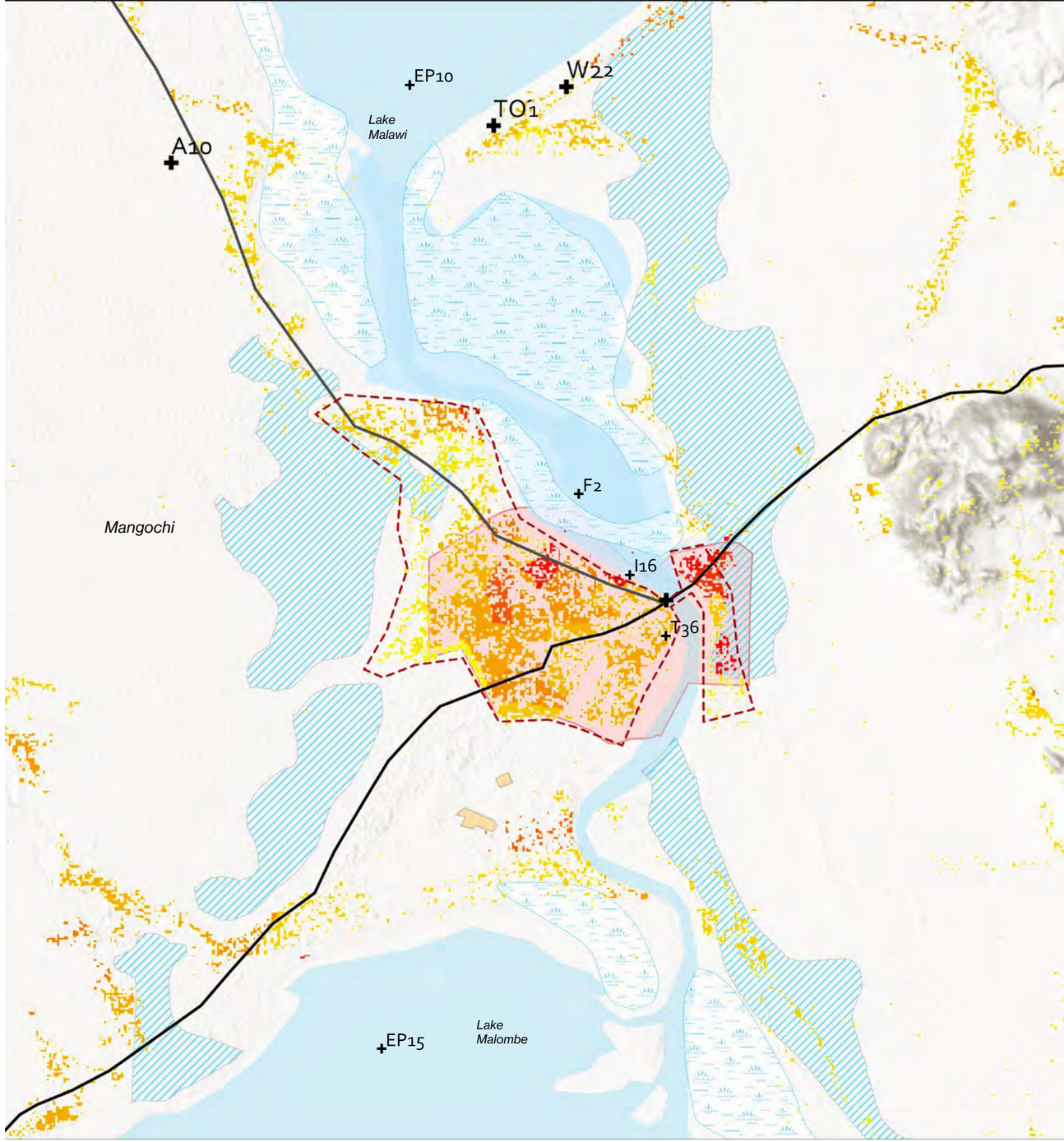
Land Suitability
13 / 41

Connectivity
Group B/1.25



Mchinji

District: Mchinji

Projects and Assets in a 25 km radius

Flagship Projects
T16: Nkaya to Mchinji Rail Line Rehabilitation

Agriculture Projects
A10: Exagris Africa Estates

Water Projects
W15: Development of Multi-purpose Dams and Integration of Water Supply Schemes for Kasungu, Mponela, Ntcheu, Mchinji and Dedza Towns

Natural Resources
EP16: Mchinji Forest Reserve

Mineral Resources
M29- Silica Sand

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	939
Settlement Population 2018	35,518
Settlement Density	38
25 km radius	
Population 2018	279,117
Urban/Rural Ratio	13/87

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	1,003
Population witin Jurisdictional Boundary	28,011
Density in Jurisdictional Boundary	28
Estates (within 25 km radius) (ha)	15,281

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	88,079
Conservation Area	13,810
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	Yes

Transportation

Lake Port	-
Rail	1
Major Road	1
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

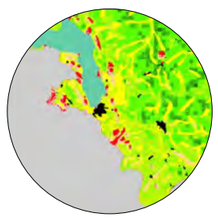
Flood Risk	Low

Mining

Active Licence	No

Population Projections

Growth rate	3.2%
by 2040	71,023
by 2063	146,566
by 2040	558,135
by 2063	1,151,788



Urban Potential
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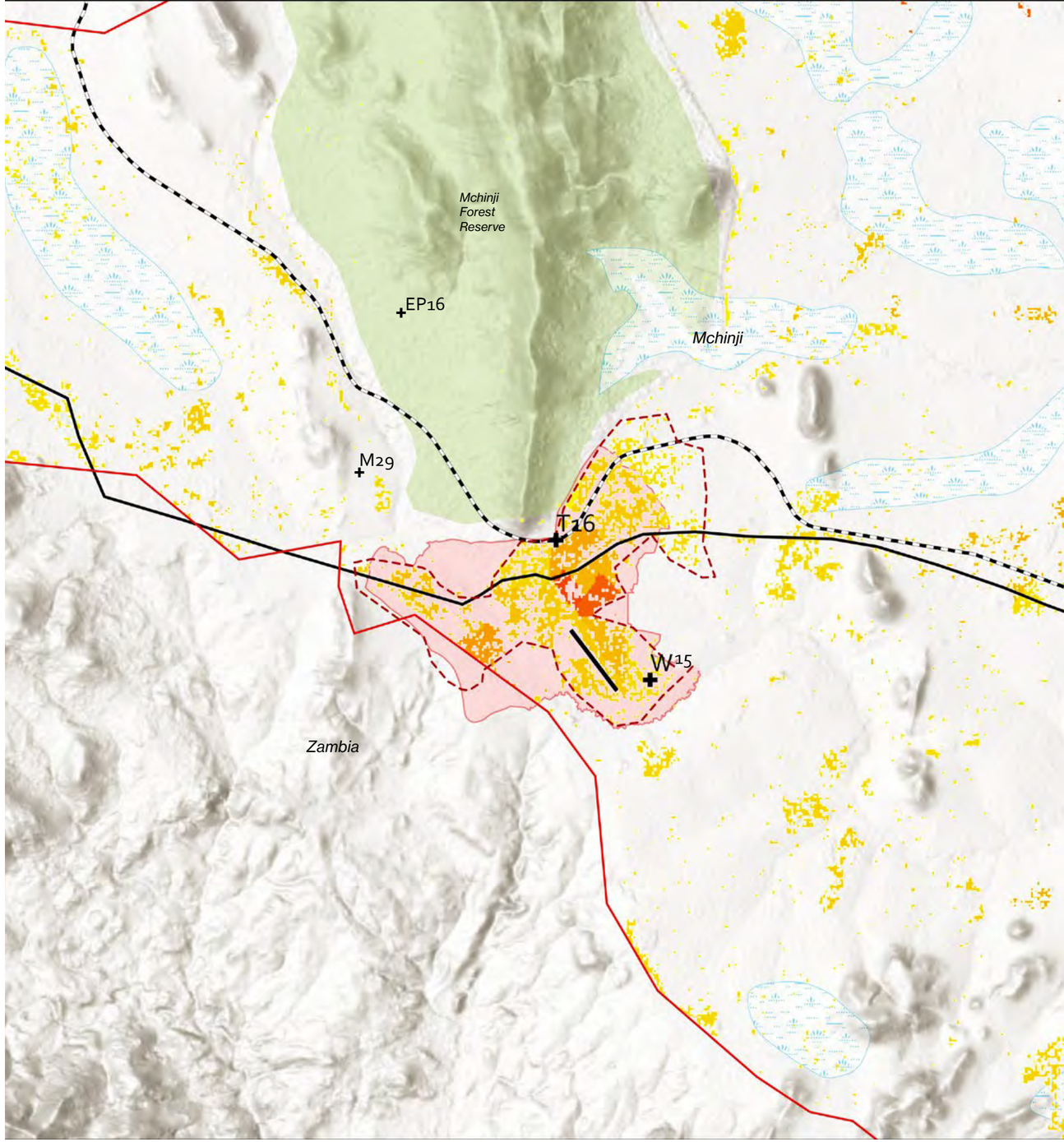
Land Suitability
23 / 41

Connectivity
Group B/2



0 2.5 5 Km

Water Features
Natural Reserves
Settlement Footprint
Estate Farms
Road Network
Rail Tracks
Port Facility
Airport facility
Urban Jurisdiction
District Boundary
Exceptional Floods
Frequent Floods
Marshes
Settlement Pattern

Monkey Bay

District: Mangochi

Projects and Assets in a 25 km radius

Flagship Projects
I1: MIP-1: Special Economic Zones Proposal

Tourism Projects
TO1: Cape Maclear Resort Project

Environmental Protection Projects
EP10: Lake Malawi

Mineral Resources
M29: Monazite, Titanium

Industry Projects
I16: Monkey Bay transit-oriented Commercial /Industrial Center Development

Transportation Projects
T35: Monkey Bay Port Development
T36: Mangochi Port Development

Agricultural Projects
A31: Commercial and Small Farm Development for Monkey Bay

Climate Change Projects
CC8: Monkey Bay Flood Zone Management and Green Infrastructure

Aquaculture and Fisheries Projects
F2: Maldeco Fisheries

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	601
Settlement Population 2018	14,955
Settlement Density	25
25 km radius	
Population 2018	115,942
Urban/Rural Ratio	13/87

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	1,065
Population witin Jurisdictional Boundary	14,955
Density in Jurisdictional Boundary	14
Estates (within 25 km radius) (ha)	450

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	21,904
Conservation Area	-
Water Resources	151,180

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	Yes

Transportation

Lake Port	1
Rail	-
Major Road	-
Airport	1

Tourism

Attractions	Yes

Climate Change and Resiliency

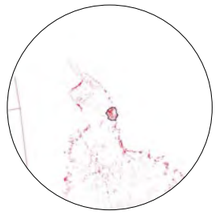
Flood Risk	Low

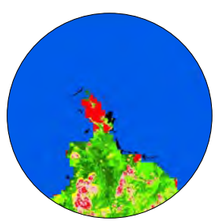
Mining

Active Licence	No

Population Projections

Growth rate	4.4%
by 2040	38,565
by 2063	103,826
by 2040	298,986
by 2063	804,939





Urban Potential
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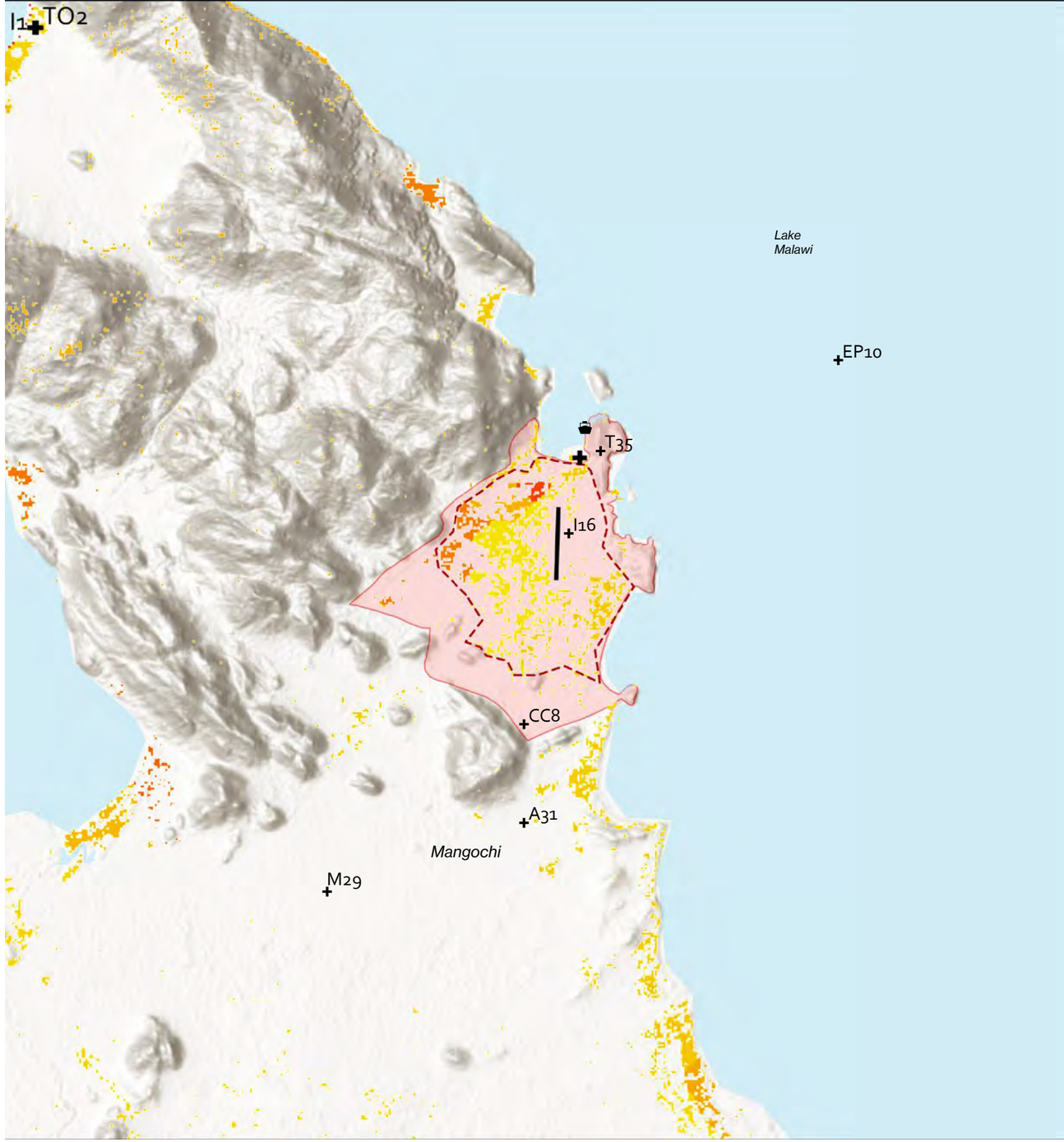
Land Suitability
30 / 41

Connectivity
Group A/2



Mponela

District: Dowa

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	950
Settlement Population 2018	36,961
Settlement Density	38
25 km radius	
Population 2018	627,789
Urban/Rural Ratio	6/94

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	1,025
Population witin Jurisdictional Boundary	24,543
Density in Jurisdictional Boundary	24
Estates (within 25 km radius) (ha)	-

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	125,439
Conservation Area	-
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	-

Transportation

Lake Port	-
Rail	-
Major Road	1
Airport	-

Tourism

Attractions	No

Climate Change and Resiliency

Flood Risk	Low

Mining

Active Licence	No

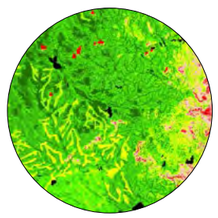
Projects and Assets in a 25 km radius

Water Projects
W15: Development of Multi-purpose Dams and Integration of Water Supply Schemes for Kasungu, Mponela, Ntcheu, Mchinji and Dedza Towns

Mineral Resources
M29: Gypsum

Population Projections

Growth rate	3.8%
by 2040	83,962
by 2063	197,981
by 2040	1,426,118
by 2063	3,362,750



Urban Potential
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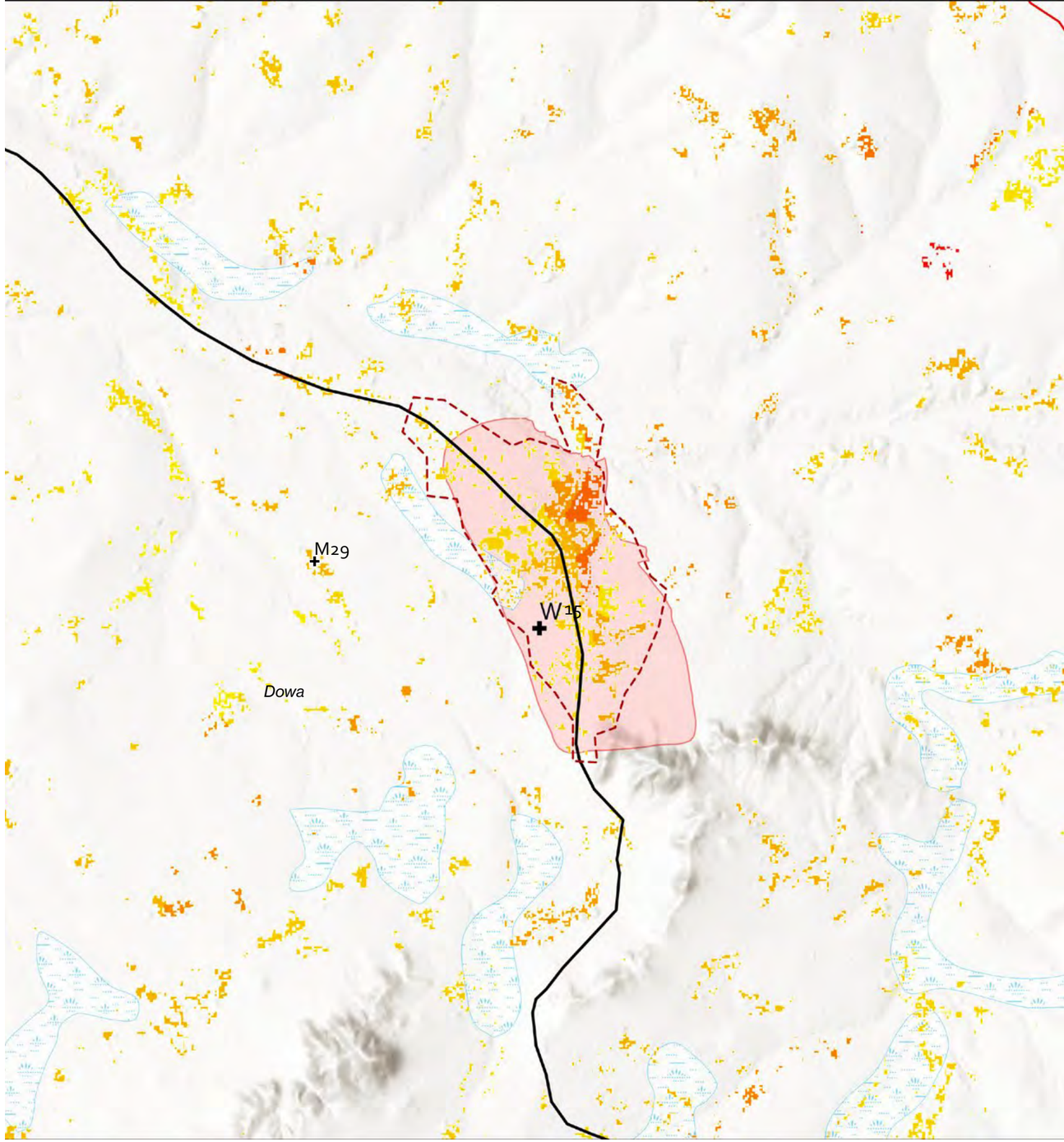
Land Suitability
2 / 41

Connectivity
Group C



Mulanje

District: Mulanje

Projects and Assets in a 25 km radius

Flagship Projects
W4: Construction of New Water Sources from Likhubula River in Mulanje to Blantyre

Mining Projects/ Mineral Resources
M25: Rock Aggregate
M29- Kaolinite, Bauxite

Environmental Protection Projects
EP17: Mulanje Mountain Reserve

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	179
Settlement Population 2018	7,221
Settlement Density	40
25 km radius	
Population 2018	633,572
Urban/Rural Ratio	1/99

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	1365.7
Population witin Jurisdictional Boundary	14,782
Density in Jurisdictional Boundary	11
Estates (within 25 km radius) (ha)	9,234

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	90,563
Conservation Area	35,628
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	-

Transportation

Lake Port	-
Rail	-
Major Road	1
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

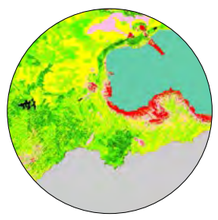
Flood Risk	Low

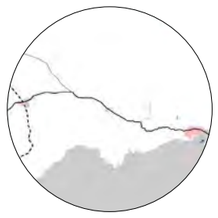
Mining

Active Licence	No

Population Projections

Growth rate	3.1%
by 2040	14,134
by 2063	28,525
by 2040	1,240,185
by 2063	2,502,856





Urban Potential
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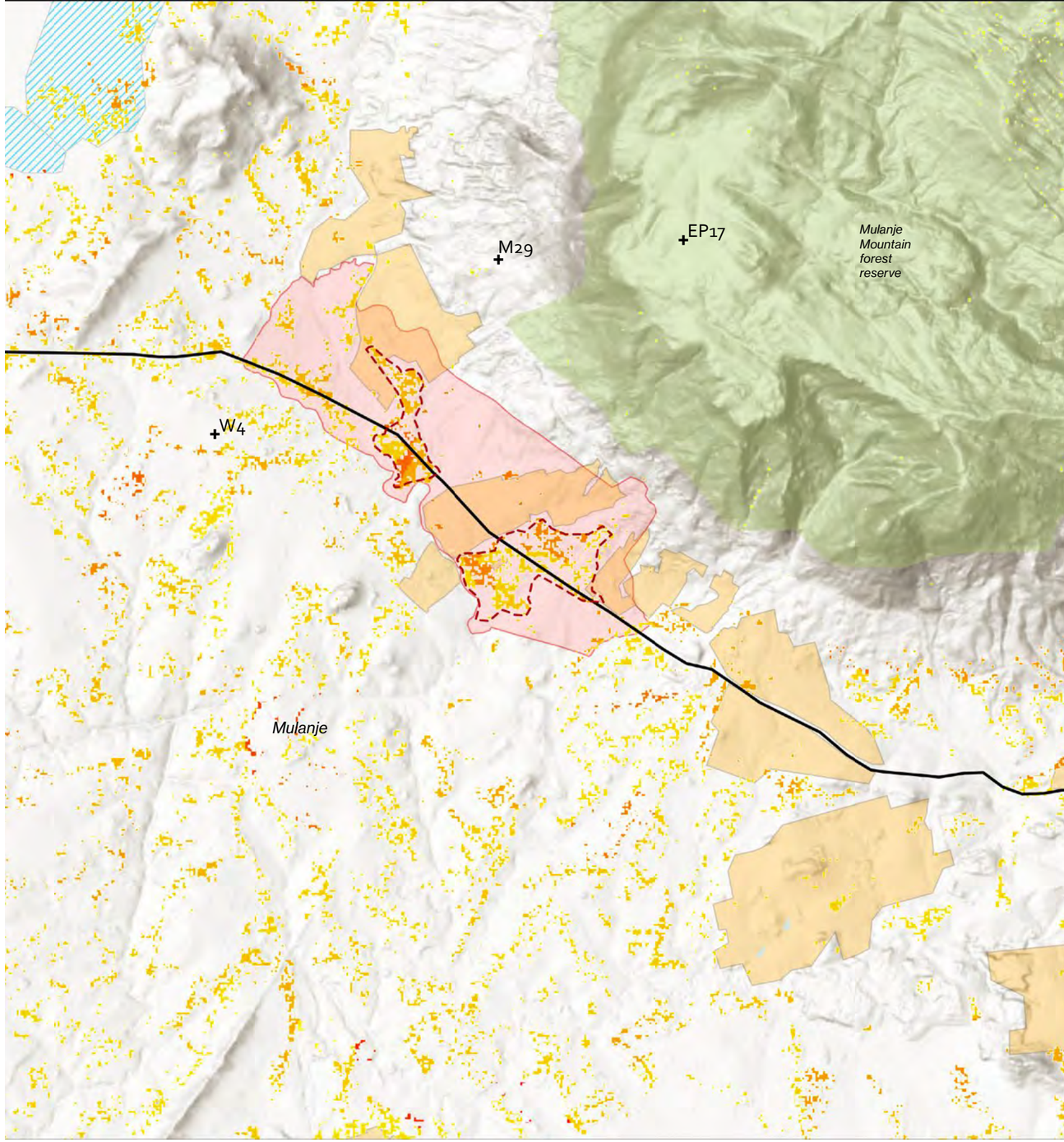
Land Suitability
20 / 41

Connectivity
Group C



Muloza

District: Mulanje

Projects and Assets in a 25 km radius

Agriculture Projects:
A11: Lujeri Tea Estates

Natural Resources
EP17: Mulanje Mountain Reserve

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	1,090
Settlement Population 2018	31,564
Settlement Density	29
25 km radius	
Population 2018	287,462
Urban/Rural Ratio	11/89

Jurisdiction and Land Tenure

Traditional Jurisdictional Area (ha)	N/A
Population witin Jurisdictional Boundary	N/A
Density in Jurisdictional Boundary	N/A
Estates (within 25 km radius) (ha)	-

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	30,690
Conservation Area	40,261
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	-

Transportation

Lake Port	-
Rail	-
Major Road	1
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

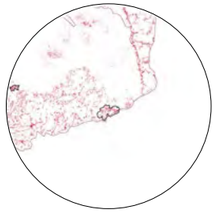
Flood Risk	Low

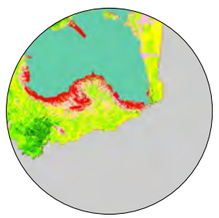
Mining

Active Licence	No

Population Projections

Growth rate	3.1%
by 2040	61,784
by 2063	124,690
by 2040	562,690
by 2063	1,135,582





Urban Potential
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Land Suitability
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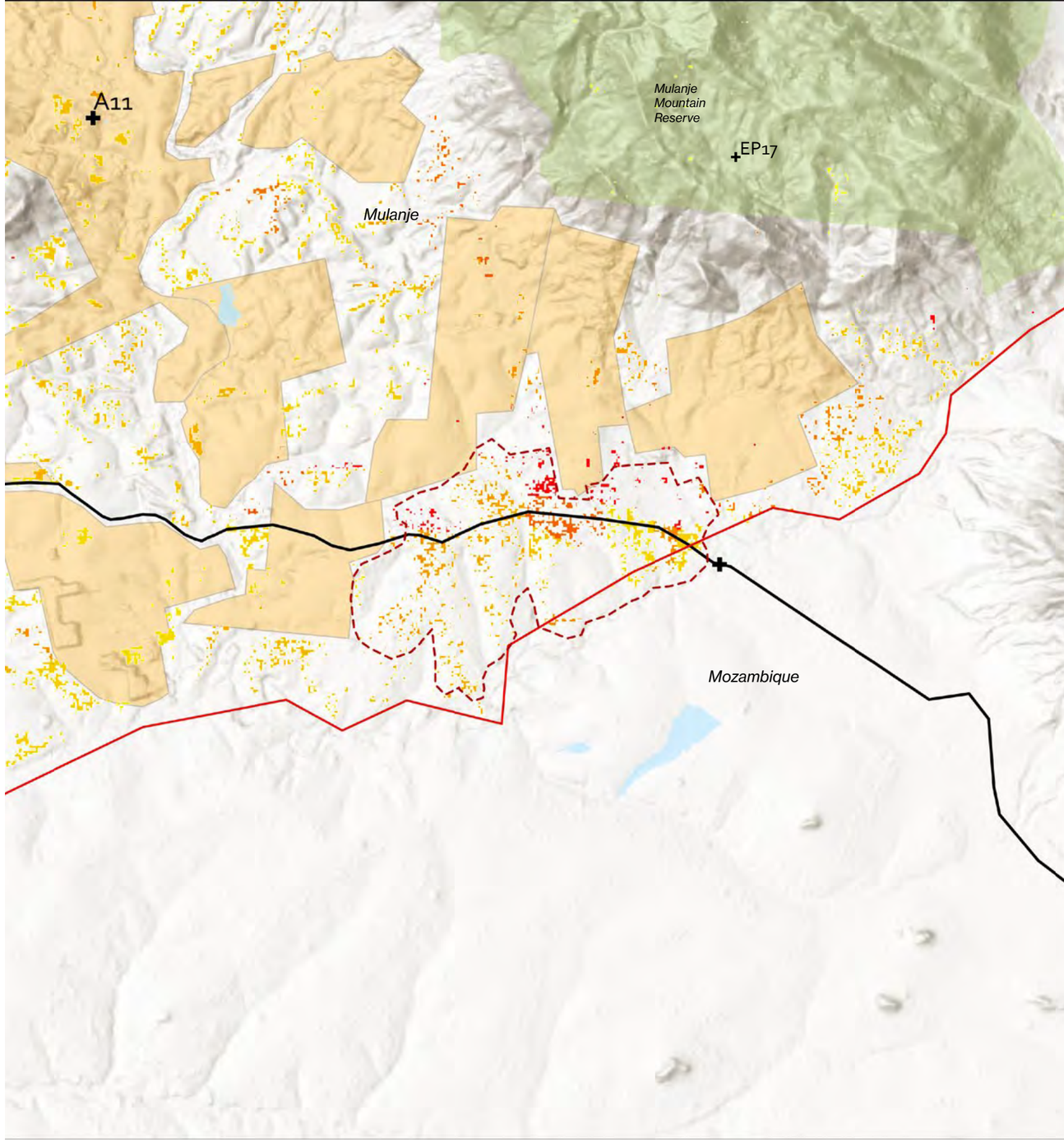
Connectivity
Group C



Mwanza

District: Mwanza

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	607
Settlement Population 2018	25,776
Settlement Density	42
25 km radius	
Population 2018	21,481
Urban/Rural Ratio	12/88

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	1,243
Population witin Jurisdictional Boundary	18,039
Density in Jurisdictional Boundary	14.5
Estates (within 25 km radius) (ha)	1,114

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	78,312
Conservation Area	3,014
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	-

Transportation

Lake Port	-
Rail	-
Major Road	1
Airport	-

Tourism

Attractions	No

Climate Change and Resiliency

Flood Risk	Low

Mining

Active Licence	No

Projects and Assets in a 25 km radius

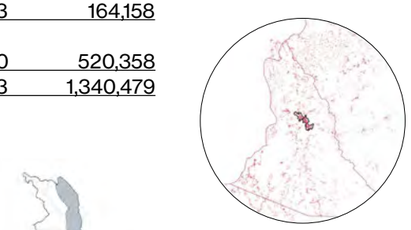
Energy Projects
E5: Mpatamanga Power Station

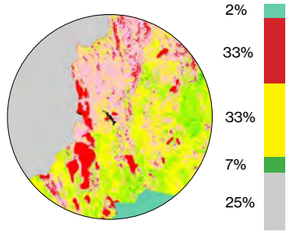
Population Projections

Growth rate
4.2%

by 2040	63,724
by 2063	164,158

by 2040	520,358
by 2063	1,340,479





Urban Potential
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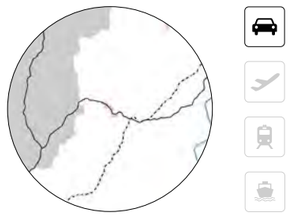
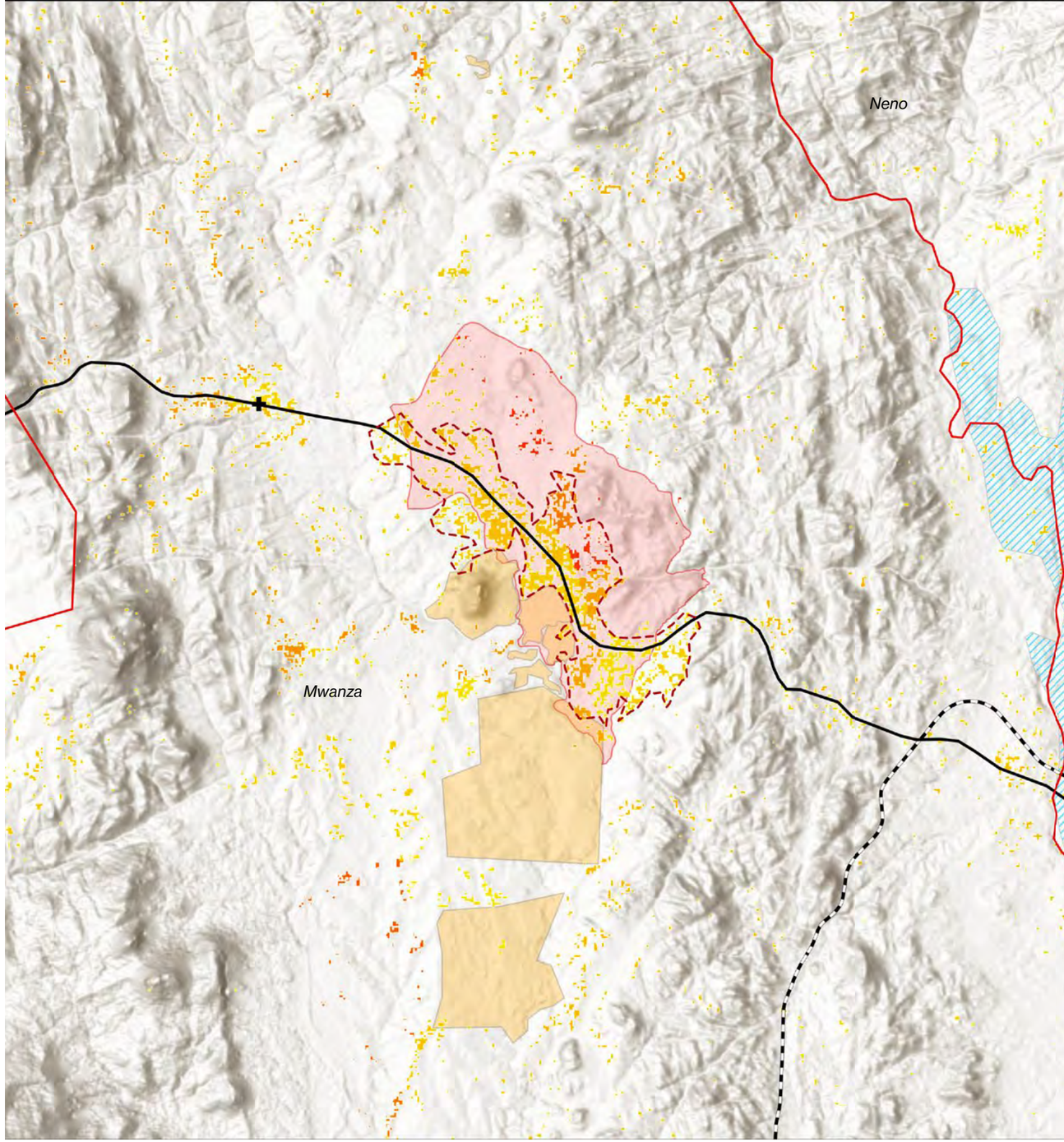
Land Suitability
36 / 41

Connectivity
Group C





0 2.5 5 Km

Water Features
Natural Reserves
Settlement Footprint
Estate Farms
Road Network
Rail Tracks
Port Facility
Airport facility
Urban Jurisdiction
District Boundary
Exceptional Floods
Frequent Floods
Marshes
Settlement Pattern

Mzimba

District: Mzimba

Projects and Assets in a 25 km radius

Agriculture Projects
A10: Exagris Africa Estates

Natural Resources
Viphya Complex Forest Reserve

Mineral Resources
M29- Mica, Beryl

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	1,363
Settlement Population 2018	32,849
Settlement Density	24
25 km radius	
Population 2018	199,487
Urban/Rural Ratio	16/84

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	1,055
Population witin Jurisdictional Boundary	26,096
Density in Jurisdictional Boundary	25
Estates (within 25 km radius) (ha)	117

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	122,536
Conservation Area	40,281
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	-

Transportation

Lake Port	-
Rail	-
Major Road	1
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

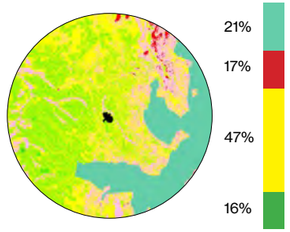
Flood Risk	Medium

Mining

Active Licence	No

Population Projections

Growth rate	4.2%
by 2040	64,300
by 2063	129,766
by 2040	390,485
by 2063	788,051



Urban Potential
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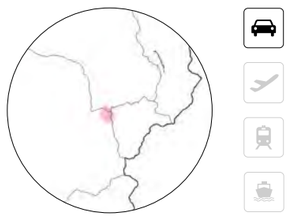
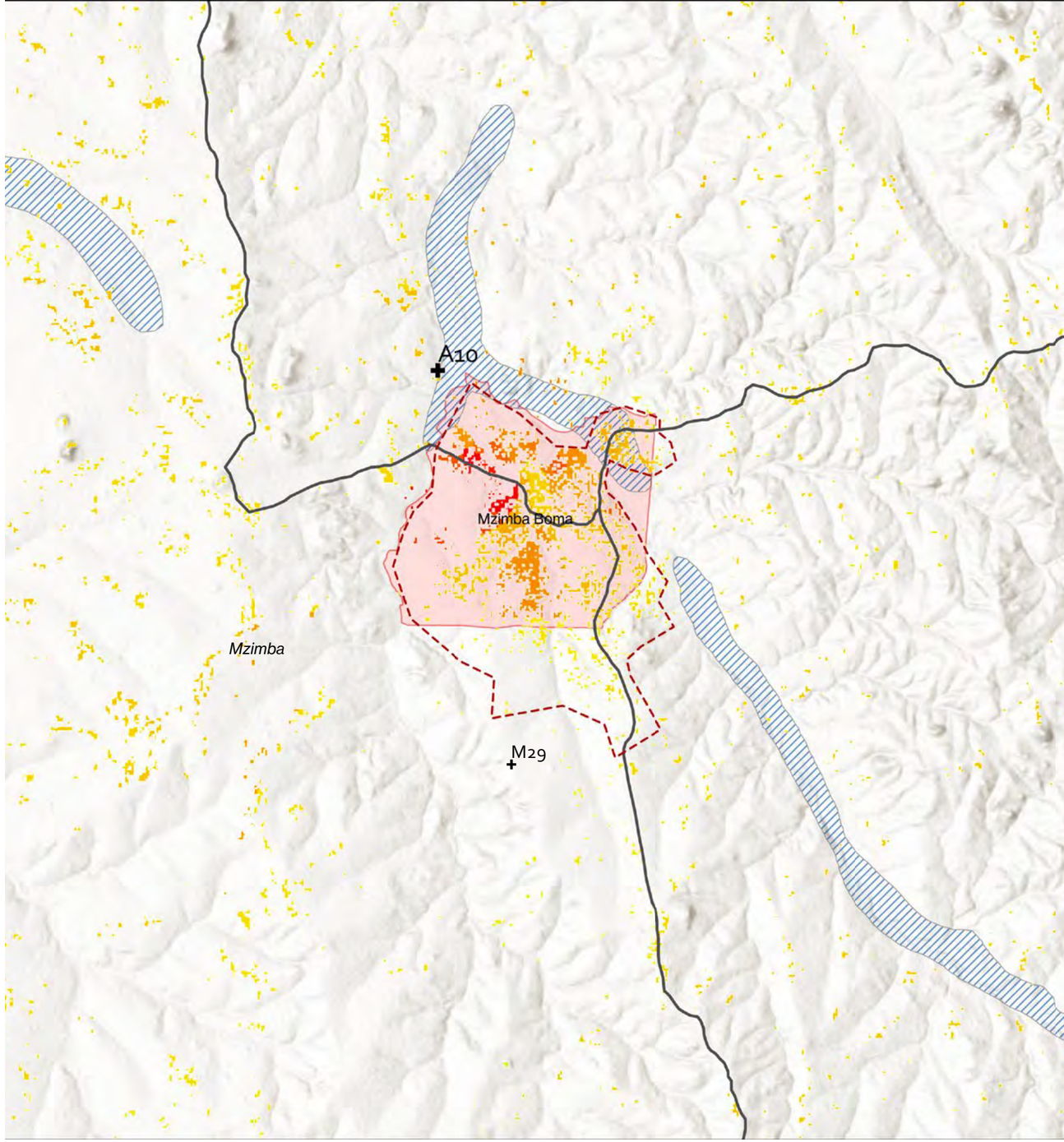
Land Suitability
29 / 41

Connectivity
Group C





Mzuzu

District: Mzimba

Projects and Assets in a 25 km radius

Flagship Projects
T15: Expansion and Rehabilitation of Airports
I1: MIP-1: Special Economic Zone Proposal

Water Projects
W14: Mzuzu City Sanitation Project

Environmental Protection Projects
EP18: Kaningina Forest Reserve

Mineral Resources
M29: Brickclay

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	6,706
Settlement Population 2018	215,944
Settlement Density	35
25 km radius	
Population 2018	396,304
Urban/Rural Ratio	54/46

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	14,592
Population witin Jurisdictional Boundary	221,272
Density in Jurisdictional Boundary	15
Estates (within 25 km radius) (ha)	621

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	70,401
Conservation Area	29,504
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	-

Transportation

Lake Port	-
Rail	-
Major Road	1
Airport	1

Tourism

Attractions	Yes

Climate Change and Resiliency

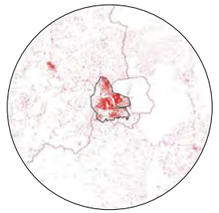
Flood Risk	Medium

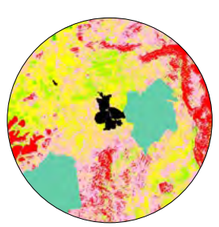
Mining

Active Licence	No

Population Projections

Growth rate	7.3%
by 2040	1,017,501
by 2063	5,114,327
by 2040	1,867,335
by 2063	9,440,955





Urban Potential
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Land Suitability
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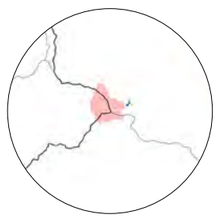
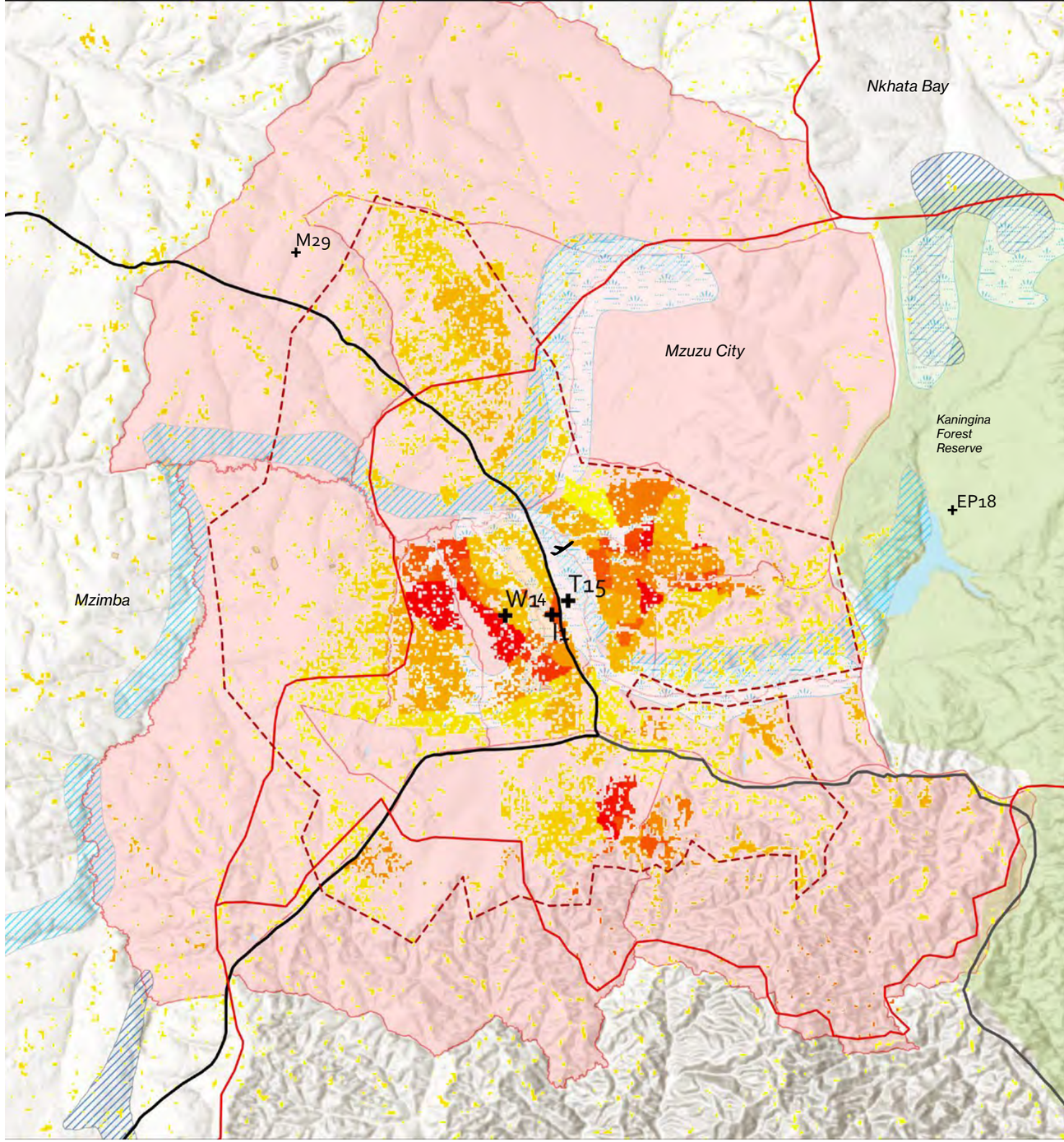
Connectivity
Group B/2





Nchalo

District: Chikwawa

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	734.5
Settlement Population 2018	33,790
Settlement Density	46
25 km radius	
Population 2018	439,903
Urban/Rural Ratio	8/92

Jurisdiction and Land Tenure

Traditional Jurisdictional Area (ha)	N/A
Population witin Jurisdictional Boundary	N/A
Density in Jurisdictional Boundary	N/A
Estates (within 25 km radius) (ha)	-

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	110,3131
Conservation Area	-
Water Resources	20,393

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	Yes

Transportation

Lake Port	-
Rail	-
Major Road	1
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

Flood Risk	High

Mining

Active Licence	No

Projects and Assets in a 25 km radius

Flagship Projects
W2: Shire Valley Transformation Programme

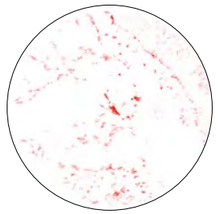
Environmental Protection Projects
EP20: Lengwe National Park

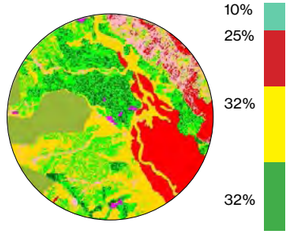
Transportation Projects
T20: Nchalo Bus Depot and Produce Market

Water Projects
W21: Upgrading Rehabilitation and Extension of Nchalo Water Supply Project

Population Projections

Growth rate	2.9%
by 2040	63,376
by 2063	122,315
by 2040	825,078
by 2063	1,592,387

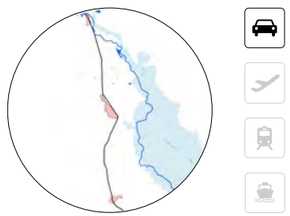


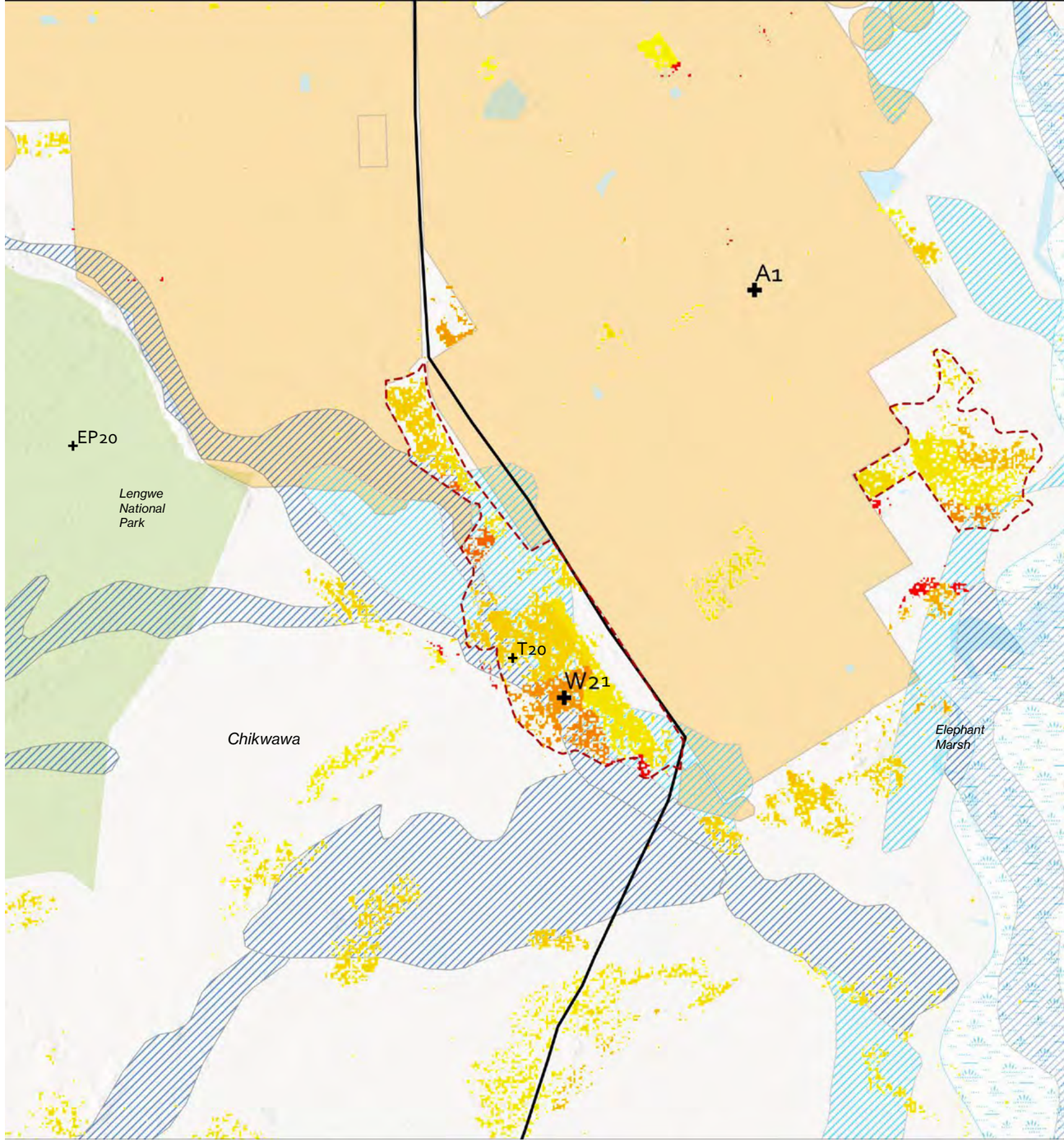


Urban Potential
22 / 41

Land Suitability
16 / 41

Connectivity
Group C





Neno

District: Neno

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	251
Settlement Population 2018	5,620
Settlement Density	22
25 km radius	
Population 2018	193,708
Urban/Rural Ratio	3/97

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	245
Population witin Jurisdictional Boundary	2,283
Density in Jurisdictional Boundary	9
Estates (within 25 km radius) (ha)	5,002

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	87,608
Conservation Area	-
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	-

Transportation

Lake Port	-
Rail	-
Major Road	-
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

Flood Risk	Low

Mining

Active Licence	No

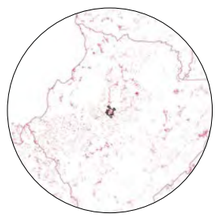
Projects and Assets in a 25 km radius

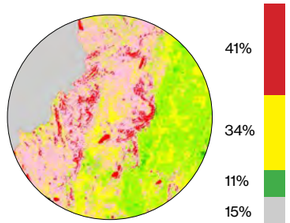
Flagship Projects
E3: Kammwamba Power Station

Natural Resources
Tsamba Forest Reserve

Population Projections

Growth rate	2.8%
by 2040	10,317
by 2063	19,472
by 2040	355,628
by 2063	671,178





Urban Potential
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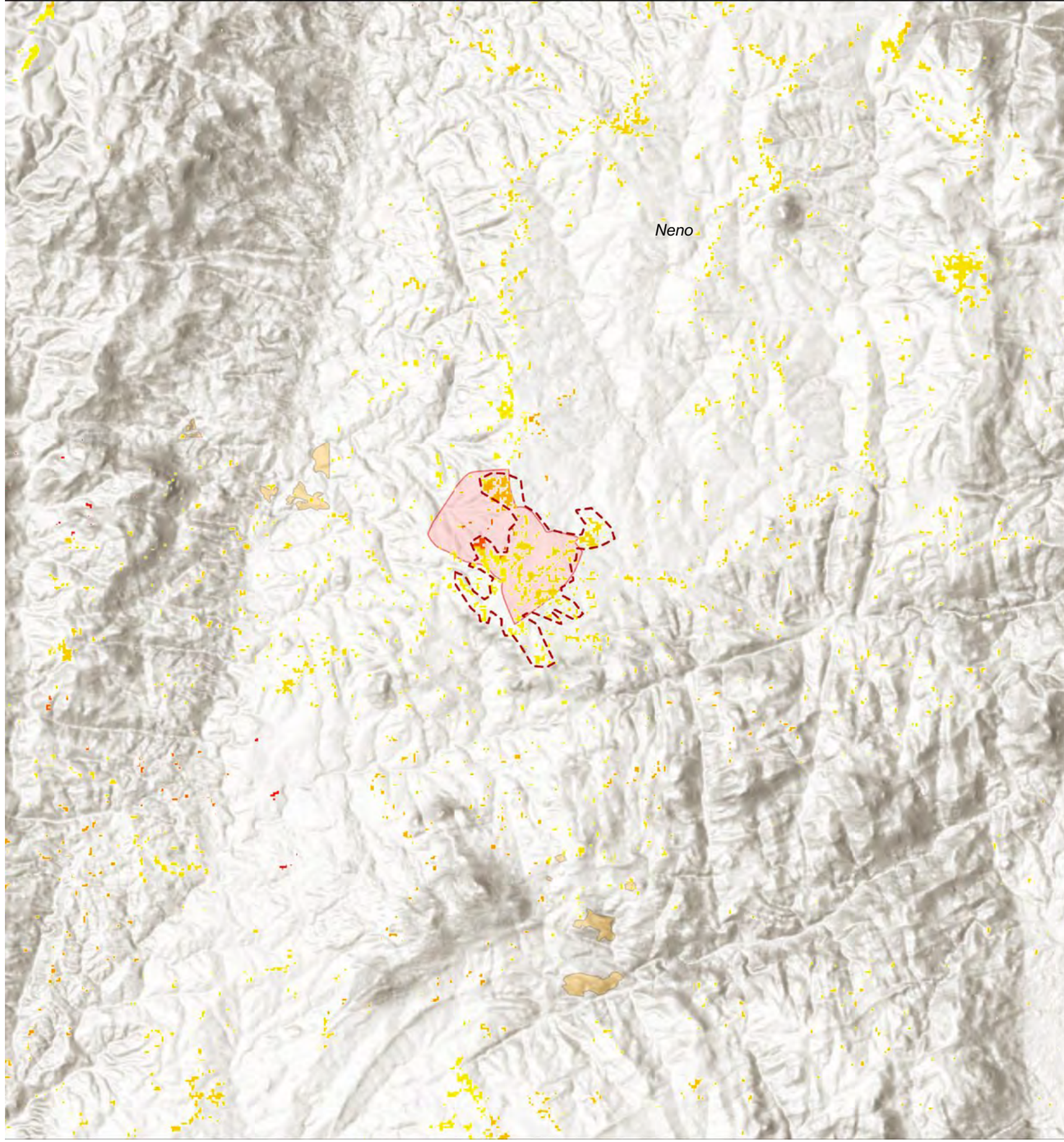
Land Suitability
31 / 41

Connectivity
Group D



Ngabu

District: Chikwawa

Projects and Assets in a 25 km radius

Flagship Projects
A25: GBA - Ntchalo Irrigation Scheme
A23 GBA - Mwananjovu Chikwawa Irrigation Scheme
W2: Shire Valley Transformation Programme

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	307
Settlement Population 2018	11,253
Settlement Density	36.5
25 km radius	
Population 2018	286,530
Urban/Rural Ratio	4/96

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	757
Population witin Jurisdictional Boundary	7,032
Density in Jurisdictional Boundary	9
Estates (within 25 km radius) (ha)	2,025

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	103,307
Conservation Area	16,072
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	Yes

Transportation

Lake Port	-
Rail	-
Major Road	1
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

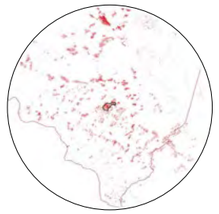
Flood Risk	Medium

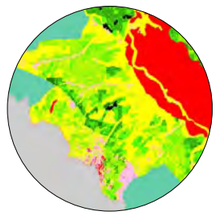
Mining

Active Licence	No

Population Projections

Growth rate	2.9%
by 2040	21,106
by 2063	40,734
by 2040	537,413
by 2063	1,037,198





Urban Potential
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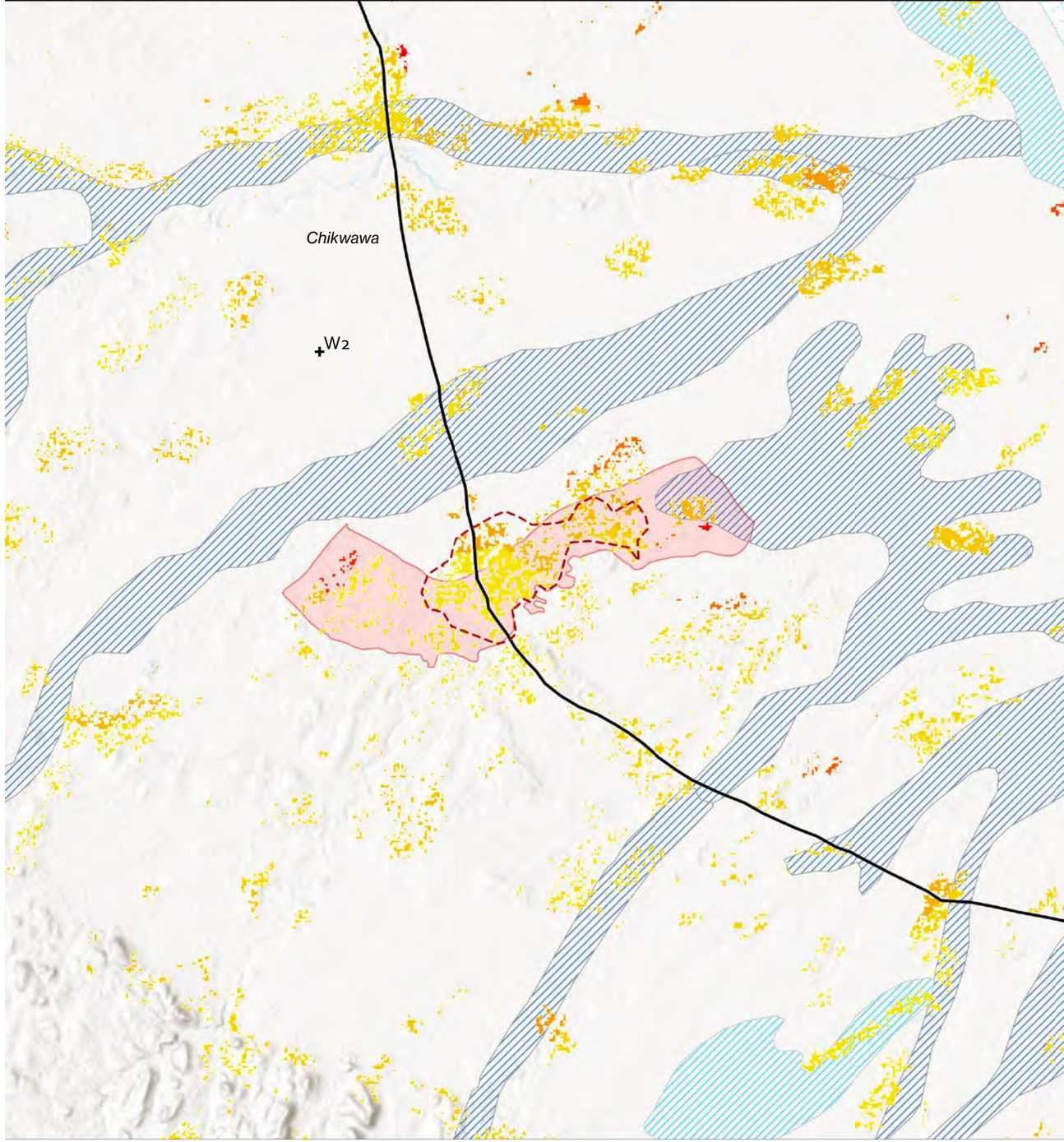
Land Suitability
25 / 41

Connectivity
Group C



Nkhata Bay

District: Nkhata Bay

Projects and Assets in a 25 km radius

Flagship Projects
T11: MIP-1: Construction and Rehabilitation of Ports and Jetties
A26: Agriculture Infrastructure Youth in Agribusiness (AIYAP)

Water Projects
W12: Nkhata Bay Town Water Supply and Sanitation Project

Environmental Protection Projects
EP2: Fish Conservation Project EP10: Lake Malawi

Tourism Projects
TO4: MIP-1: Malawi Lakeshore Tourism Development

Agriculture Projects
A14: Sweet Potato Project
A31: Commercial and Small Farm Development for Nkhata Bay

Transportation Projects
T32: M5 road between Nkhata Bay and Mzuzu

Climate Change Projects
CC4: Nkhata Bay Flood Zone Management and Green infrastructure

Industry Projects
I13: Nkhata Bay Transit-oriented Commercial/Industrial Center Development

Aquaculture and Fisheries Projects
F10: MIP-1: Nkhata Bay Fisheries Development

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	150
Settlement Population 2018	7,831
Settlement Density	52
25 km radius	
Population 2018	143,226
Urban/Rural Ratio	5/95

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	1237
Population witin Jurisdictional Boundary	14,274
Density in Jurisdictional Boundary	11.5
Estates (within 25 km radius) (ha)	4,653

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	32,378
Conservation Area	4,934
Water Resources	112,971

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	Yes

Transportation

Lake Port	1
Rail	-
Major Road	1
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

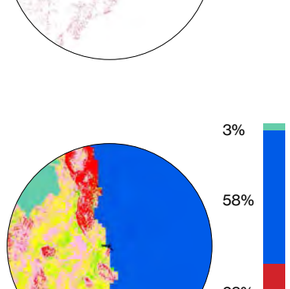
Flood Risk	Low

Mining

Active Licence	No

Population Projections

Growth rate	3.2%
by 2040	15,659
by 2063	32,314
by 2040	286,401
by 2063	591,028



Urban Potential
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Land Suitability
40 / 41

Connectivity
Group B/1.5

Nkhotakota

District: Nkhotakota

Projects and Assets in a 25 km radius

Flagship Projects
T10: Construction and Rehabilitation of Ports and Jetties
A26: Agriculture Infrastructure Youth in Agribusiness (AIYAP)

Water Projects
W17: Rehabilitation and Expansion of water schemes - Dowa, Dwangwa, Salima, Nkhotakota and Ntchisi

Environmental Protection Projects
EP10: Lake Malawi
EP31: Nkhotakota Wildlife Reserve

Tourism Projects
TO10: Resort and Houseboat Harbor

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	1,337
Settlement Population 2018	32,345
Settlement Density	24
25 km radius	
Population 2018	153,276
Urban/Rural Ratio	21/79

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	1,238
Population witin Jurisdictional Boundary	28,350
Density in Jurisdictional Boundary	23
Estates (within 25 km radius) (ha)	136

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	23,613
Conservation Area	45,017
Water Resources	98,092

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	Yes

Transportation

Lake Port	1
Rail	-
Major Road	1
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

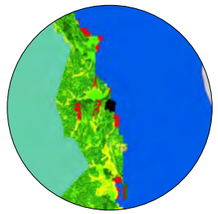
Flood Risk	Medium

Mining

Active Licence	No

Population Projections

Growth rate	3.1%
by 2040	63,313
by 2063	127,775
by 2040	300,030
by 2063	605,499



Urban Potential
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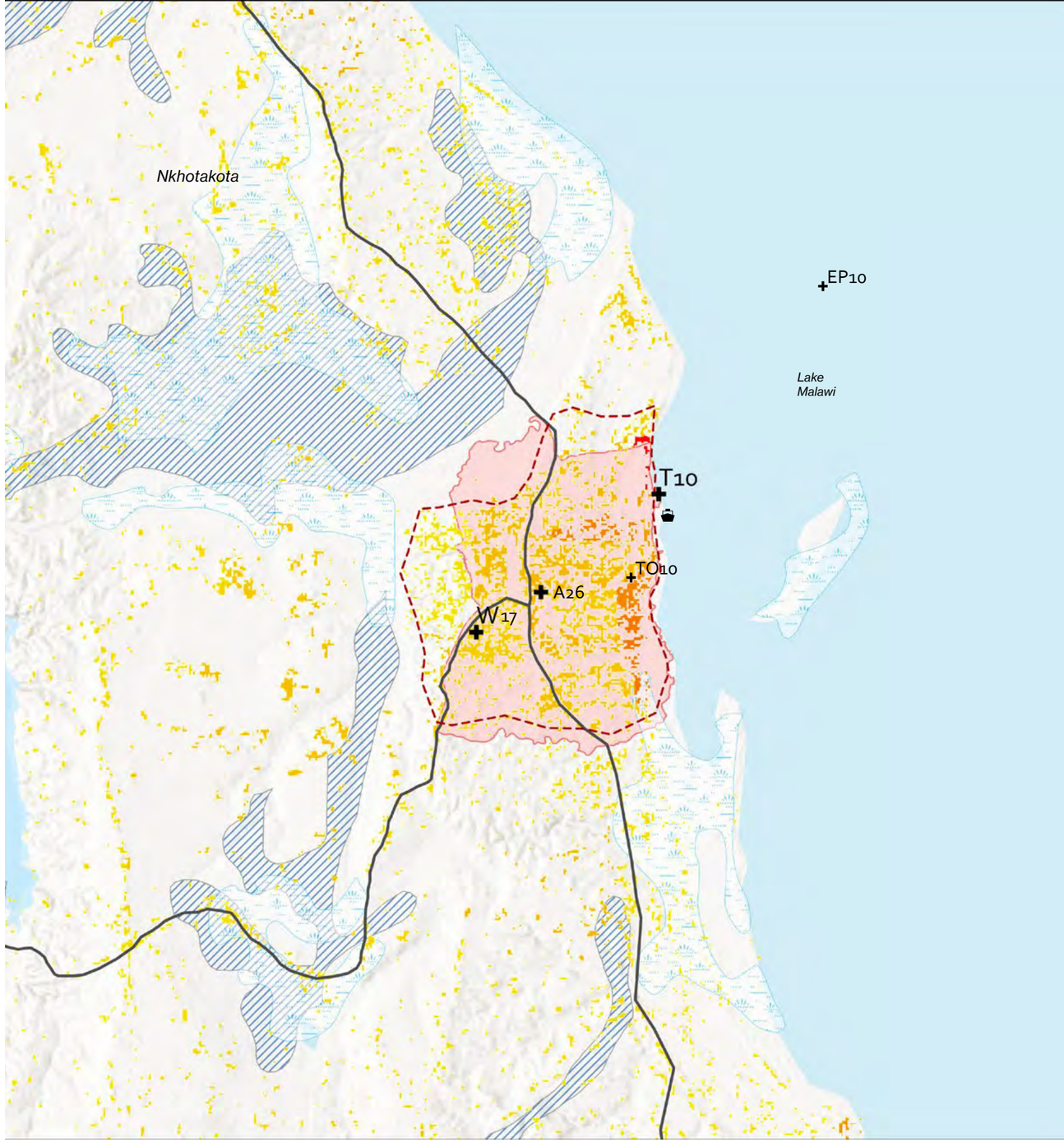
Land Suitability
24 / 41

Connectivity
Group B/1.5



Nsanje

District: Nsanje

Projects and Assets in a 25 km radius

Flagship Projects
T7: Development of Nsanje World Inland Port
T17: MIP-1: Limbe to Marka Rail Line Rehabilitation

Environmental Protection Projects
EP19: Matandwe Forest Reserve

Mining Projects
M24: Crown Minerals (Heavy Minerals Sand)

Tourism Projects
TO7: Songwe border Transit Facility

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	1,424
Settlement Population 2018	32,778
Settlement Density	23
25 km radius	
Population 2018	164,411
Urban/Rural Ratio	20/80

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	1,542
Population witin Jurisdictional Boundary	26,844
Density in Jurisdictional Boundary	17
Estates (within 25 km radius) (ha)	149

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	31,932
Conservation Area	23,337
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	Yes

Transportation

Lake Port	1
Rail	1
Major Road	1
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

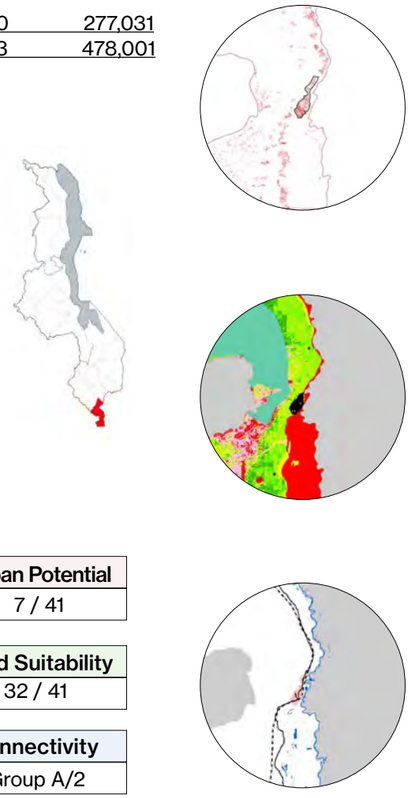
Flood Risk	Medium

Mining

Active Licence	Yes

Population Projections

Growth rate	2.4%
by 2040	55,230
by 2063	95,297
by 2040	277,031
by 2063	478,001



Urban Potential
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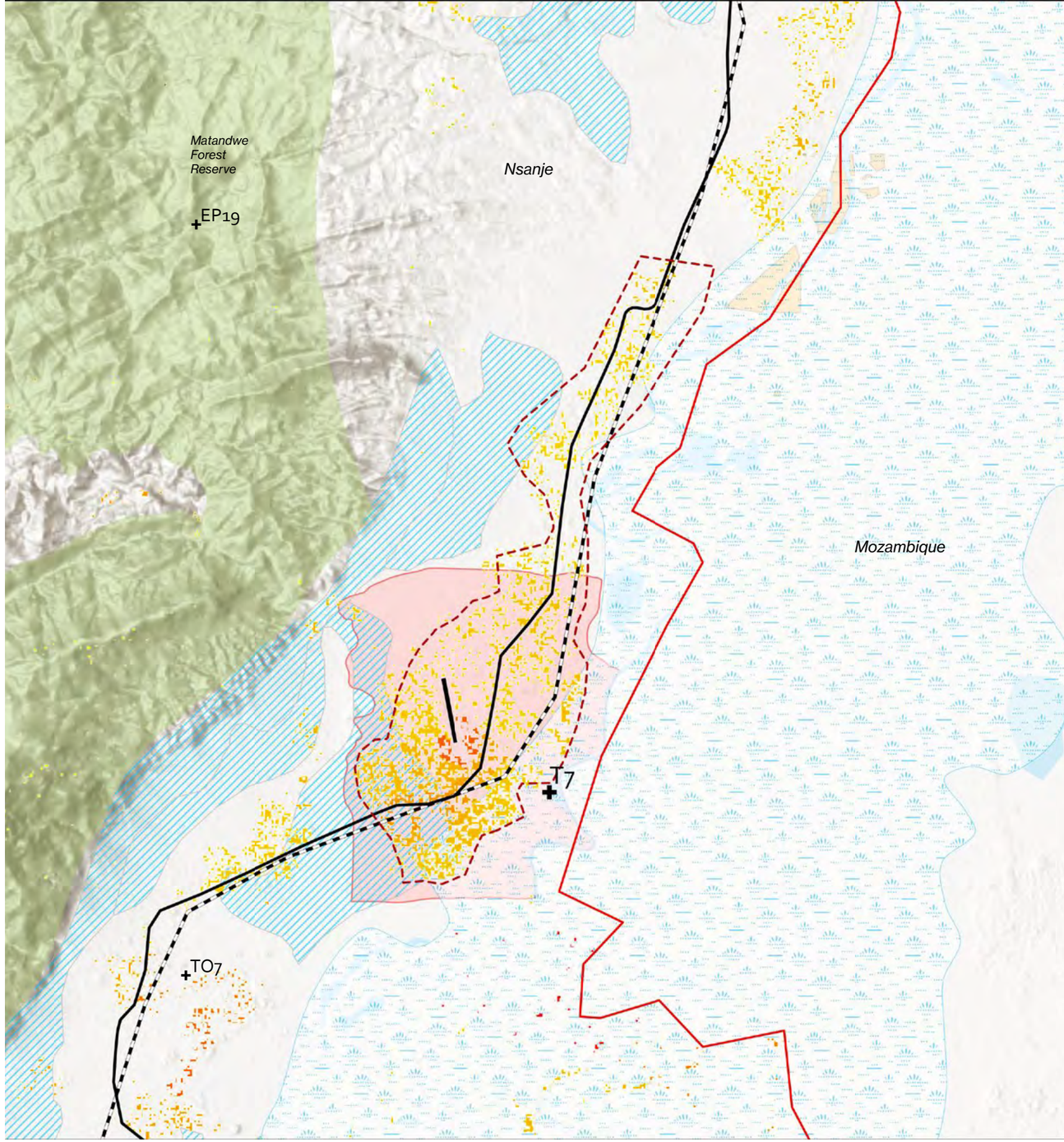
Land Suitability
32 / 41

Connectivity
Group A/2



Ntcheu

District: Ntcheu

Projects and Assets in a 25 km radius

Water Projects
W15: Development of Multi-purpose Dams and Integration of Water Supply Schemes for Kasungu, Mponela, Ntcheu, Mchinji and Dedza Towns

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	777
Settlement Population 2018	26,416
Settlement Density	34
25 km radius	
Population 2018	363,039
Urban/Rural Ratio	7/93

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	931
Population witin Jurisdictional Boundary	20,389
Density in Jurisdictional Boundary	22
Estates (within 25 km radius) (ha)	-

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	97,356
Conservation Area	-
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	-

Transportation

Lake Port	-
Rail	-
Major Road	1
Airport	-

Tourism

Attractions	No

Climate Change and Resiliency

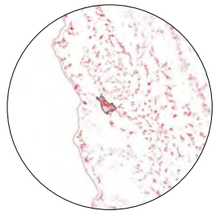
Flood Risk	Low

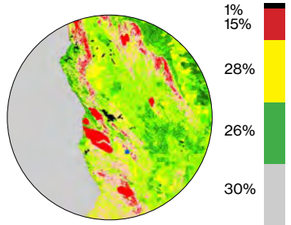
Mining

Active Licence	No

Population Projections

Growth rate	4%
by 2040	62,603
by 2063	154,300
by 2040	860,372
by 2063	2,120,574





Urban Potential
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Land Suitability
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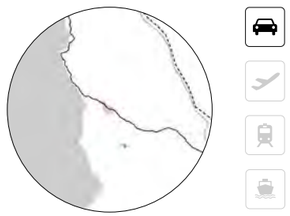
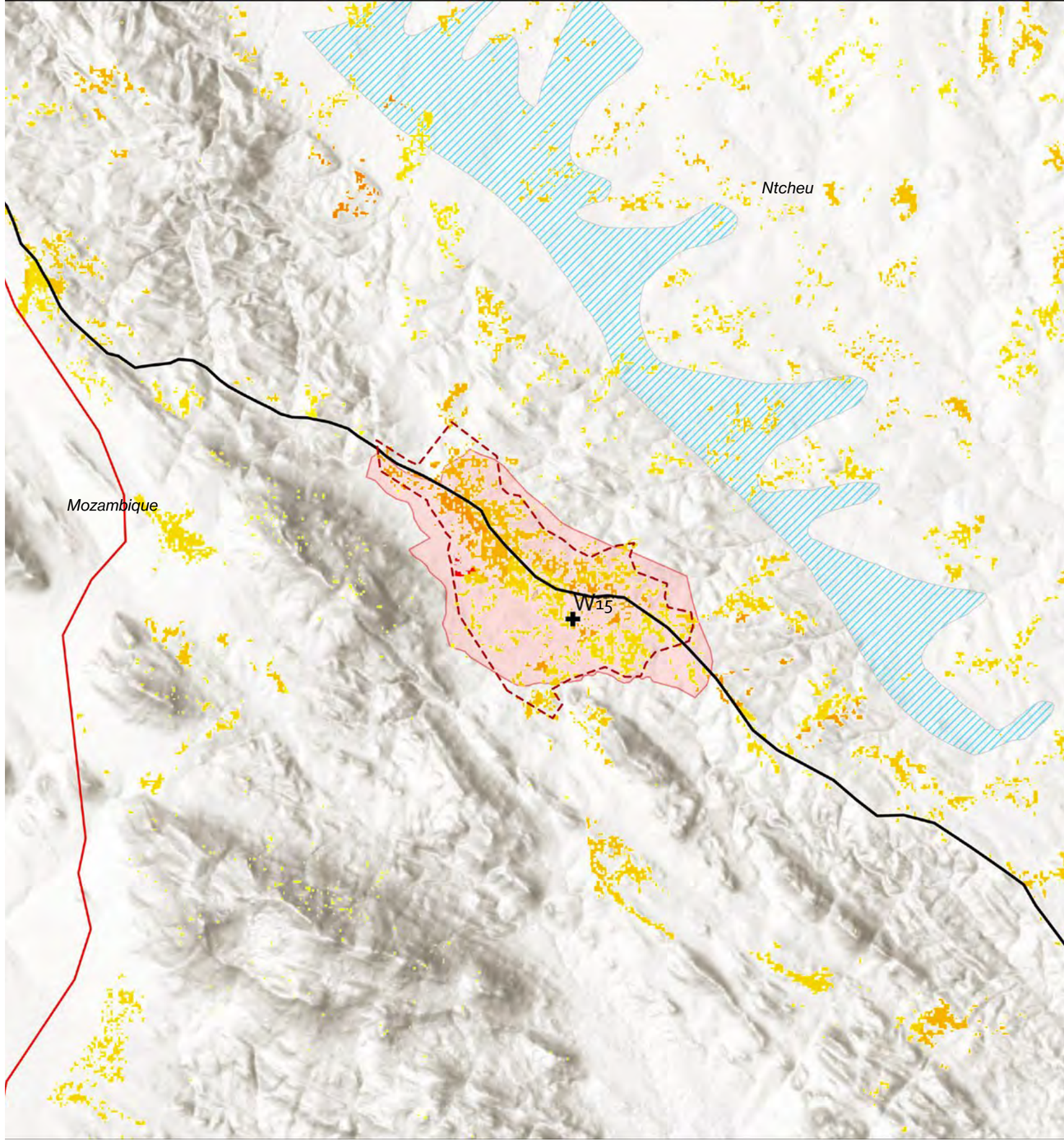
Connectivity
Group C





0 2.5 5 Km

Water Features
Natural Reserves
Settlement Footprint
Estate Farms
Road Network
Rail Tracks
Port Facility
Airport facility
Urban Jurisdiction
District Boundary
Exceptional Floods
Frequent Floods
Marshes
Settlement Pattern

Ntchisi

District: Ntchisi

Projects and Assets in a 25 km radius

Water Projects
W17: Rehabilitation and Expansion of Water Schemes - Dowa, Dwangwa, Salima, Nkhotakota and Ntchisi

Natural Assets
Ntchisi Forest Reserve

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	559
Settlement Population 2018	17,804
Settlement Density	32
25 km radius	
Population 2018	431,982
Urban/Rural Ratio	4/96

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	445
Population witin Jurisdictional Boundary	9,357
Density in Jurisdictional Boundary	20
Estates (within 25 km radius) (ha)	55

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	101,421
Conservation Area	1,465
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	-

Transportation

Lake Port	-
Rail	-
Major Road	1
Airport	-

Tourism

Attractions	No

Climate Change and Resiliency

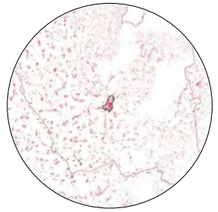
Flood Risk	Low

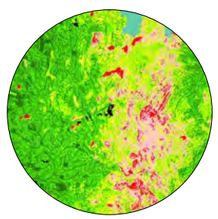
Mining

Active Licence	No

Population Projections

Growth rate	4.3%
by 2040	44,954
by 2063	118,389
by 2040	1,090,737
by 2063	2,872,496





Urban Potential
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Land Suitability
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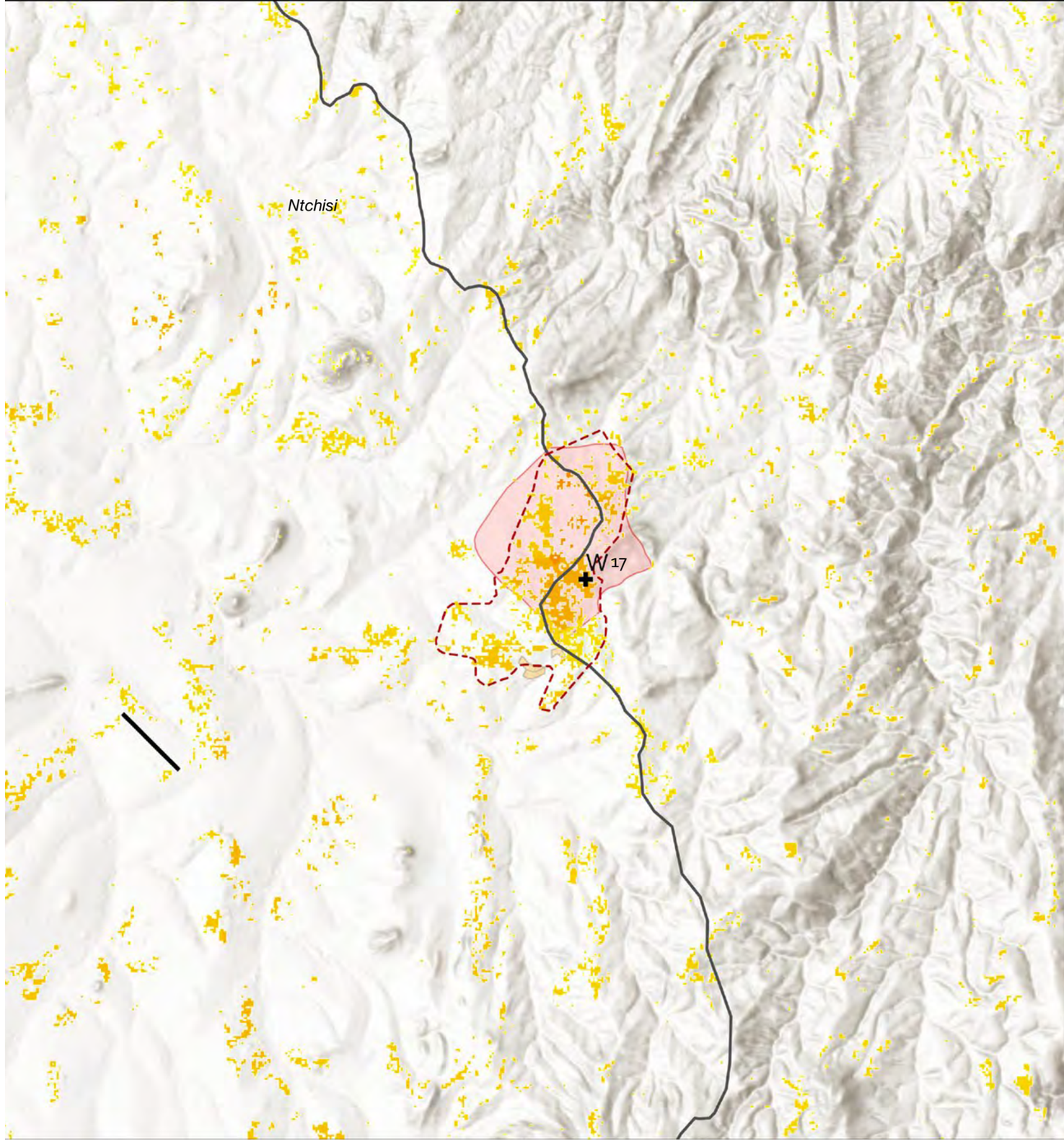
Connectivity
Group C



Phalombe

District: Phalombe

Projects and Assets in a 25 km radius

Flagship Projects
W4: Construction of New Water Sources from Likhubula River in Mulanje to Blantyre

Water Projects
W11: New Supply Centres for Southern Region Water Board

Mining Projects
M21: Apatite, Phosphate

Environmental Protection Projects
EP17: Mulanje Mountain Forest Reserve
EP21: Michese Forest Reserve

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	373
Settlement Population 2018	13,747
Settlement Density	36.8
25 km radius	
Population 2018	525,985
Urban/Rural Ratio	2/98

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	343
Population witin Jurisdictional Boundary	6,242
Density in Jurisdictional Boundary	18
Estates (within 25 km radius) (ha)	310

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	98,892
Conservation Area	52,634
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	Yes

Transportation

Lake Port	-
Rail	-
Major Road	-
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

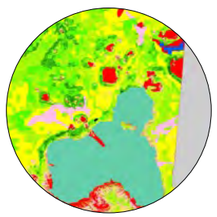
Flood Risk	Low

Mining

Active Licence	Yes

Population Projections

Growth rate	3.6%
by 2040	29,931
by 2063	67,514
by 2040	1,145,217
by 2063	2,583,225



Urban Potential
35 / 41

Land Suitability
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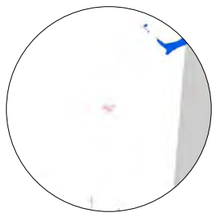
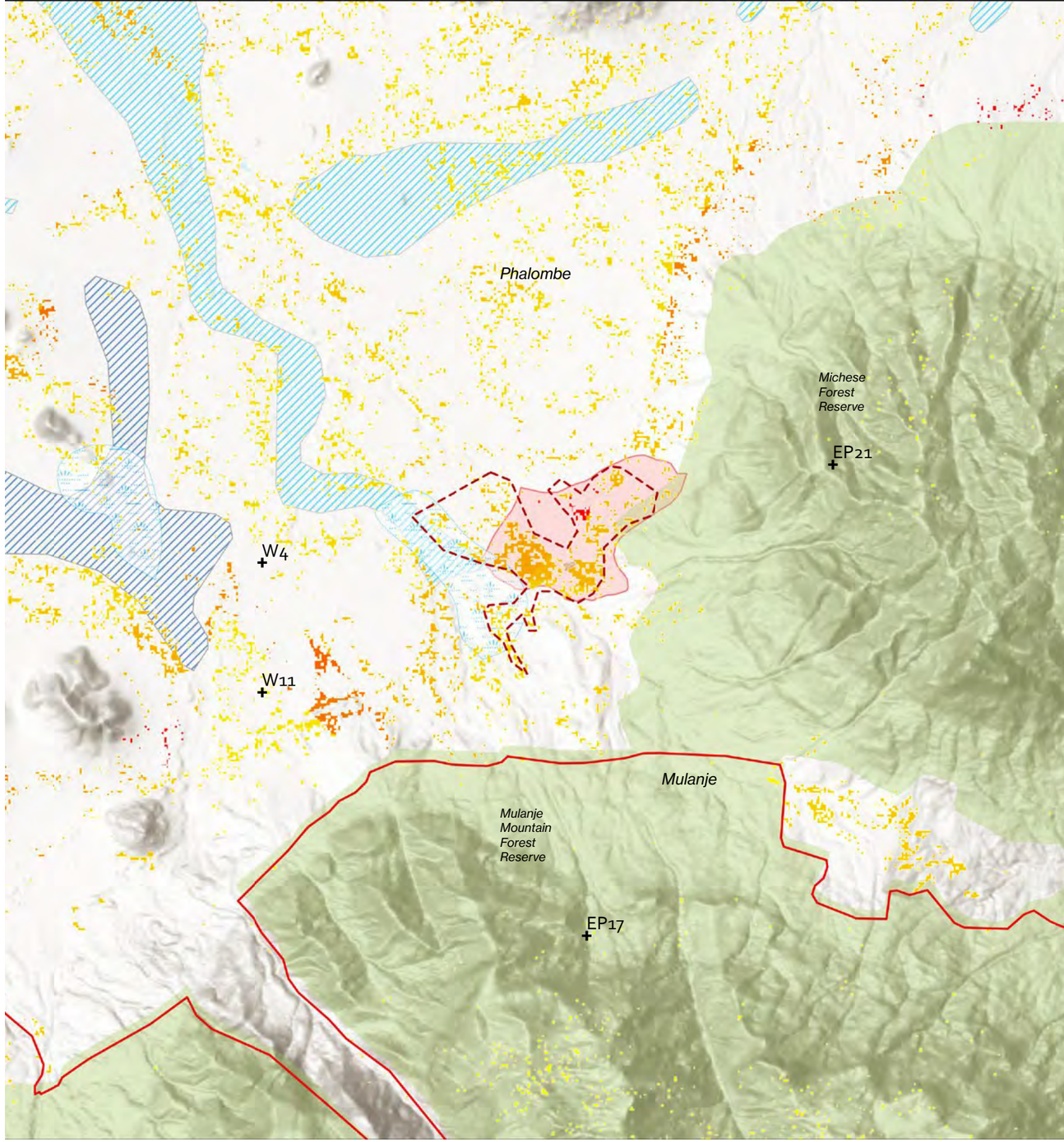
Connectivity
Group D





Rumphi

District: Rumphi

Projects and Assets in a 25 km radius

Water Projects
W6: PRIDE - Programme for Rural Irrigation Development

Agriculture Projects
A10: Exagris Africa Estates

Mining Projects/ Mineral Resources
M14: Pink Granite
M29: Nepheline Syenite, Sodalite

Energy Projects
E8: Lower Fufu Hydropower Project

Environmental Protection Projects
EP23: Nyika National Park

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	802
Settlement Population 2018	25,513
Settlement Density	32
25 km radius	
Population 2018	207,641
Urban/Rural Ratio	12/88

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	1,125
Population witin Jurisdictional Boundary	22,358
Density in Jurisdictional Boundary	20
Estates (within 25 km radius) (ha)	1,888

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	74,354
Conservation Area	31,412
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	-

Transportation

Lake Port	-
Rail	-
Major Road	1
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

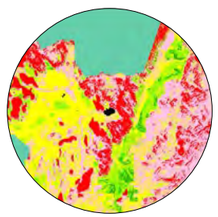
Flood Risk	Low

Mining

Active Licence	Yes

Population Projections

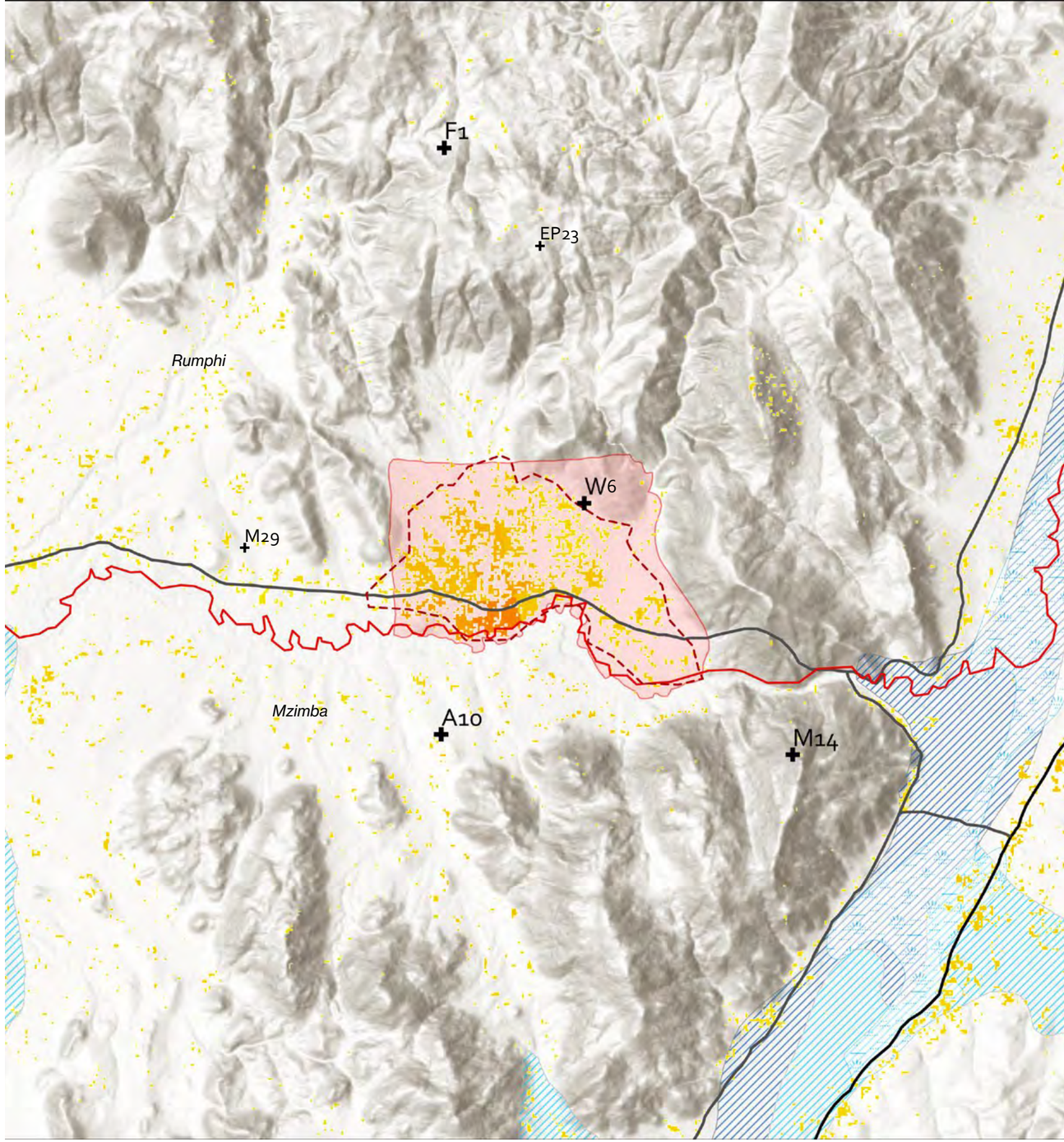
Growth rate	3.8%
by 2040	57,956
by 2063	136,660
by 2040	471,688
by 2063	1,112,228



Urban Potential
17 / 41

Land Suitability
35 / 41

Connectivity
Group C



Salima

District: Salima

Projects and Assets in a 25 km radius

Flagship Projects
T8: Construction and Rehabilitation of Ports and Jetties
W5: Lake Malawi Water Supply Project

Water Projects
W17: Rehabilitation and Expansion of Water Schemes - Dowa, Dangwa, Salima, Nkhotakota and Ntchisi

Agriculture Projects
A10: Exagris Africa Estates
A31: Commercial and Small Farm Development for Salima/Chipoka

Climate Change Projects
CC2: Salima Green Infrastructure-Flood Zone Management

Transportation Projects
T5: ADMARC Salima

Energy Projects
E2: Kanzimbe Solar Power Station

Transportation Projects
T27: Senga Bay Jetty Jort Rehabilitation

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	1,769
Settlement Population 2018	67,043
Settlement Density	38
25 km radius	
Population 2018	327,202
Urban/Rural Ratio	18/82

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	1,766
Population witin Jurisdictional Boundary	36,789
Density in Jurisdictional Boundary	20
Estates (within 25 km radius) (ha)	1,281

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	72,993
Conservation Area	12,363
Water Resources	47,412

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	Yes

Transportation

Lake Port	-
Rail	1
Major Road	1
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

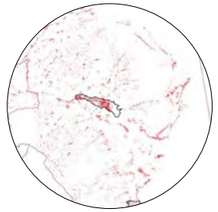
Flood Risk	High

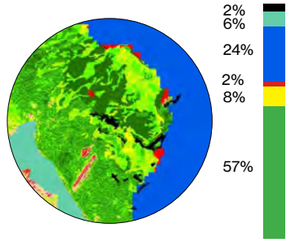
Mining

Active Licence	No

Population Projections

Growth rate	4.2%
by 2040	165,746
by 2063	426,973
by 2040	920,170
by 2063	2,370,424





Urban Potential
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Land Suitability
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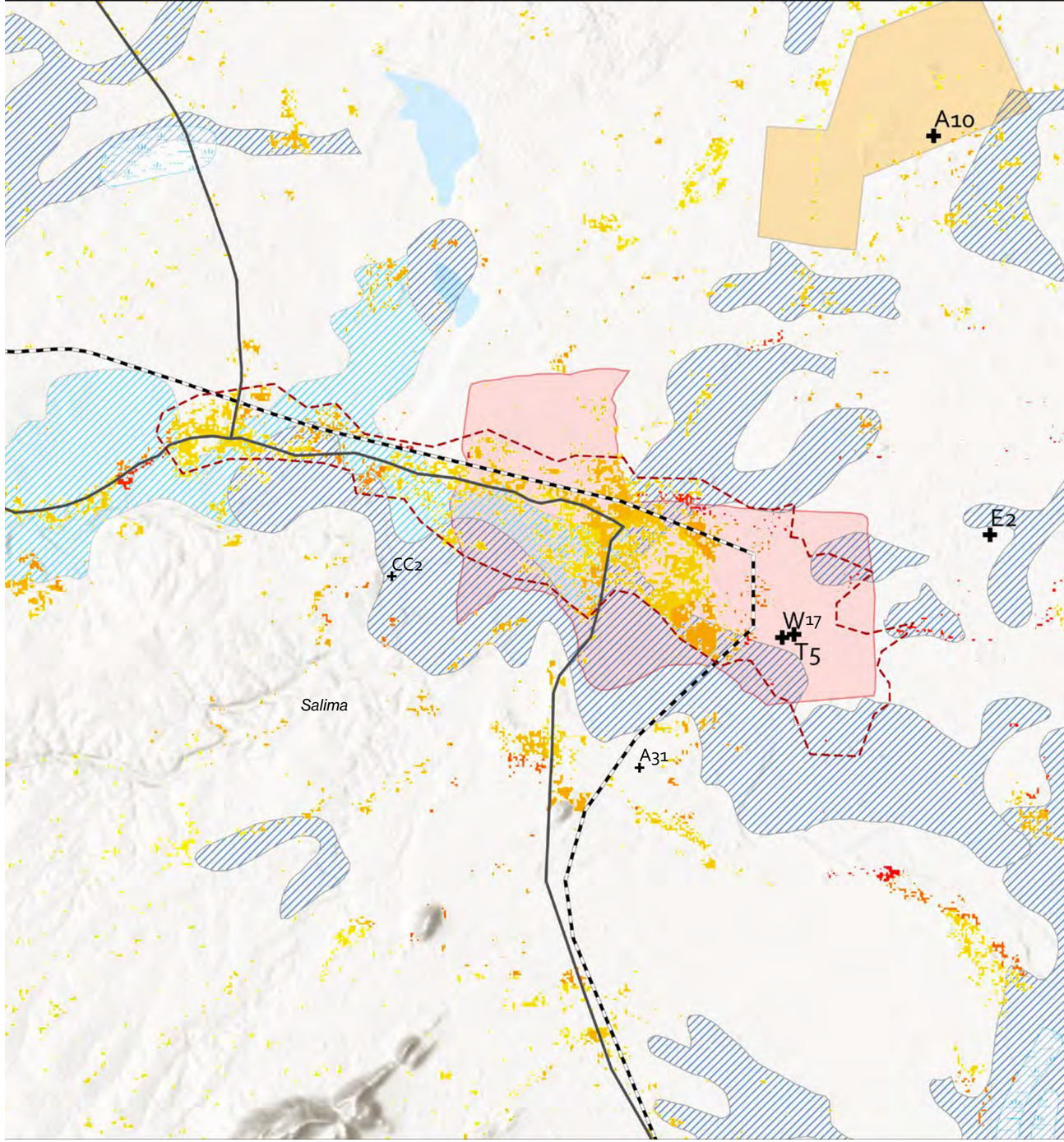
Connectivity
Group B/2



Thyolo

District: Thyolo

Projects and Assets in a 25 km radius

Flagship Projects
I1: MIP-1: Special Economic Zones Proposal

Energy Projects
E13: Zoa Falls

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	383
Settlement Population 2018	17,205
Settlement Density	45
25 km radius	
Population 2018	911,550
Urban/Rural Ratio	2/98

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	372
Population witin Jurisdictional Boundary	6,798
Density in Jurisdictional Boundary	18
Estates (within 25 km radius) (ha)	6,107

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	118,877
Conservation Area	-
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	-

Transportation

Lake Port	-
Rail	-
Major Road	1
Airport	-

Tourism

Attractions	No

Climate Change and Resiliency

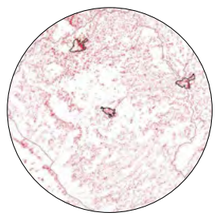
Flood Risk	Low

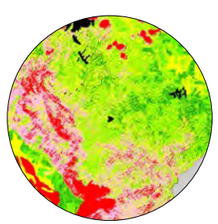
Mining

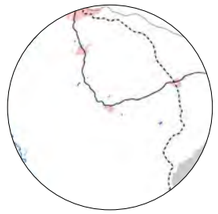
Active Licence	No

Population Projections

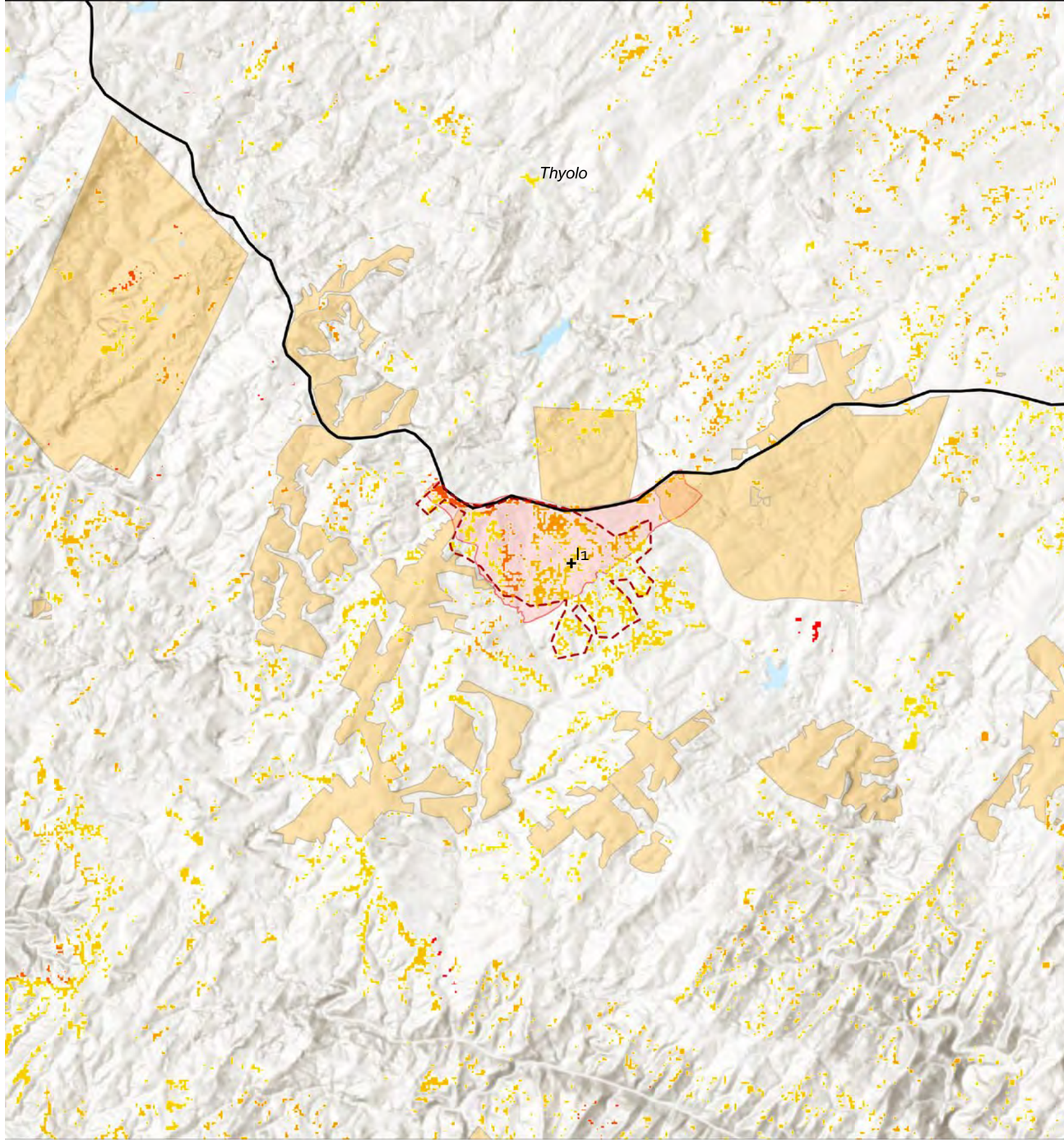
Growth rate	3.1%
by 2040	33,678
by 2063	67,966
by 2040	1,784,313
by 2063	3,600,977







Urban Potential	37 / 41
Land Suitability	15 / 41
Connectivity	Group C



Zomba

District: Zomba

Projects and Assets in a 25 km radius

Agriculture Projects
W10: Additional Water Source for Zomba City and Surrounding Areas
W6: PRIDE - Programme for Rural Irrigation Development

Environmental Protection Projects
EP14: Zomba Malosa Forest

Mineral Resources
M29: Aluminium, Quartz

Population Distribution and Growth Trends

Settlement Footprint 2018 (ha)	3,097
Settlement Population 2018	122,947
Settlement Density	39.7
25 km radius	
Population 2018	805,238
Urban/Rural Ratio	15/85

Jurisdiction and Land Tenure

Urban Jurisdictional Area (ha)	4,182
Population witin Jurisdictional Boundary	105,013
Density in Jurisdictional Boundary	25
Estates (within 25 km radius) (ha)	8,171

Natural Ecosystems (25 km radius)

Agricultural Land Suitability	126,687
Conservation Area	19,692
Water Resources	-

Fisheries and Aquaculture

Active/Potential for Fishing and Aquaculture	-

Transportation

Lake Port	-
Rail	-
Major Road	1
Airport	-

Tourism

Attractions	Yes

Climate Change and Resiliency

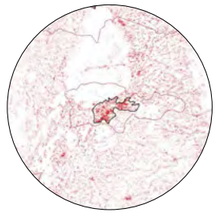
Flood Risk	Low

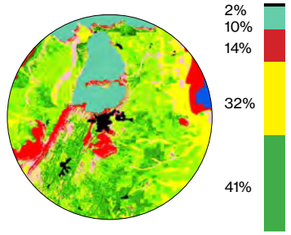
Mining

Active Licence	No

Population Projections

Growth rate	2.9%
by 2040	230,598
by 2063	445,051
by 2040	1,510,297
by 2063	2,914,849





Urban Potential
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Land Suitability
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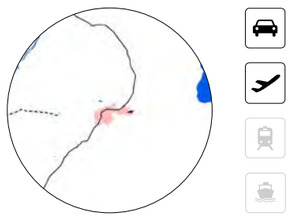
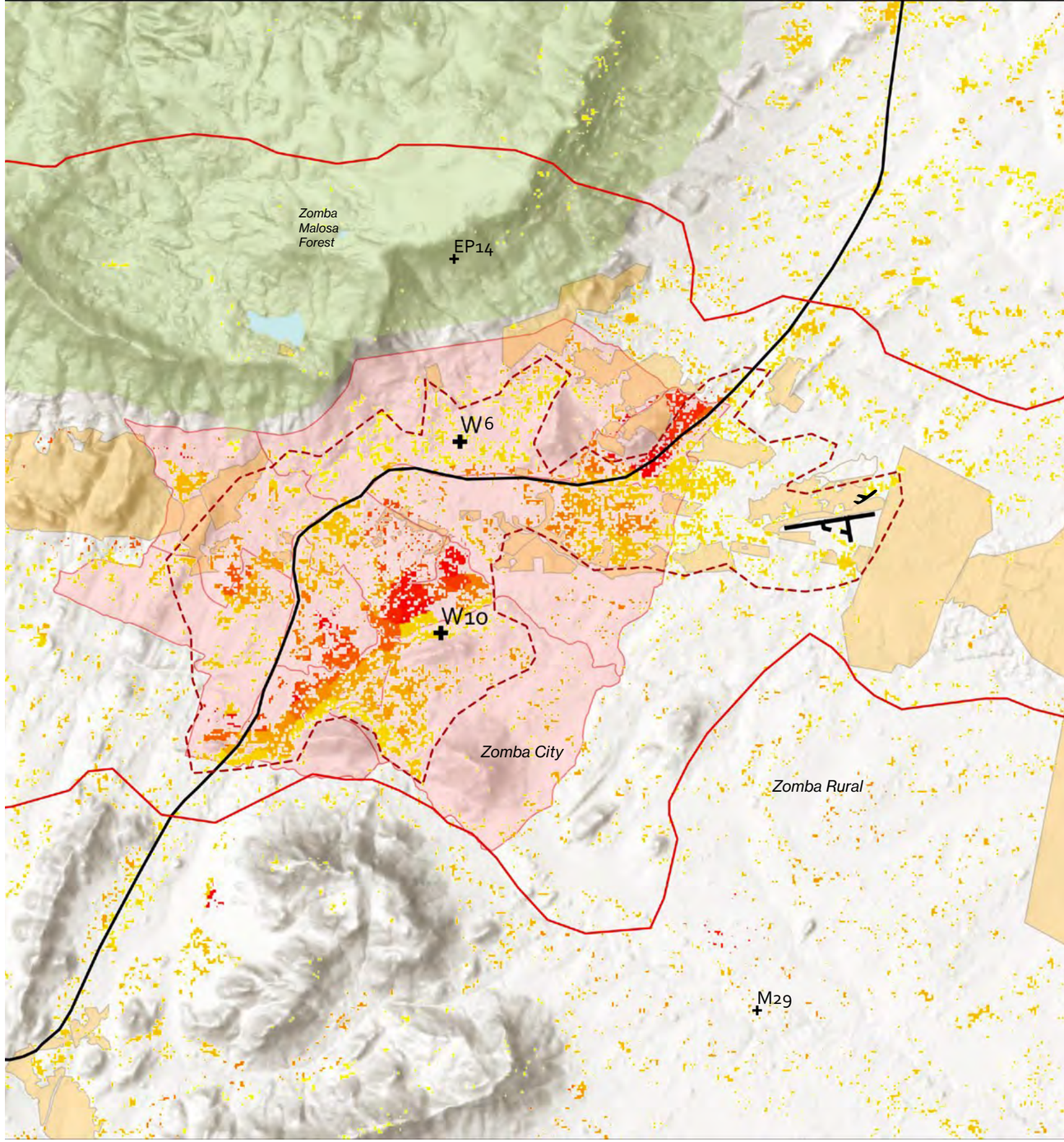
Connectivity
Group B/2





APPENDIX II
ASSETS AND PLANNED OPPORTUNITIES
A MAPPED SELECTION

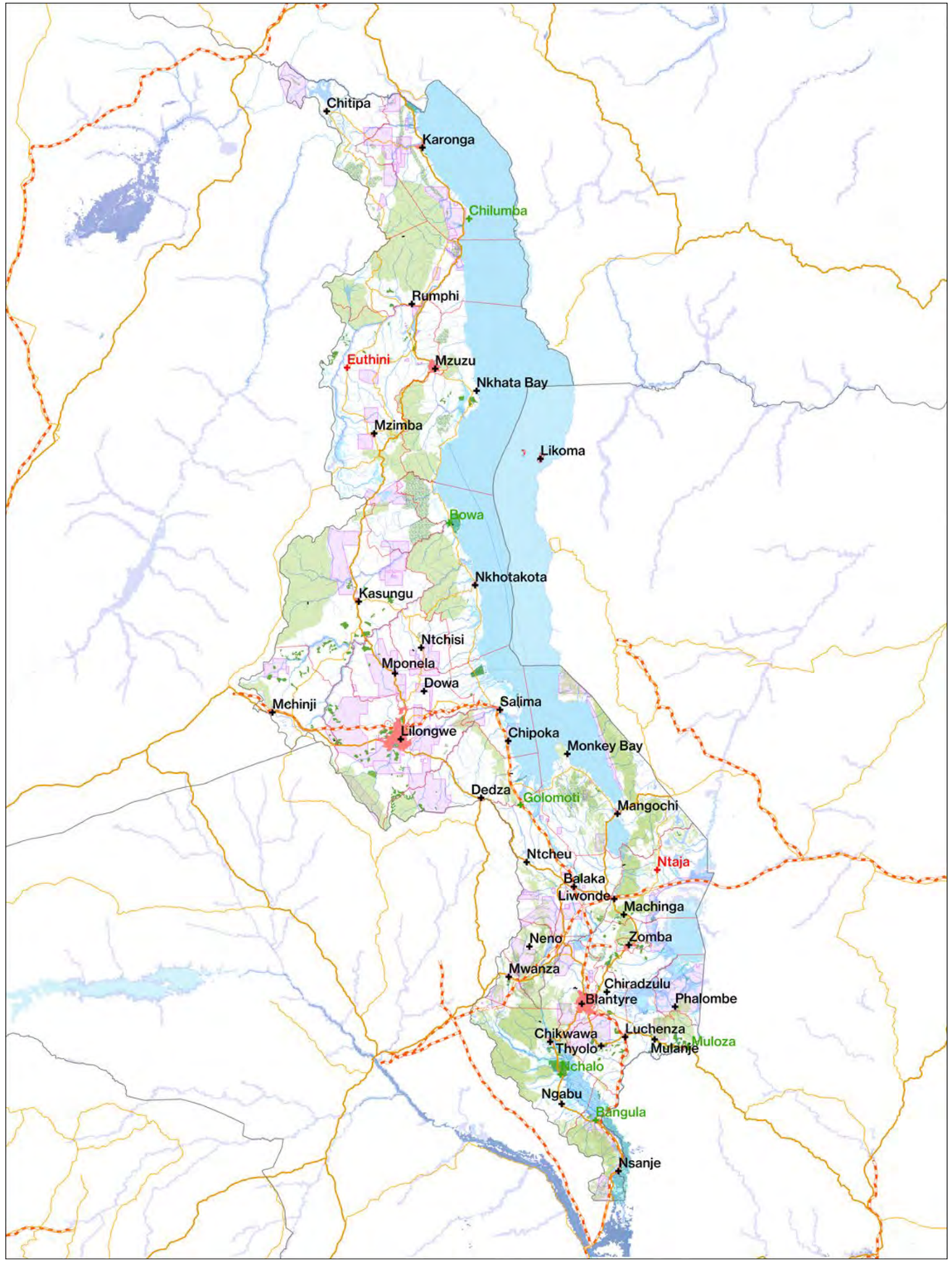
Appendix II: Assets and Planned Opportunities
A Select List

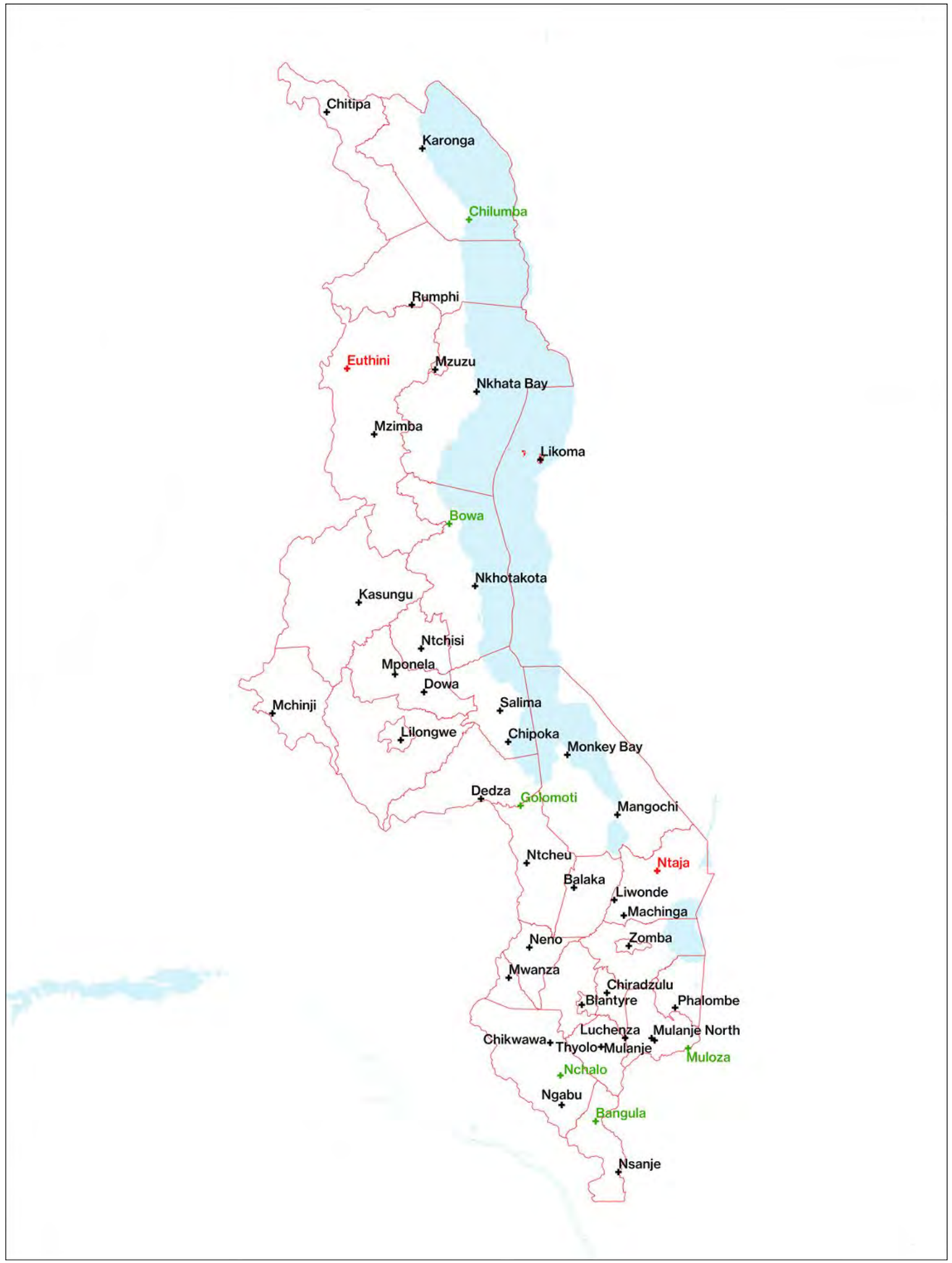
1. Population distribution and growth trends
2. Jurisdiction and land tenure subdivision
3. Water resources and hydrology
4. Agriculture
5. Fisheries and aquaculture
6. Transportation
7. Manufacturing and processing
8. Energy
9. Mining
10. Eco-tourism/Nature reserves
11. Natural ecosystems
12. Climate change adaptation areas

The following pages were produced and compiled over 2019-2021 and include a list of assets and planned opportunities that were available to the team at the time of the publishing of the MSCP.

The baseline exercise of survey and analysis included both the collection and classification of existing data sets provided by a wide variety of sources, as well as through a series of consultations and interviews with a wide variety of stakeholders. Overlaying different layers of data allowed us to then identify critical intersections of opportunities and highlight areas of particular importance in relation to MSCP's agenda.

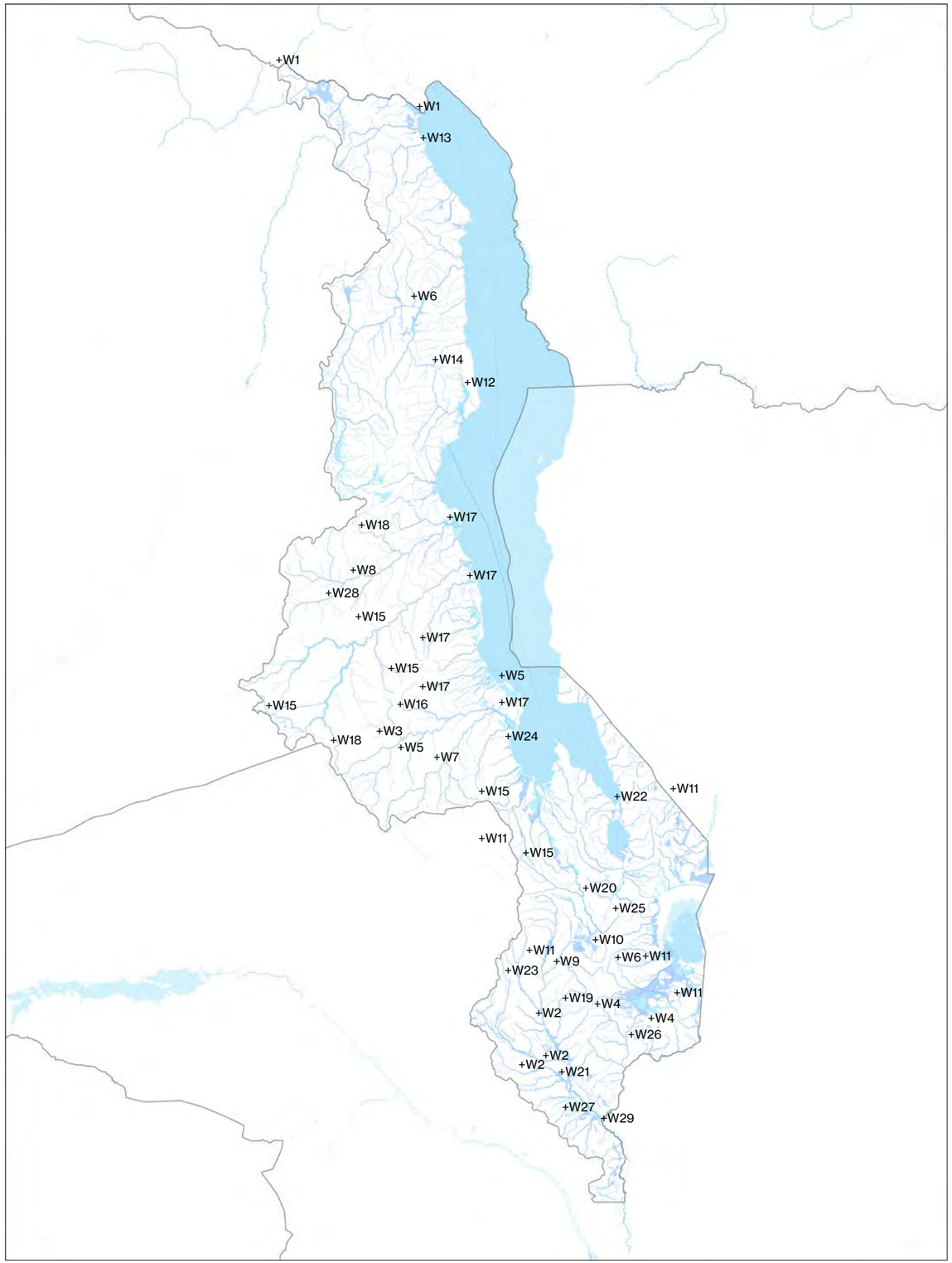
As this work comes to support the MW2063 vision, the mapping themes were tailored to support the three thematic pillars of **Urbanisation, Industrialisation and Agricultural Productivity and Commercialisation** established by the MW2063. Consequently, we have expanded each Pillar into several related sub-themes which we have mapped and analyzed at varying scales.





List of urban settlements

U1 Lilongwe City
U2 Blantyre City
U3 Mzuzu City
U4 Zomba City
U5 Karonga Town
U6 Kasungu Boma
U7 Mangochi Town
U8 Salima Town
U9 Liwonde Town
U10 Balaka Town
U11 Dedza Boma
U12 Nkhotakota Boma
U13 Mchinji Boma
U14 Nsanje Boma
U15 Mzimba Boma
U16 Mponela Boma
U17 Rumphi Boma
U18 Ntcheu Boma
U19 Mwanza Boma
U20 Chipoka Urban
U21 Chitipa Boma
U22 Monkey Bay Urban
U23 Mulanje Boma
U24 Nkhata Bay Boma
U25 Luchenza Town
U26 Ntchisi Boma
U27 Thyolo Boma
U28 Dowa Boma
U29 Ngabu Urban
U30 Phalombe Boma
U31 Chikwawa Boma
U32 Machinga Boma
U33 Chiradzulu Boma
U34 Likoma Boma
U35 Neno Boma
U36 Bangula
U37 Dwangwa
U38 Chilumba
U39 Golomoti
U40 Nchalo
U41 Muloza



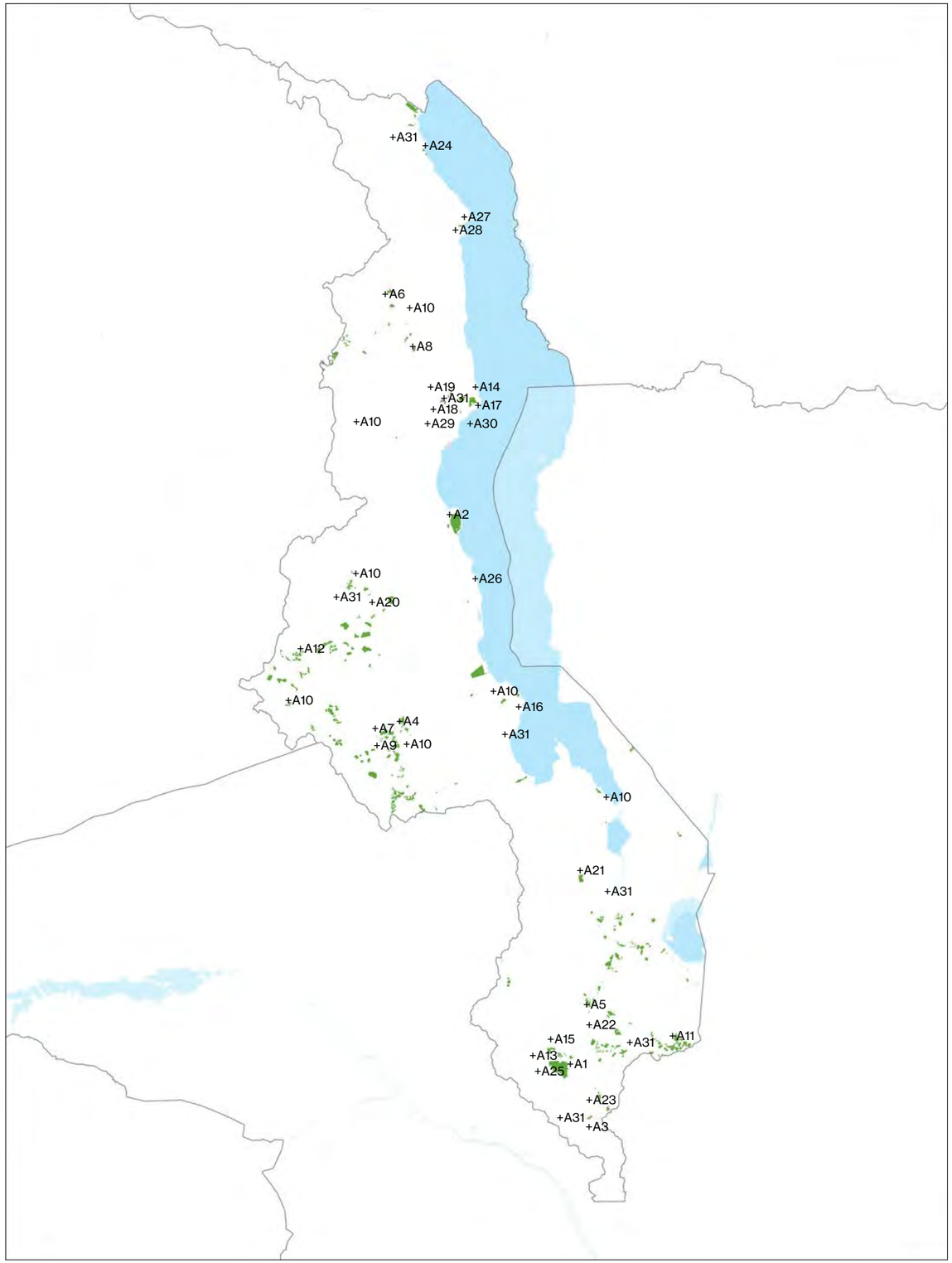
List of water infrastructure projects

W1	MIP-1: Songwe River Basin Development Programme (SRBDP)
W2	MGDS3 Flagship: Shire Valley Transformation Programme
W3	Lilongwe Water and Sanitation Project
W4	MGDS3 Flagship: Construction of a water source from Likhubula river Mulanje to Blantyre
W5	MIP-1: Lake Malawi Water Supply Project (LMWP)
W6	PRIDE – Programme for Rural Irrigation Development
W7	MIP-1: Lilongwe Water Project - Diamphwe multi-purpose dam
W8	MIP-1: Dwangwa multi-purpose dam
W9	Construction of independent Power Generation Plant - Blantyre Water Board
W10	Additional Water Source for Zomba City and Surrounding Areas
W11	New Supply Centers for Southern Region Water Board
W12	Nkhatabay Town water supply and sanitation project
W13	Karonga Town water supply and sanitation project
W14	Mzuzu City Sanitation Project
W15	Development of multipurpose dams and integration of water supply schemes for Kasungu, Mponela, Ntcheu, Mchinji and Dedza Towns
W16	Ntofu Water Supply Project - Lilongwe North
W17	Rehabilitation and Expansion of water supply schemes: Dowa, Dwangwa, Salima, Nkhotakota and Ntchisi
W18	Establishment of New Water Schemes - Nkhamenya and Namitete
W19	Completion of Upgrading and Rehabilitation of Mudi Pumping Station, Water Treatment Works and Accessories
W20	Upgrading Rehabilitation and Extension of Liwonde Water Supply Project to include Balaka
W21	Upgrading Rehabilitation and Extension of Nchalo Water Supply Project
W22	Proposal for Extension of Mangochi Water Supply System to Lakeshore Areas
W23	Upgrading Rehabilitation and Extension of Mwanza Water Supply
W24	Chipoka Town Water Supply and Sanitation
W25	Liwonde Town Water Supply and Sanitation
W26	Luchenza Thyolo Muloza and Mulanje Towns Water Supply and Sanitation Project
W27	Extension of LSVTP to reach Bangula
W28	Chitete Dam
W29	Bangula Town Water Supply and Sanitation Project

Project #	Project Name	Activity	Project Location (s)	District (s)
W1	**MIP-1: Songwe River Basin Development Programme**	The objective of the Songwe River Basin Development Programme is to contribute to the economic growth, reduced poverty, improved health and living conditions, and enhanced food and energy security for the people of the Songwe River in particular and the overall economic development for the two countries (Malawi and Zambia).	Songwe River Basin	Chitipa, Karonga
W2	**MGDS3 Flagship: Shire Valley Transformation Programme**		Portions of the lower Shire River Valley	Chikwawa, Nsanje
W3	**Lilongwe Water and Sanitation Project**	Water Distribution Network Rehabilitation, Expansion and NRW Reduction, Priority Sanitation Improvements, Technical Assistance, Institutional Capacity Strengthening.		Lilongwe
W4	**MGDS3 Flagship: Construction of new water source from Likhubula river in Mulanje to Blantyre**		/	Mulanje, Chiradzulu, Blantyre
W5	**MIP-1: Lake Malawi Water Supply Project (LMWP)**	To increase water availability of Lilongwe City and strengthen the capacity of Lilongwe Water Board to respond to adverse climatic conditions and hence sustain reliable water supply services to its customer. The project will also expand access to potable water to areas along the Lilongwe-Salima corridor.	/	Salima, Lilongwe
W6	**PRIDE – Programme for Rural Irrigation Development**	PRIDE intends to contribute to the resilience of smallholder communities. It will reduce vulnerability to food insecurity, to climate change effects and to the vagaries of the market by enabling farmers to enhance their production levels to such a degree that they can provide for their household nutrition demands and deliver produce to viable markets. PRIDE does so by providing smallholder farm households a combination of (i) irrigation and soil- and water conservation infrastructure; (ii) promotion of good agricultural practices; and (iii) linkage to improved value chains.	Nationwide, but 15 priority projects	Chitipa, Karonga, Rumphi, Nkhata Bay, Machinga, Zomba, Chiradzulu, Phalombe
W7	**MIP-1: Lilongwe Water Project - Diamphwe multipurpose dam**	"RCC Dam (H = 25 m, L = 960 m, V = 150'000 m³) Spillway (L = 170 m, Q = 1.800 - 3.500 m³/s) Water supply intake (H x W = 1.4 x 1.4 m) Irrigation intake (H x W = 0.8 x 0.8 m) Pipeline (L = 80 km, D = 500 - 1'100 mm) Irrigation Scheme (A = 1'000 Ha)"		Lilongwe, Dedze
W8	**MIP-1: Dwangwa multi purpose dam**	45,000m3 of water per day plus 3.7 gigawatts hydro-power generation a year, with other surpluses of fisheries scheme and irrigation farming.		Kasungu

Project #	Project Name	Activity	Project Location (s)	District (s)
W9	**Construction of independent Power Generation Plant - Blantyre Water Board**	To construct a 50-Megawatt solar power plant.	Blantyre	Blantyre
W10	**Additional Water Source for Zomba City and Surrounding Areas**	Activity 1-1: Conduct feasibility, preliminary and detailed designs for additional water source for Zomba and surrounding areas Activity 2-1: Construct a dam, treatment plant with associated booster stations, reservoirs, transmission and distribution pipe networks Activity 3-1: Rehabilitate catchment areas	Zomba	Zomba
W11	**New Supply Centres for Southern Region Water Board**	To establish five (5) new water supply schemes under the SRWB. Thondwe, Zalewa, Migowi, Ulongwe and Chiponde .	Thondwe, Zalewa, Migowi, Ulongwe and Chiponde	
W12	**Nkhatabay Town water supply and sanitation project**	The project development objective is to achieve universal access to sustainable potable water supply and improved sanitation services in Nkhatabay Town and surrounding areas by 2025 and 2030 respectively for the socio-economic growth and development of the area. In order to achieve this objective, the project will specifically rehabilitate, upgrade and expand the existing water supply system to meet the current and future water supply demand and improve sanitation services.	Nkhatabay Town	Nkhatabay
W13	**Karonga Town water supply and sanitation project**	The Project rationale is to address the challenges of Karonga Water Supply scheme by constructing adequate capacity infrastructure that take into account new developments that have occurred between 2002 and 2015, also forecasting to meet future demands for the year 2040. Construction of adequate capacity transmission pipelines, distribution pipelines and reservoirs shall provide the most feasible solution to system capacity challenges.	Karonga Town	Karonga
W14	**Mzuzu City Sanitation Project**	*Activity 1-1: carry out feasabilty studies *Activity 2-1: prepare detailed designs *Activity 3-1: construct liquid waste management facilities *Activity 4-1: construct solid waste management facilities *Activity 5-1: install storm water drainage system *Activity 6-1: carry out sanitation and hygiene promotion services *Activity 7-1: establish project management system	Mzuzu City	Mzuzu

Project #	Project Name	Activity	Project Location (s)	District (s)
W15	**Development of multipurpose dams and integration of water supply schemes for Kasungu, Mponela, Ntcheu, Mchinji and Dedza Towns**	To increase access to potable water for the five towns to meet present and future water demands for about 400,000 people by the year 2035. The dams will also provide water for other uses like irrigation, hydo-power generation and fisheries.	Kasungu municipality, Mponela, Dedza, Mchinji and Ntcheu towns	
W16	**Ntofu Water Supply Project - Lilongwe North**	The project involves a full detailed design study and the construction of a 9Million m3 gross storage capacity dam on Ntofu River, an intake station, raw water transmission main, 15,000m3/day Water Treatment works and ancillaries and extension and upgrading of the distribution network.	Lilongwe North	Lilongwe
W17	**Rehabilitation and Expansion of water schemes - Dowa, Dwangwa, Salima, Nkhota-kota and Ntchisi**	The goal is to meet the year 2035 water demand for the five schemes and their surrounding unserved areas through rehabilitation, upgrading and expansion of the water supply facilities of source, treatment plants, transmission mains, storage tanks and distribution network. The project will include provision of backup solar power for water production.	Dowa, Dwangwa, Salima, Nkhotakota and Ntchisi	Dowa, Dwangwa, Salima, Nkhotakota and Ntchisi
W18	**Establishment of New Water Schemes - Nkhamenya and Namitete**	To provide access to reliable potable water supply in Nkhamenya, Namitete, Chileka and Msundwe market centres	Nkhamenya and Namitete	Kasungu, Lilongwe
W19	**Completion of Upgrading and Rehabilitation of Mudi Pumping Station, Water Treatment Works and Accessories**	The project goal is to increase water production for Blantyre Water Board in order to improve the provision of water supply and sanitation services to the City of Blantyre and the surrounding areas.	Blantyre	Blantyre
W20	**Upgrading Rehabilitation and Extension of Liwonde Water Supply Project to include Balaka**	The purpose of the Project is to Upgrade, Rehabilitate and Extend the water supply infrastructure at Liwonde Town to provide the people of theses areas with clean water to the year 2035.	Liwonde, Balaka	Machinga, Balaka
W21	**Upgrading Rehabilitation and Extension of Nchalo Water Supply Project**	The goal for the project is to supply adequate quantities of potable water to the people of Nchalo Town and the peripheral areas to reduce the risk of water borne diseases that threatens the livelihood of the people and reduce the productivity of the population to the national economic development.	Nchalo	Chikwawa
W22	**Proposal for Extension of Mangochi Water Supply System to Lakeshore Areas**	Improving livelihoods of the people along Lake-shore areas through provision of safe and clean water	Mangochi Lake Shore	Mangochi
W23	**Upgrading Rehabilitation and Extension of Mwanza Water Supply**	The goal for the project is to supply adequate quantities of potable water to the people of Mwanza Town and the peripheral areas. The project will also promote the protection of water catchment areas to sustain the capacities of water resources.	Mwanza	Mwanza
W24	**Chipoka Town Water Supply and Sanitation**	A water supply and sanitation proposal for Chipoka town.	Chipoka	Salima
W25	**Liwonde Town Water Supply and Sanitation**	A water supply and sanitation proposal for Liwonde town.	Liwonde	Liwonde
W26	**Luchenza, Thyolo, Muloza and Mulanje Towns Water Supply and Sanitation Project**	A water supply and sanitation proposal running along the road connecting Luchenza, Thyolo, Muloza and Mulanje towns.	Luchenza, Thyolo, Muloza, Mulanje	Luchenza, Thyolo, Mulanje
W27	**Extension of LSVTP to reach Bangula**	An extension of LSVTP connecting the Chikwawa source to a source in Bangula and possibly Nsanje town.	Bangula	Bangula
W28	**Chitete Dam**		Kasungu	Kasungu
W29	**Bangula Town Water Supply and Sanitation Project**	A water supply and sanitation proposal for Bangula town.	Bangula	Nsanje

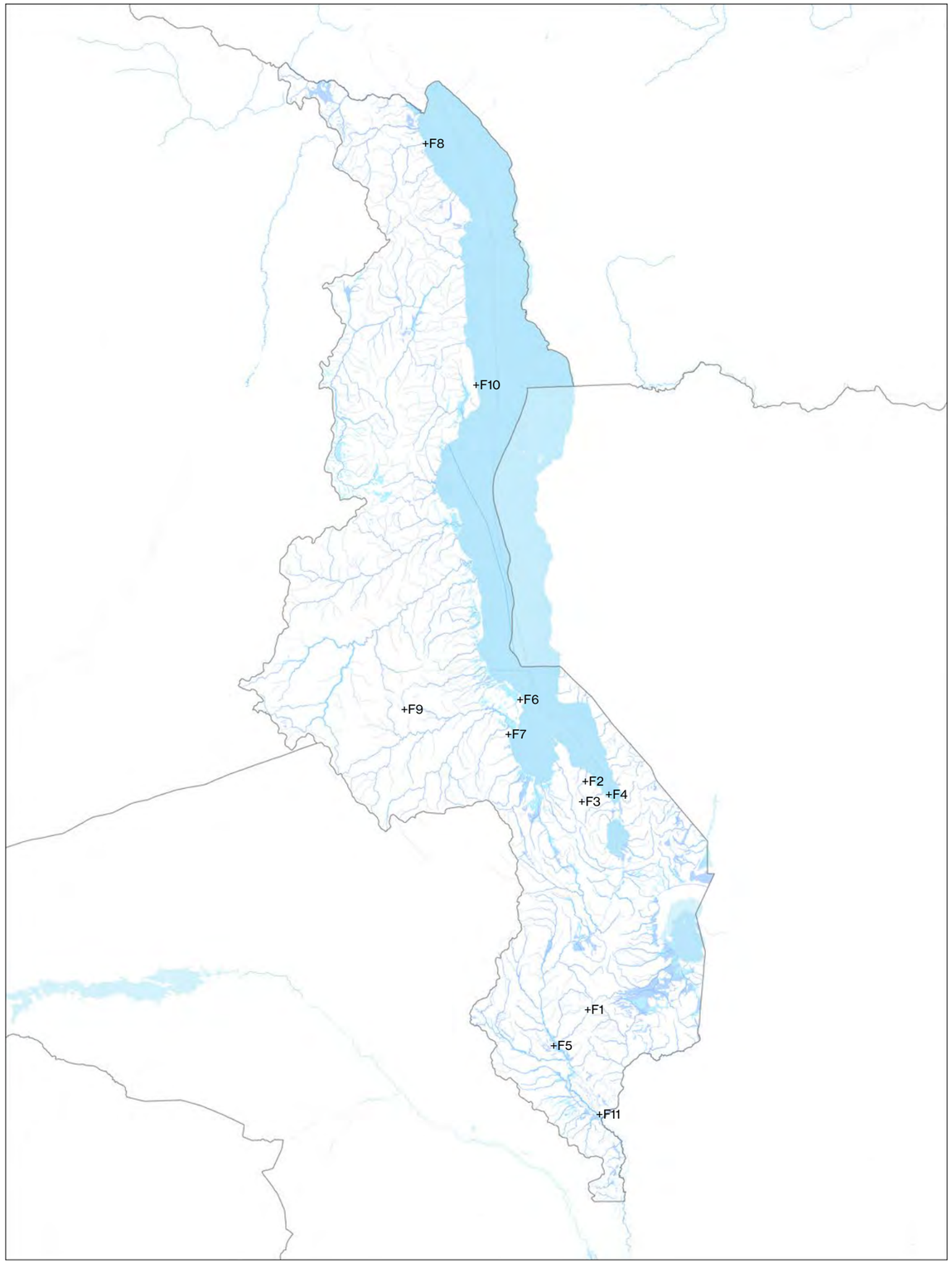


List of agriculture projects

A1 Nchalo Sugar Estate
A2 Dwangwa Sugar Estate
A3 Kaombe Sugar Estate
A4 Kapani
A5 Kamponji Enterprises Limited
A6 Cattle Feedlot Company (Part of Agricane Group)
A7 Nyama World Limited
A8 Jacoma - Tropha
A9 Afri-Oils
A10 Exagris Africa Estates
A11 Lujeri Tea Estates
A12 Press Agriculture
A13 Phata Sugarcane Outgrowers Cooperative
A14 Sweet Potato Project
A15 Kasinthula Cane Growers
A16 Liifuwu Rice Scheme
A17 Vizara Rubber Estate
A18 Chombe Tea Estate
A19 Kawalazi Tea Estate
A20 Dumbo Farming/Conservation Policy Development
A21 Toleza Government Food Farm
A22 Sanjika Estate
A23 GBA: Chikwawa (Mwana Na Njovu) Project
A24 GBA: Nthola-Illora-Ngosa Irrigation Scheme
A25 GBA: Nchalo Scheme
A26 MGDS3 Flagship: Agriculture Infrastructure Youth in Agribusiness (AIYAP)
A27 Hara Irrigtation Scheme
A28 Wovwe Irrigation Scheme
A29 Luweya Irrigation Scheme
A30 Limphasa Irrigation/Settlement
A31 Commercial and Small Farm Development for Karonga, Nkhata Bay, Kasungu, Salima/ Chipoka, Liwonde, Mangochi/Monkey Bay, Luchenza, Bangula

Project #	Project Name	Activity	Project Location (s)	District (s)
A1	**Nchalo Sugar Estate**	Sugar estate and mill	Lower Shire Valley	Chikwawa
A2	**Dwangwa Sugar Estate**	Sugar estate and mill	Central Region	Nkhotakota
A3	**Kaombe Sugar Estate**	Sugar cane community trust farm	Bangula, Lower Shire Valley	Nsanje
A4	**Kapani**	Livestock - Commercial poultry company cooperating (sourcing) with local poultry farmers	Lilongwe	Lilongwe
A5	**Kamponji Enterprises Limited**	Livestock - produces, distributes and retails table eggs, broiler day-old chicks and animal feed across Malawi.	Limbe	Blantyre
A6	**Cattle Feedlot Company (Part of Agricane Group)**	Livestock	Rumphi	Rumphi
A7	**Nyama world Limited**	Livestock - Cattle farming and beef retail, including smallholders in the value chain	Deals with farmers in several districts	/
A8	**Jacoma - Tropha**	Converting tobacco farms into plantations of other crops, mainly chillies, paprika and macademia. Also develops irrigation systems which benefit neighboring smallholders	North of Ekwendeni	Mzimba
A9	**Afri-Oils**	Groundnut farming and processing, trains farmers and sources nuts from them nationwide	Factory in Lilongwe, nationwide	Nation-wide
A10	**Exagris Africa Estates**	Agricultural estates: 1 - Mangochi District; Gulugufe Estate - 340ha 2 -Salima District; Nakhondwa/Kaputu/ Mphatsanjoka Estates - 865 ha 3 - Lilongwe District; Lisungwi Estate - 265 ha 4 - Mchinji District ; Kuminyanga/57/60/Mchaisi Estates - 2,700 ha 5 - Kasungu District; Ngala Estate - 118 ha 6 - Mzimba District; Katonthowolo Estate - 682 ha 7 - Mzimba district; Kazuma Farm - 132 ha 8 - Rumphi District - Nkhozo Estate - 1,100 ha"	/	Mangochi, Salima, Lilongwe, Mchinji, Kasungu, Mzimba, Rumphi
A11	**Lujeri Tea Estates**	TEA Estate working with smallholders and conforming to fair trade principles	Mulanje District, Southern Region	Mulanje
A12	**Press Agriculture**	Estates largely underused. Current activity concentrates around Kasungu with plans for commercialization and diversification.	Nationwide	/
A13	**Phata Sugarcane Outgrowers Cooperative**	Smallholder cooperative	Between Nchalo and Chikwawa, Chikwawa District, Southern Malawi	Chikwawa
A14	**Sweet Potato Project**	•Help 3,000 farmers grow improved varieties of orange-fleshed sweet potatoes – high yielding and rich in Vitamin A. •Enable farmers to pass on vines to their neighbors increasing production at no extra cost. •800 pre-school children will receive a nutritious meal at school making them less likely to suffer from Vitamin A deficiency.	District-wide	Nkhata Bay

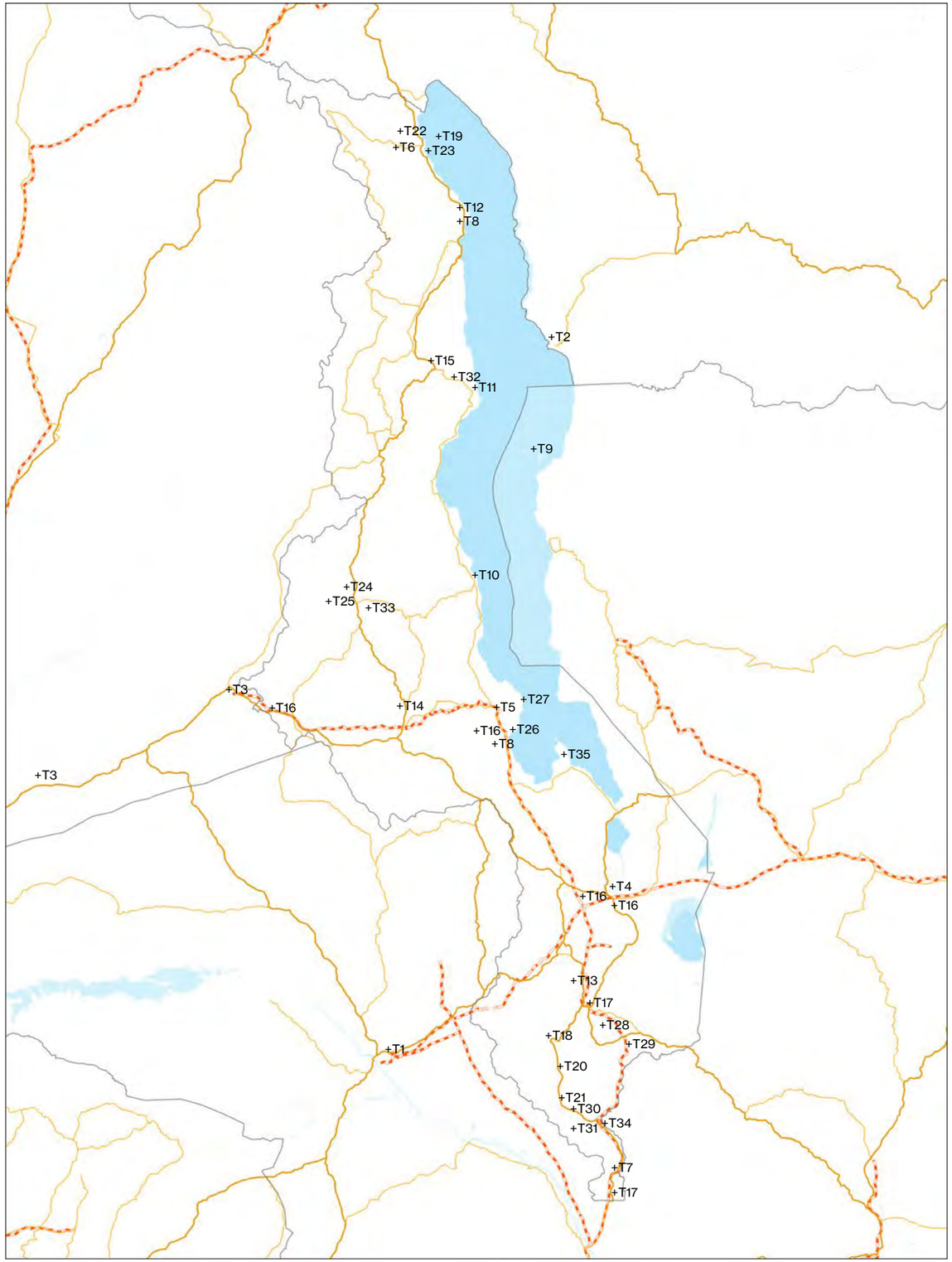
Project #	Project Name	Activity	Project Location (s)	District (s)
A15	**Kasinthula Cane Growers**	Sugar Cane Co-operative	Chikwawa	Chikwawa
A16	**Lifuwu Rice Scheme**		Senga Bay	Salima
A17	**Vizara Rubber Estate**	Vizara rubber plantation. One of the most commercially viable in Southern Africa.	Nkhata Bay	Nkhata Bay
A18	**Chombe Tea Estate**	Chombe Tea Estate is an agricultural land in Northern Malawi and has an elevation of 603 metres. Chombe Tea Estate is situated southwest of Chavukuka.	Nkhata Bay	Nkhata Bay
A19	**Kawalazi Tea Estate**	Kawalazi Estate produces and cultivates tea, macadamia nuts, and coffee beans.	Nkhata Bay	Nkhata Bay
A20	**Dumbo Farming/ Conservation Policy Development**		Kasungu	Kasungu
A21	**Toleza Government Food Farm**	Toleza Government Food Farm is a farm and is located in Balaka District, Southern Region, Malawi. The estimate terrain elevation above seal level is 656 metres.	Balaka	Liwonde
A22	**Sanjika Estate**	Sanjika Estate is an agricultural land in Southern Malawi. Sanjika Estate is situated north of Makande, close to Makande Railway Station.	Luchenza	Luchenza
A23	**GBA: Chikwawa (Mwana Na Njovu) Project**		/	Ngabu, Chikwawa
A24	**GBA: Nthola-Illora-Ngosi Irrigation Scheme**		/	Karonga
A25	**GBA: Nchalo Scheme**		/	Chikwawa
A26	**MGDS3 Flagship: Agriculture Infrastructure and Youth in Agribusiness (AIYAP)**		/	Nkhotakota, Nkhata Bay
A27	**Hara Irrigation Scheme**		Chilumba	Karonga
A28	**Wovwe Irrigation Scheme**		Chilumba	Karonga
A29	**Luweya Irrigation Scheme**	Opportunity for Wastewater Treatment Element in southern site as outlet to lake	Luweya	Nkhatabay
A30	**Limphasa Irrigation/ Settlement**		Limphasa	Nkhatabay
A31	**Commercial and Small Farm Development for Karonga, Nkhata Bay, Kasungu, Salima/ Chipoka, Liwonde, Mangochi/Monkey Bay, Luchenza, Bangula**	Proposal to develop small and large scale farming in or around the secondary cities, to service the population around.	NA	Karonga, Nkhata Bay, Kasungu, Salima, Liwonde, Mangochi, Luchenza, Nsanje



List of fisheries and aquaculture projects

F1 Chambo Fisheries
F2 Maldeco Fisheries
F3 Maldeco Port Facility
F4 Maldeco Lake Cages
F5 Kasinthula Fish Ponds
F6 LM Aquaculture
F7 MIP-1: Sustainable Aquaculture and Fisheries Development (Chipoka Fisheries)
F8 MIP-1: Sustainable Aquaculture and Fisheries Development (Karonga Fisheries)
F9 Site for Fish Feed Mill Development
F10 MIP-1: Sustainable Aquaculture and Fisheries Development (Nkhata Bay Fisheries)
F11 Bangula Fisheries Development

Project #	Project Name	Activity	Project Location (s)	District (s)
F1	**Chambo Fisheries**	Refer to the National Aquaculture Strategic Plan, Department of Fisheries	Chambo	Blantyre
F2	**Maldeco Fisheries**		Monkey Bay	Monkey Bay
F3	**Maldeco Port Facility**		Monkey Bay	Monkey Bay
F4	**Maldeco Lake Cages**		Monkey Bay	Monkey Bay
F5	**Kasinthula Fish Ponds**		Nchalo	Chikwawa
F6	**LM Aquaculture**		Senga Bay	Salima
F7	**MIP-1: Sustainable Aquaculture and Fisheries Development (Chipoka Fisheries)**	Proposal to develop the fisheries sector at Chipoka benefiting from Chipoka port.	Chipoka	Salima
F8	**MIP-1: Sustainable Aquaculture and Fisheries Development (Karonga Fisheries)**	Proposal to develop the fisheries sector at Karonga.	Karonga	Karonga
F9	**Site for Fish Feed Mill Development**	Proposed site for a fish feed mill development at Kanengo industrial area.	Area 55, Lilongwe	Lilongwe
F10	**MIP-1: Sustainable Aquaculture and Fisheries Development (Nkhata Bay Fisheries)**	Proposal to develop the fisheries sector at Nkhatabay, benefiting from the port.	Nkhata Bay	Nkhata Bay
F11	**Bangula Fisheries Development**	Proposal to develop the fisheries sector at Bangula, benefiting from the rail/port connection.	Bangula	Nsanje

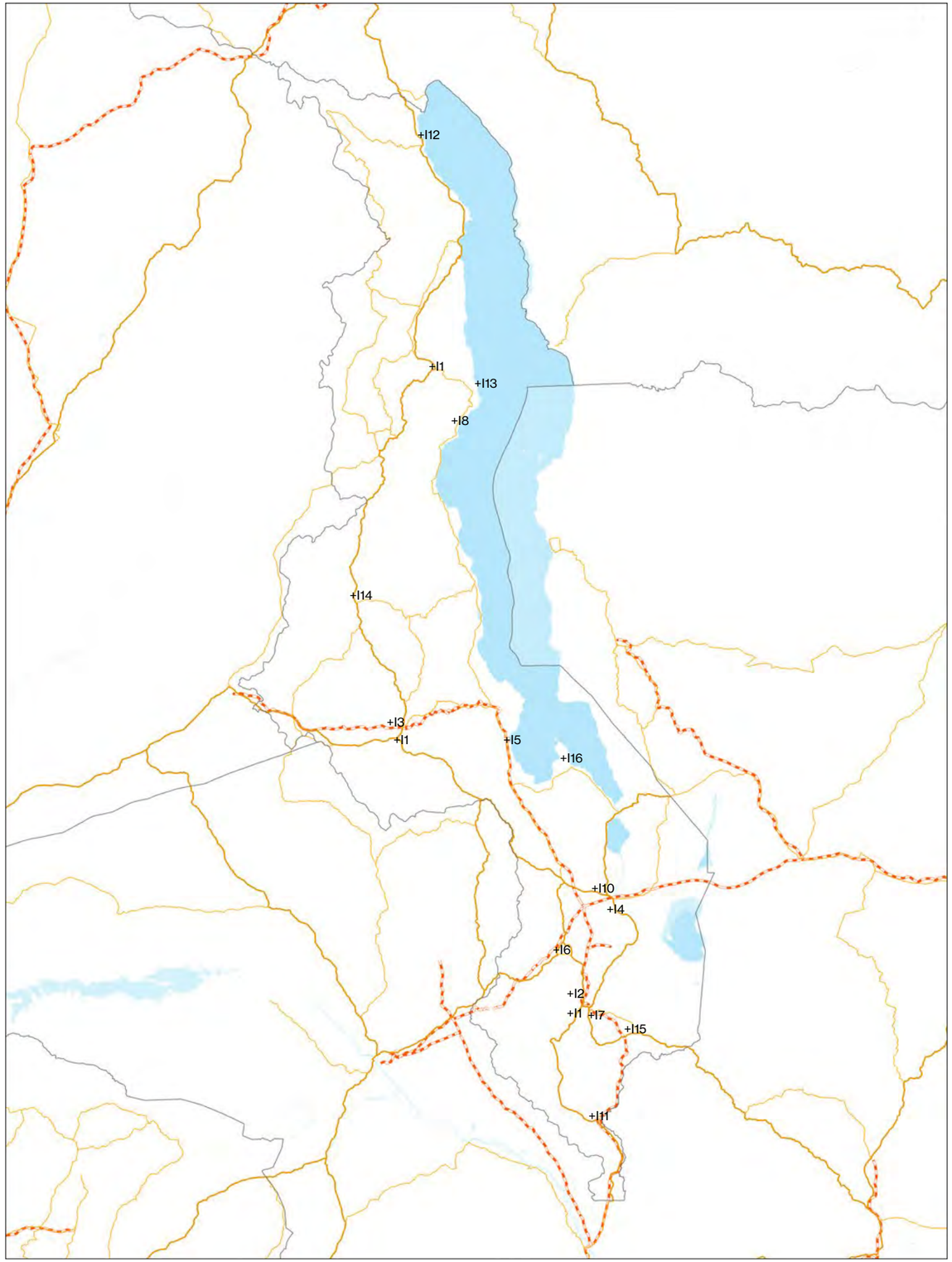


List of transportation projects

T1	Nacala Logistics Corridor - Nacala Rail and Port Project
T2	Mtwara Development Corridor
T3	Chipata-Petauke-Serenje Railway Line (ZAMBIA)
T4	Liwonde Port Development
T5	ADMARC Salima
T6	Mbeya to Chilumba
T7	MGDS 3 Flagship: Development of Nsanje World Inland Port
T8	MGDS 3 Flagship: Construction and rehabilitation of ports and jetties (Chipoka)
T9	MGDS 3 Flagship: Construction and rehabilitation of ports and jetties (Likoma)
T10	MGDS 3 Flagship: Construction and rehabilitation of ports and jetties (Nkhotakota)
T11	MIP-1: Construction and rehabilitation of ports and jetties (Nkhata Bay)
T12	MIP-1: Construction and rehabilitation of ports and jetties (Chilumba)
T13	MGDS 3 Flagship: Expansion and Rehabilitation of airports (Chileka Airport)
T14	MGDS 3 Flagship: Expansion and Rehabilitation of airports (Kumuzu Airport)
T15	MGDS 3 Flagship: Expansion and Rehabilitation of airports (Mzuzu Airport)
T16	MIP-1: Rail line rehabilitation (Nkaya to Mchinji)
T17	MIP-1: Rail line rehabilitation (Limbe to Marka)
T18	Dyerto Bus Depot and Produce Market
T19	Karonga Passenger Port Facility Development
T20	Nchalo Bus Depot and Produce Market
T21	Ngabu Bus Depot and Produce Market
T22	Karonga Multi-modal hub
T23	MIP-1: Karonga Airport Rehabilitation
T24	Kasungu Airpot Rehabilitation
T25	M1 road from Kasungu to Lilongwe and Mzuzu
T26	Chipoka Multi-modal Port
T27	Senga Bay Jetty Port Rehabilitation
T28	Luchenza Multi-modal Station
T29	M2 road from Blantyre to Muloza
T30	Bangula Multi-modal Port
T31	Bangula Bridge Reconstruction (S151)
T32	M5 Road Between Mzuzu and Nkhata Bay
T33	M19 Road to Nkhotakota and Mchinji
T34	M1 road from Blantyre to Nsanje
T35	Monkey Bay Port Development
T36	Mangochi Port Development

Project #	Project Name	Activity	Project Location (s)	District (s)
T1	**Nacala Logistics Corridor - Nacala Rail and Port Project**	New 912km railway line from Mozambique (Nacala) to Malawi and Zambia	Nacala to Tete line	/
T2	**Mtwara Development Corridor**	New (and refurbished) 840km Rail link from Mtwara (Tanzania) to Mbamba bay on Lake Malawi, with road links into Mozambique and Boat links crossing Lake Malawi to Nkhata Bay	Mtwara to Mbamba Bay line	/
T3	**Chipatata-Petauke-Serenje railway line**	An east-west rail line connecting Chipata (on the Malawi border, already connected to Malawi through the existing Chipata-Mchinji railway line, which forms part of the Nacala Corridor) to Serenje on the Eastern Congo border	Chipata to Serenje line	/
T4	**Liwonde Port Development**	A new river port that will integrate to the railway network and link directly to the Nacala corridor. It would consist of new general cargo berth; new storage yard, warehouses and handling equipment; new railway connection; and new navigation channel (potential dredging)	Liwonde	Machinga
T5	**ADMARC Salima**	Increase rail and road network reach and interoperability	Salima	Salima
T6	**Mbeya to Chilumba**	A spur line from Mbeya to Chilumba to connect with port on Lake Malawi. 20.5 tonnes/axle to connect with Tazara line	Mbeya to Chilumba	/
T7	**MGDS 3 Flagship Development of Nsanje World Inland Port**	A direct Waterway transport system between the port in Njanje in Malawi and the port of Chinde at the Zambzi on the Indian Ocean	Nsanje	Nsanje
T8	**MIP-1: Construction and rehabilitation of ports and jetties**	Chipoka Port Rehabilitation: Extension of the existing quay; dredging of a new access channel and at the berth;siltation management; and new equipment	Chipoka	Salima
T9		Likoma Jetty Construction	Likoma	Likoma
T10		Nkhotakota Jetty Construction	Nkhotakota	Nkhotakhota
T11		Nkhatabay Jetty Rehabilition	Nkhatabay	Nkhotakhota
T12		Chilumba Port Rehabilition	Chilumba	Karonga
T13	**MGDS 3 Flagship: Expansion and Rehabilitation of airports**	Chileka International Airport	Blantyre	Blantyre
T14		Kumuzu International Airport	Liwonde	Liwonde
T15		Mzuzu Airport	Mzuzu	Mzuzu
T16	**MIP-1: Rail line rehabilitation**	Nkaya to Mchinji rail line rehabilitation	/	/
T17		Limbe to Marka rail line rehabilitation	/	/

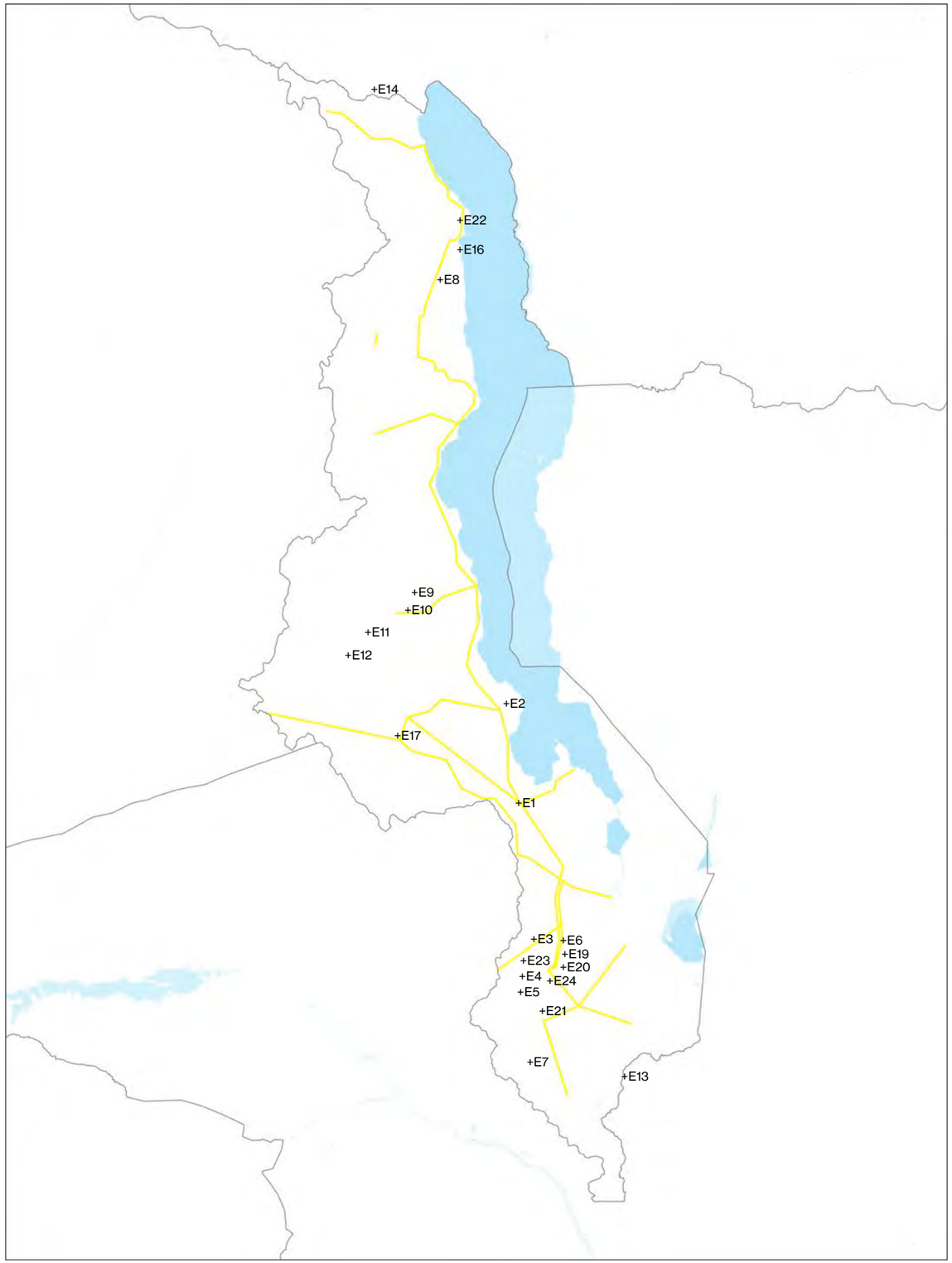
Project #	Project Name	Activity	Project Location (s)	District (s)
T18	**Dyeratu Bus Depot and Produce Market**		Chikwawa	Chikwawa
T19	**Karonga Passenger Port Facility Development**	A proposed passenger port facility development at Karonga to connect Karonga to other secondary cities along the lakefront.	Karonga	Karonga
T20	**Nchalo Bus Depot and Produce Market**		Nchalo	Chikwawa
T21	**Ngabu Bus Depot and Produce Market**		Ngabu	Chikwawa
T22	**Karonga Multi-modal hub**	A proposed multi-modal hub at the city center connecting a potential line/station to road transporation.	Karonga	Karonga
T23	**Karonga Airport Rehabilitation**	A proposal to rehabilitate Karonga airport to become a functioning airport for the northern region.	Karonga	Karonga
T24	**Kasungu Airpot Rehabilitation**	A proposal to rehabilitate Kasungu airport connecting Kasungu to other major cities via an airport, in the absence of any other connection but road.	Kasungu	Kasungu
T25	**M1 road from Kasungu to Lilongwe and Mzuzu**	Rehabilitation of M1 road connecting Kasungu to Lilongwe and Mzuzu.	Kasungu, Lilongwe, Mzuzu	Kasungu, Lilongwe, Mzuzu
T26	**Chipoka Multi-modal Port**	A proposal to develop a multi-modal port at Chipoka, connecting water transport to rail transport, an important infrastructural intersection for the country.	Chipoka	Salima
T27	**Senga Bay Jetty Port Rehabilitation**	A proposal to rehabilitate the Jetty port at Senga Bay for tourism and leisure purposes.	Senga Bay	Salima
T28	**Luchenza Multi-modal Station**	A proposal to develop a multi-modal station at Luchenza, connecting rail, road and water transports serving the southern region.	Luchenza	Luchenza
T29	**M2 road from Blantyre to Muloza**	Rehabilitation of M2 road connecting Blantyre to Muloza.	Blantyre, Luchenza, Muloza	Blantyre, Luchenza, Muloza
T30	**Bangula Multi-Modal Port**	A proposal to develop a multi-modal port at Bangula, connecting water transport to rail transport.	Bangula	Nsanje
T31	**Bangula Bridge Reconstruction (S151)**	Reconstruction of the vehicular bridge at Bangula city.	Bangula	Nsanje
T32	**M5 Road between Mzuzu and Nkhata Bay**	Rehabilitation of M5 road connecting Mzuzu to Nkhatabay	Mzuzu, Nkhata Bay	Mzuzu, Nkhata Bay
T33	**M19 Road to Nkhotakota and Mchinji**	Rehabilitation of M19 road connectiong Nkhotakota to Mchinji.	Nkhotakota, Mchinji	Nkhotakota, Mchini
T34	**M1 road from Blantyre to Nsanje**	Rehabilitation of M1 road connecting Nsanje, the most southern settlement to Blantyre.	Blantyre, Bangula, Nsanje	Blantyre, Nsanje
T35	**Monkey Bay Port Development**	Rehabilitation of Monkey Bay Port for Industrial and Tourism purposes.	Monkey Bay	Mangochi



List of industrial projects

I1	MIP-1: Special Economic Zones proposals - Lilongwe, Blantyre, Mzuzu, Cape Maclear
I2	Blantyre Industrial District
I3	Kanengo - Lilongwe Industrial District
I4	Malawi Fertilizer Company - Superfert
I5	Chipoka Transit-oriented Industrial and Commercial Center Development
I6	Zalewa Potential SEZ
I7	Chigumula Possible SEZ (Blantyre)
I8	Chintheche Possible SEZ
I9	Lower Shire Valley Industrial Parks
I10	Liwonde Transit-oriented Industrial and Commercial Center Development
I11	Bangula Transit-oriented Industrial and Commercial Center Development
I12	Karonga Transit-oriented Industrial and Commercial Center Development
I13	Nkhata Bay Transit-oriented Industrial and Commercial Center Development
I14	Kasungu Transit-oriented Industrial and Commercial Center Development
I15	Luchenza Transit-oriented Industrial and Commercial Center Development
I16	Monkey Bay Transit-oriented Industrial and Commercial Center Development

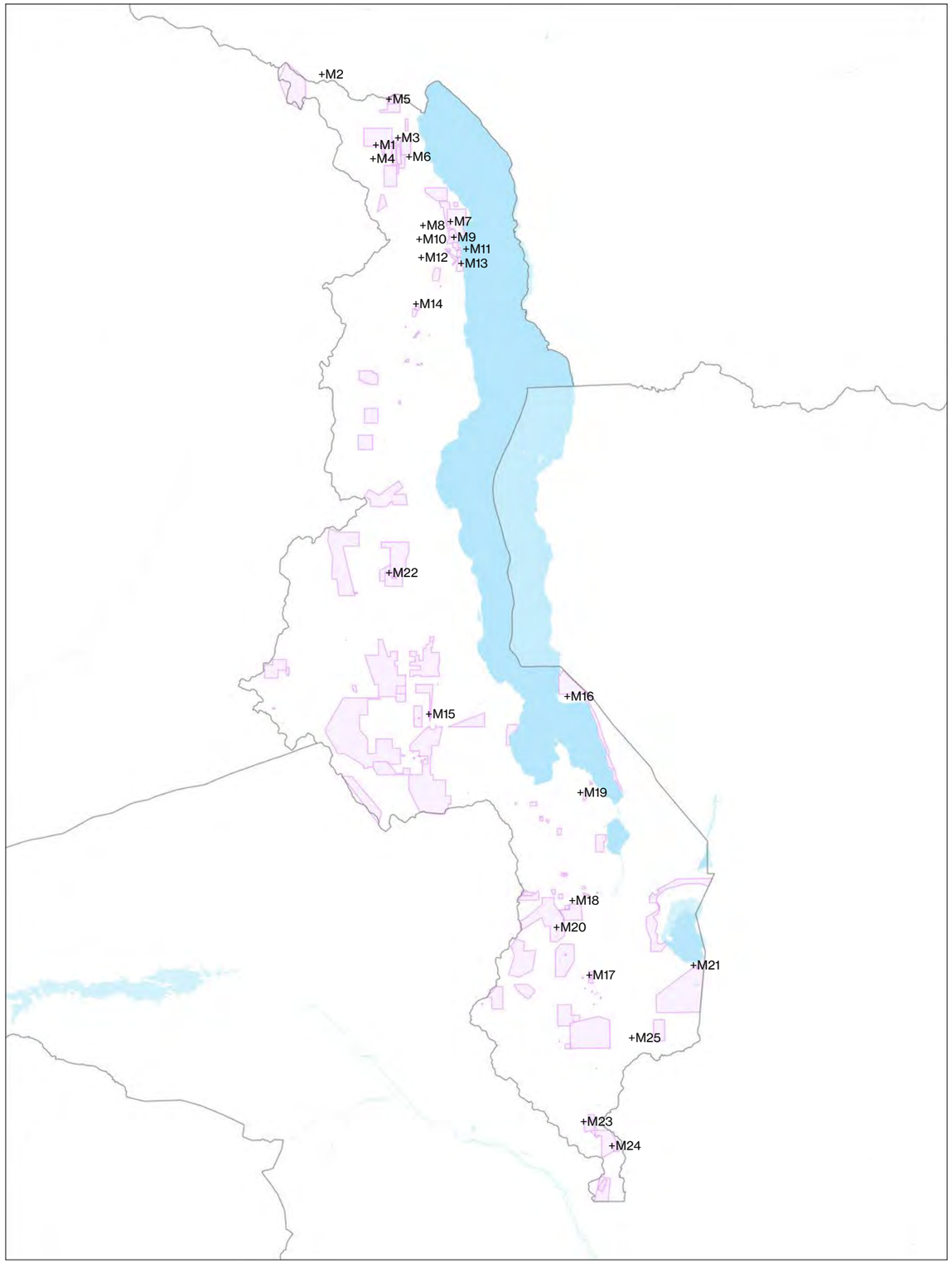
Project #	Project Name	Activity	Project Location (s)	District (s)
I1	**MIP-1: Special Economic Zones proposals - Lilongwe, Blantyre, Mzuzu, Cape Maclear**	Establish special economic zones aimed at contributing to the growth of the industrial sector and economic development in the country. The economic zones will be developed in line with the identified areas for appropriate investment for development of industrial parks by Government of Malawi.	Mzuzu, Lilongwe, Blantyre, Monkey Bay	Mzuzu, Lilongwe, Blantyre, Monkey Bay
I2	**Blantyre Industrial District**		Blantyre	Blantyre
I3	**Kanengo - Lilongwe Industrial District**		Kanengo	Lilongwe
I4	**Malawi Fertilizer Company - Superfert**		Liwonde	Machinga
I5	**Chipoka Transit Oriented Industrial and Commercial Center Development**	A proposed industrial and commercial center development at Chipoka, at the intersection of rail, port and road.	Chipoka	Salima
I6	**Zalewa Potential SEZ**		Zalewa	Blantyre, Neno
I7	**Chigumula Possible SEZ (blantyre)**		Blantyre	Blantyre
I8	**Chintheche Possible SEZ**		Chintheche	Nkhata Bay
I9	**Lower Shire Valley Industrial Parks**			
I10	**Liwonde Transit-oriented Industrial and Commercial Center Development**	A proposed industrial and commercial center development benefiting from the rail, port, road connection at Liwonde, as well as the Tete-Nacala corridor,	Liwonde	Machinga
I11	**Bangula Transit-oriented Industrial and Commercial Center Development**	A proposed industrial and commercial center development benefiting from the rail, port, road connection at Bangula, serving the Nsanje district.	Bangula	Nsanje
I12	**Karonga Transit-oriented Industrial and Commercial Center Development**	A proposed industrial and commercial center development at Karonga, near the existing market. Potentially, connected to the northern rail development.	Karonga	Karonga
I13	**Nkhata Bay Transit-oriented Industrial and Commercial Center Development**	A proposed industrial and commercial center development at Nkhatabay, along Lake Malawi, connecting Nkhatabay to other port cities such as Chipoka, Liwonde, Karonga.	Nkhata Bay	Nkhata Bay
I14	**Kasungu Transit-oriented Industrial and Commercial Center Development**	A proposed industrial and commercial center development at Kasungu, near the airport and along the main road connecting Karonga to	Kasungu	Kasungu
I15	**Luchenza Transit-oriented Industrial and Commercial Center Development**	A proposed industrial and commercial center development at Luchenza, benefiting from rail connection, servicing the area east-west of Blantyre.	Luchenza	Luchenza
I16	**Monkey Bay Transit-oriented Industrial and Commercial Center Development**	A proposed industrial and commercial center development at Monkey Bay, benefiting from port connection.	Monkey Bay	Mangochi



List of energy projects

E1 Solar Photovoltaic (PV) project in the Golomoti
E2 Kanzimbe Solar Power Station- Solar Photovoltaic (PV) Project in the Salima District
E3 MGDS 3 Flagship: Kammwamba Thermal Power Station
E4 Tedzani I-IV - Hydroelectric - 20MW, 20MW, 52.7 MW, 18MW
E5 Mpatamanga Hydroelectric Power Station
E6 Kholombidzo Hydroelectric Power Station
E7 The Sustainable Off-Grid Electrification of Rural Villages (SOGERV) project
E8 Lower Fufu Hydroelectric Project
E9 Chizuma
E10 Chasombo (Bua River)
E11 Malenga
E12 Mbongozi
E13 Zoa Falls
E14 Manolo (SRBDP)
E15 Songwe Hydroelectric Power Station
E16 Geothermal Exploration in Chiweta
E17 Solar Power Plant Project - Lilongwe Water Board
E18 Construction of independent Power Generation Plant - Blantyre Water Board
E19 Nkula A
E20 Nkula B
E21 Kapichira I & II
E22 Wovwe Power Station
E23 Tedzani 1 Power Station
E24 Tedzani 2 Power Station
E25 Tedzani 3 Power Station

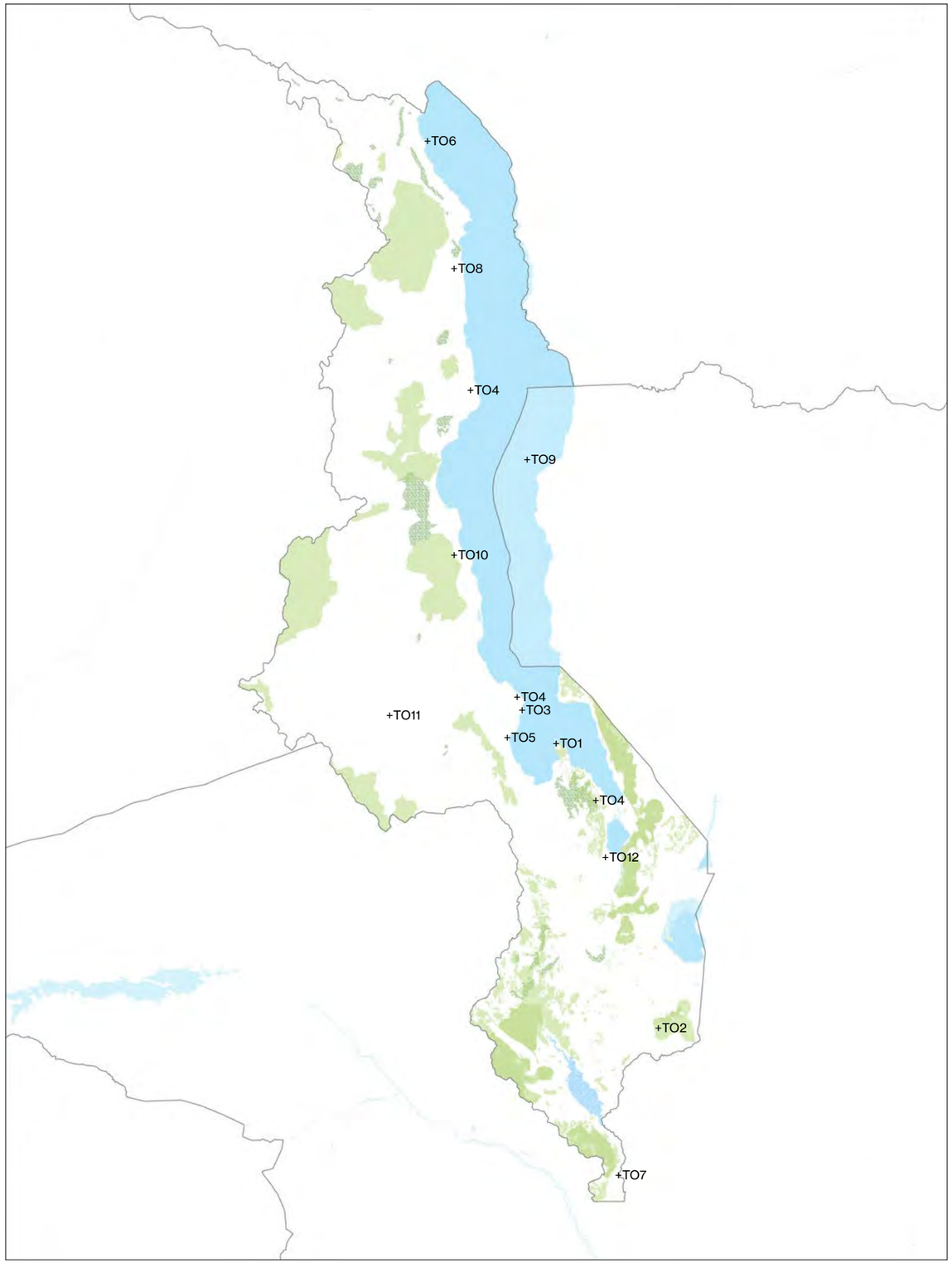
Project #	Project Name	Activity	Project Location (s)	District (s)
E1	**Solar Photovoltaic (PV) project in the Golomoti**	JCM has negotiated a power purchase agreement (PPA) with the Electricity Supply Corporation of Malawi Limited (ESCOM). The PPA signing is subject to Malawi Energy Regulatory Authority (MERA) approval once the tariff is settled between JCM and ESCOM.	Golomoti, Dedza District, Central Region	Dedza
E2	**Kanzimbe Solar Power Station- solar photovoltaic (PV) project in the Salima district**	JCM has negotiated a power purchase agreement (PPA) with the Electricity Supply Corporation of Malawi Limited (ESCOM) and has completed all the required steps to acquire land.	North-west of the town of Salima, Salima District, Central Region	Salima
E3	**MGDS 3 Flagship: Kammwamba Thermal Power Station**	A proposed coal-fired power plant	Kammwamba Area in the town of Zalewa, in Neno District, in the Southern Region of Malawi	Neno
E4	**Tedzani I-IV - Hydroelectric - 20MW, 20MW, 52.7 MW, 18MW**	A complex of integrated hydroelectric power plants	On the Shire River, south of Tedzani, South Region	Chikwawa
E5	**Mpatamanga Hydroelectric Power Station**	A planned complex of integrated hydroelectric power plants	On the Shire River, West of Blantyre, South Region	Blantyre
E6	**Kholombidzo Hydroelectric Power Station**	A proposed hydropower plant	Across the Shire River, in the village of Kholombidzo, Blantyre District, in the Southern Region	Blantyre
E7	**The Sustainable Off-Grid Electrification of Rural Villages (SOGERV) project**	Reduce energy poverty in rural Chikhwawa district through the electrification of households, businesses and community energy infrastructure via the deployment of sustainable renewable energy technologies (RETs)	Chikwawa district, Southern Region. Two villages are already operational: Mandrade and Kandeu	Chikwawa
E8	**Lower Fufu Hydroelectric Project**	The project involves the construction of a hydroelectric power plant to generate 200MW power.	Rumphi	Rumphi
E9	**Chizuma**	Chizuma Hydroelectric Power Plant 50 MW	Bua river	Nkhotakota
E10	**Chasombo (Bua river)**	Chasombo Hydroelectric Power Plant 50 MW	Bua river	Nkhotakota
E11	**Malenga**	Malenga Hydroelectric Power Plant 62 MW	Bua river	Kasungu, Dowa, Ntchisi
E12	**Mbongozi**	Mbongozi Hydroelectric Power Plant 41 MW	Bua river	Kasungu, Dowa, Ntchisi
E13	**Zoa Falls**	Proposal to use the potential capacity of zoa falls for energy generation.	Ruo river	Thyolo
E14	**Manolo (SRBDP)**		Songwe river	Chitipa
E15	**Songwe Hydroelectric Power Station**	Lower Songwe dam (330 million m3) and hydropower plant (180.2 MW), managed as a public-private partnership	On the Songwe River separating Tanzania and Malawi, south of the town of Itumba, approximately 120 kilometres (75 mi), south of Mbeya, Mbeya District, Tanzania	Chitipa
E16	**Geothermal Exploration in Chiweta**		Chiweta	Rumphi
E17	**Solar Power Plant Project - Lilongwe Water Board**	The overall objective of the project is to construct and commission a 10-Megawatts solar power generation plant that will ensure adequate, sustainable and economical provision of potable water to Lilongwe City and the surrounding areas within the Board's water supply area.	Lilongwe	Lilongwe
E18	**Construction of independent Power Generation Plant - Blantyre Water Board**	To construct a 50-Megawatt solar power plant *Activity 1-1: Acquisition of land *Activity 2-1: Pre-feasibility study *Activity 2-2: Preliminary and detailed designs *Activity 2-3: Environmental and Social Impact Assessment *Activity 3-1: Project administration *Activity 3-2: Construction and commissioning *Activity 3-3: construction supervision *Activity 3-4: Licensing	Blantyre	Blantyre
E19	**Nkhula A**	Power station in Blantyre	Blantyre	Blantyre
E20	**Nkhula B**	Power station in Blantyre	Blantyre	Blantyre
E21	**Kapichira I & II**	Power station along the Shire river that supports the Shire Valley Transformation Programme.	Chikwawa	Chikwawa
E22	**Wovwe Power Station**	The Wovwe Hydroelectric Power Station, also Wovwe Power Station, is a hydroelectric power plant on the Wovwe River in Malawi. It has installed capacity of 4.35 megawatts (5,830 hp), with three generation units of 1.45 megawatts each.	Chitipa	Karonga
E23	**Tedzani 1 Power Station**	The Tedzani Hydroelectric Power Station is a complex of integrated hydroelectric power plants on the Shire River in Malawi. It has a planned installed capacity of 110.7 megawatts.	Blantyre	Blantyre
E24	**Tedzani 2 Power Station**	See above	Blantyre	Blantyre
E25	**Tedzani 3 Power Station**	See above	Blantyre	Blantyre



List of mining projects

M1	Kayelekera Uranium Mine - Paladin (Africa) Ltd
M2	Ilomba Granite
M3	Premier Teamwork Mining
M4	Zagaf Cement Sales
M5	Malcoal Mining Limited
M6	Nkhauti Trading
M7	Njati Mining Corporation
M8	Lisikwa Investments
M9	DDY General Dealers
M10	Kaziwiziwi Mining Company
M11	Dantasie Mining Limited
M12	CPL-Mchenga Coal Mines Limited
M13	Mean Jalawe Coal Mine
M14	World of Granite
M15	Tijan Mining Company
M16	Mawei Mining Company Limited
M17	Shayona Cement Corporation
M18	Lynas Africa Limited
M19	Cement Products Limited
M20	Plinth Mining Group
M21	Optichem 2000 (Malawi) Limited
M22	Shayona Cement
M23	Mwabvi Coal Mine
M24	Crown Minerals
M25	Zunguziwa Quarry

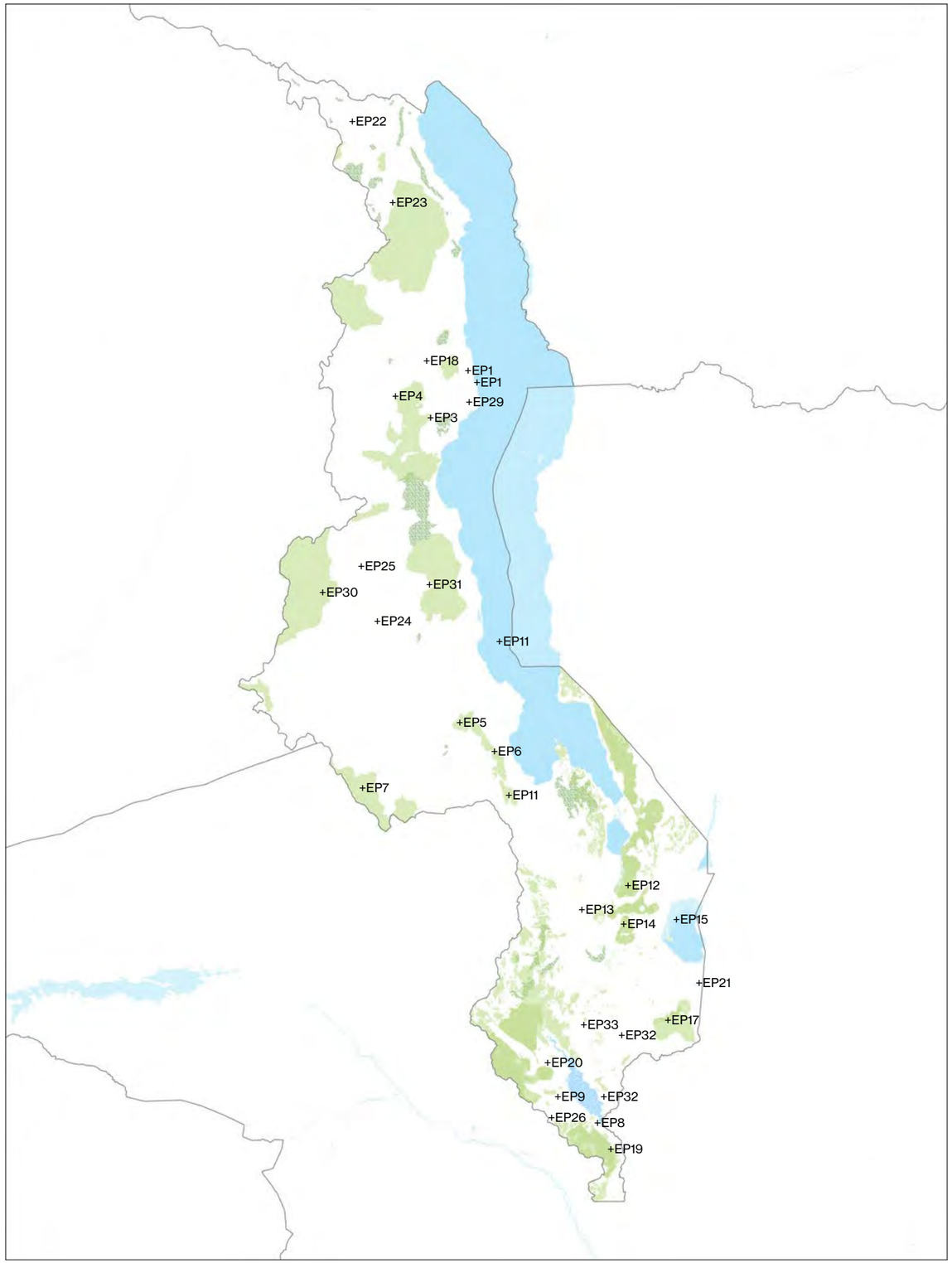
Project #	Project Name	Activity	Project Location (s)	District (s)
M1	**Kayelekera Uranium Mine - Paladin (Africa) Ltd**	Uranium		Karonga
M2	**Ilomba Granite**	Sodalite		Chitipa
M3	**Premier Teamwork Mining**	Coal		Karonga
M4	**Zagaf Cement Sales**	Coal		Karonga
M5	**Malcoal Mining Limited**	Coal		Karonga
M6	**Nkhauti Trading**	Coal		Karonga
M7	**Njati Mining Corporation**	Coal		Rumphi
M8	**Lisikwa Investments**	Coal		Rumphi
M9	**DDY General Dealers**	Coal		Rumphi
M10	**Kaziwiziwi Mining Company**	Coal		Rumphi
M11	**Dantasie Mining Limited**	Coal		Rumphi
M12	**CPL-Mchenga Coal Mines Limited**	Coal		Rumphi
M13	**Mean Jalawe Coal Mine**	Coal		Rumphi
M14	**World of Granite**	Pink Granite		Rumphi
M15	**Tijan Mining Company**	Galena, Graphite		Kasungu
M16	**Mawei Mining Company Limited**	Heavy Minerals Sand		Mangochi
M17	**Shayona Cement Corporation**	Iron Ore		Blantyre
M18	**Lynas Africa Limited**	Rare Earth Elements		Balaka, Liwonde
M19	**Cement Products Limited**	Limestone		Mangochi
M20	**Plinth Mining Group**	Gold		Balaka, Liwonde
M21	**Optichem 2000 (Malawi) Limited**	Apatite, Phosphate		Mangochi
M22	**Shayona Cement**	Iron Ore		Kasungu
M23	**Mwabvi Coal Mine**	Coal		Nsanje
M24	**Crown Minerals**	Heavy Minerals Sand		Nsanje
M25	**Zunguziwa Quarry**			Nsanje



List of tourism projects

TO1 Cape Maclear Resort Project
TO2 Integrated Cable Car Resort on Mount Mulanje
TO3 Integrated Resort in Salima
TO4 MIP-1: Malawi Lakeshore Tourism Development
TO5 Chipoka Commercial Boardwalk
TO6 Karonga Lakefront Tourism
TO7 Songwe Border Transit Facility
TO8 Livingstonia Resort
TO9 Likoma Activity Center
TO10 Resort and Houseboat Harbor in Nkhotakota
TO11 River Boardwalk Lilongwe
TO12 Shire River Waterfront

Project #	Project Name	Activity	Project Location (s)	District (s)
TO1	**Cape Maclear Resort Project**	The Cape Maclear Investment Project comprises a Special Economic Zone (SEZ) spread within the radius of 30km around the Cape Maclear peninsular; a state-of-the-art international airport covering a five square km stretch around Cape Maclera region and a smart town linked to the SEZ.	Cape Maclear Peninsula, Mangochi District, Southern Region	Mangochi
TO2	**Integrated Cable Car Resort on Mount Mulanje**	The project proposes development of a world-class tourism destination based on fantasy and adventure. Underpinned by a Cable Car facility, the project will include luge & skyride, Segway fun rides, health spa and wellness centre, living museum story-telling, eco-lodge, eco-adventure activities and a variety of themed restaurants. Nearby tea and coffee plantations are additions to the development.	Mount Mulanje, Zomba, Mulanje District, Southern Region	Mulanje
TO3	**Integrated Resort in Salima**	The project comprises of the construction of 200 room up-market hotels, a 1500-seater international conference centre, sporting complex, marina, entertainment complex golf course and an underground aquarium and wildlife sanctuary, casino.	The project has two probable sites at Senga Bay and Chipoka, both in Salima Central Lakeshore district	Salima
TO4	**MIP-1: Malawi Lakeshore Tourism Development**	The project being proposed shall involve the development and construction of public beaches and its associated infrastructures along the stretch of Lake Malawi. The project will minimise the conflict amongst the different users and reduce pressure on private developers. It will also bring orderliness and improve sanitation and cleanliness of the beach.	Salima, Mangochi, Nkhata Bay	Salima, Mangochi, Nkhata Bay
TO5	**Chipoka Commercial Boardwalk**	A proposed commercial and cultural lakefront development near Chipoka port, with its own passenger terminal and aquarium.	Chipoka	Salima
TO6	**Karonga Lakefront Tourism**	A proposed touristic area in Karonga that would become a center of attraction for the northern region.	Karonga	Karonga
TO7	**Songwe Border Transit Facility**	A proposed lodging facility with amenities 2 km from the border	Nsanje	Nsanje
TO8	**Livingstonia Resort**	A proposed resort in Livingstonia with a hotel, sports complex and multipurpose hall	Livingstonia	Rumphi
TO9	**Likoma Activity Center**	A proposed development on Likoma island	Likoma	Likoma
TO10	**Resort and House-boat Harbor in Nkhotakota**	A proposed development in Nkhotakota, including a hotel, entertainment and shopping center and house boat harbor	Nkhotakota	Nkhotakota
TO11	**River Boardwalk Lilongwe**	A proposed boardwalk and picnic and rest areas along the river in Lilongwe	Lilongwe	Lilongwe
TO12	**Shire River Waterfront**	A proposed riverfront development in Liwonde	Liwonde	Machinga



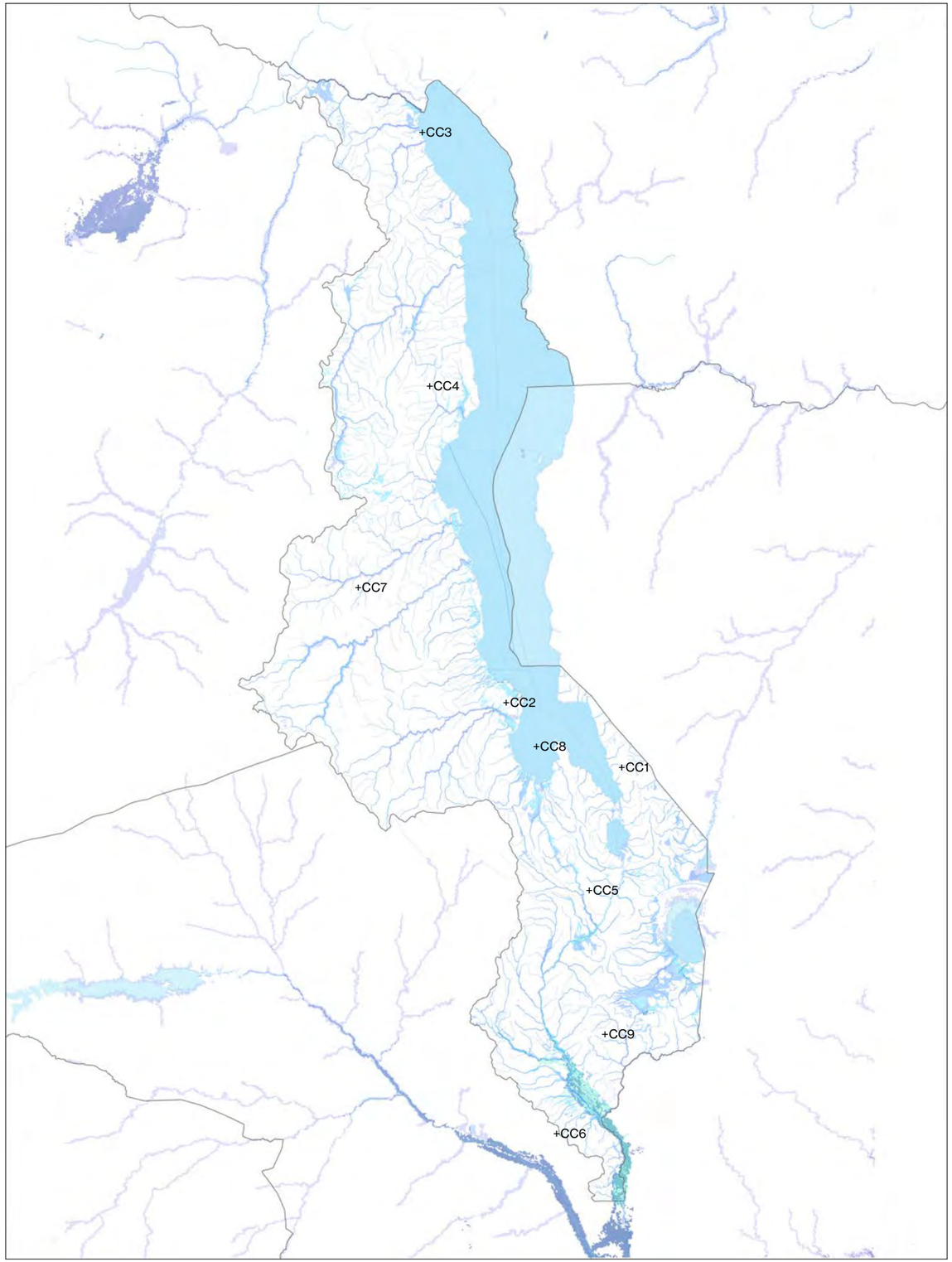
List of environmental protection projects

EP1 Kandoli Forest Conservation Project
EP2 Fish Conservation Project
EP3 Tree Planting Project
EP4 Fruit Tree Project
EP5 Thuma Forest Reserve Eco-system Rehabilitation Project
EP6 Dedza-Salima Forest Reserve Eco-system Rehabilitation Project
EP7 The Project for Conservation and Sustainable Management of Dzalanyama Forest Reserve
EP8 Mwabvi Game Reserve
EP9 Elephant Marsh Protection
EP10 Lake Malawi
EP11 Mua-Livulezi Reserve
EP12 Liwonde National Park
EP13 Liwonde Foreset Reserve + Proposed Expansion
EP14 Zomba Malosa Forest
EP15 Lake Malombe
EP16 Mchinji Forest Reserve
EP17 Mulanje Mountain Reserve
EP18 Kaningina Forest Reserve
EP19 Matandwe Forest Reserve
EP20 Lengwe National Park
EP21 Michese Forest Reserve
EP22 Matipa Complex Forest
EP23 Nyika National Park
EP24 Bua river buffer/rehabilitation
EP25 Dwangwa river buffer/rehabilitation
EP26 Eco corridor between Mwabvi Game Reserve and Elephant Marsh
EP27 Musissi Forest Reserve
EP28 Vinthukutu Forest Reserve
EP29 Nkwadzi Hill Reserve
EP30 Kasungu National Park
EP31 Nkhotakota Wildlife Reserve
EP32 Tuchila River Buffer Zone
EP33 Makande River Buffer Zone
EP34 Tomaninjobi Pool
EP35 Mangochi Forest Reserve
EP36 Phirilongwe Forest Reserve

Project #	Project Name	Activity	Project Location (s)	District (s)
EP1	**Kandoli Forest Conservation Project**	RIPPLE Africa started the project in the Kandoli Hills in 2010. Protected areas were identified, bylaws were passed, and the RIPPLE Africa forest conservation project was born.	Kandoli Hills, Nkhata Bay District, Northern Region	Nkhata Bay
EP2	**Fish Conservation Project**	Work with local community members and district authorities to develop local bylaws to protect a 40km stretch of lakeshore along Lake Malawi in the Nkhata Bay District of Malawi, Africa. - Enforce a three-month closed season to allow fish time to breed. - Protect fish breeding areas. - Restrict the length of fishing nets. - Restrict the minimum size of mesh so that only larger adult fish can be caught. - Stop migratory fishermen by introducing a local permit system.	The shoreline of Nkhata Bay district	Nkhata Bay
EP3	**Tree Planting Project**	Key Benefits: • Provides a sustainable source of timber by planting quick growing exotic trees • Conserves existing indigenous trees by decreasing the demand for wood from Malawi's natural forests • Restores land by planting nitrogen-fixing trees Reduces deforestation in Malawi	District-wide	Nkhata Bay
EP4	**Fruit Tree Project**	•Help 3,000 farmers grow improved varieties of orange-fleshed sweet potatoes – high yielding and rich in Vitamin A. •Enable farmers to pass on vines to their neighbours increasing production at no extra cost. •800 pre-school children will receive a nutritious meal at school making them less likely to suffer from Vitamin A deficiency.	District-wide	Nkhata Bay
EP5	**Thuma Forest Reserve Eco-system Rehabilitation Project**	The objective of the Thuma Project is to protect its flora and fauna and to restore its ecological balance in co-operation with the communities around Thuma.	Thuma Forest Reserve	Lilongwe & Dedza
EP6	**Dedza-Salima Forest Reserve Eco-system Rehabilitation Project**	To protect the Dedza-Salima reserve's flora and fauna and to restore its ecological balance in co-operation with the communities around the reserve.	Dedza-Salima Forest Reserve	Dedza
EP7	**The Project for Conservation and Sustainable Management of Dzalanyama Forest Reserve**	The project will help in reducing the illegal charcoal production and firewood collection in order to conserve and protect water source to the capital city of Malawi. Supply of water to residents of Lilongwe City will be improved too. Dzalanyama Forest Reserve will be conserved and protected. The communities surrounding DFR will benefit from the project through the Income Generating Activities (IGAs).	Dzalanyama Forest Reserve	Lilongwe, Dedze

Project #	Project Name	Activity	Project Location (s)	District (s)
EP8	**Mwabvi Game Reserve**	A proposal to protect Mwabvi game reserve.	Bangula	Nsanje
EP9	**Elephant Marsh Protection**	A proposal to protect the elephant marsh as a bio-diverse ecosystem.	Bangula	Nsanje
EP10	**Lake Malawi**	Lake Malawi is the biggest asset Malawi has and yet is not treated as such. In order for the Lake to meet its full potential, it needs to be treated as a rich natural asset worthy of protection.	Nationwide	Nationwide
EP11	**Mua-Livulezi Reserve**	Mua-Livulezi Reserve lies on the southern border of Dedza district. The mountain road offers spectacular views over Lake Malawi valley. The reserve has potential for touristic attraction.	Dedze	Dedze
EP12	**Liwonde National Park**	One of the most visited parks in the country, Liwonde park is a national park near the Mozambique border. The park is managed by African Parks.	Liwonde	Machinga
EP13	**Liwonde Forest Reserve + Proposed Expansion**	The Liwonde forest reserve is south of the Liwonde National Park and has been included into the larger National Park area. The proposed expansion would connect the Park to the reserve.	Liwonde	Machinga
EP14	**Zomba Malosa Forest**	Malosa Forest Reserve became part of a Zomba-Malosa-Liwonde forest management plan.	Zomba	Zomba
EP15	**Lake Malombe**	Lake Malombe is in southern part of Malawi, on the Shire River, with an area of 450 km2. In recent years the number of fishermen on the lake rose substantially, and this led to local decline in some fish speciesi. The lake is extremely shallow with an average depth of approximately eight feet, and during periods of dry weather the water level recedes and can even disappear.	Mangochi	Mangochi
EP16	**Mchinji Forest Reserve**	Forest reserve located in Mchinji District, Central region. The estimate terrain elevation above sea level is 1,495 meters.	Mchinji	Mchinji
EP17	**Mulanje Mountain Reserve**	Mulanje reserve is operated by the Mulanje Mountain Conservation Trust. It is a very touristic area and is one of the main economic activities in the southern region.	Muloza	Muloza
EP18	**Kaningina Forest Reserve**	Kaningina Forest Reserve is a forest reserve and is located in Nkhata Bay District, Northern Region, Malawi. The estimate terrain elevation above seal level is 1264 metres.	Nkhta Bay	Nkhata Bay

Project #	Project Name	Activity	Project Location (s)	District (s)
EP19	**Matandwe Forest Reserve**	The reserve was established in 1931, and covers and area of 31,053 ha. The main plant community in the reserve is open-canopy miombo woodland dominated by Brachystegia species, particularly B. boehmii, along with Uapaca kirkiana. Mwabvi Wildlife Reserve lies west of the range at its northern end, in the valley of the Mwabvi River.	Nsanje	Nsanje
EP20	**Lengwe National Park**	Lengwe National Park is a national park in Malawi located near the town of Chikwawa and about 40 miles southwest of Blantyre. Lengwe's topography is unusual for Malawi and consists of open deciduous forests and dense thickets. It is the home of the reclusive Nyala antelope.	Chikwawa	Chikwawa
EP21	**Michese Forest Reserve**	Michese Forest Reserve is located in Phalombe District, Southern Region, Malawi. It has a length of 33.2 kilometres.	Phalombe	Phalombe
EP22	**Matipa Complex Forest**	Matipa Forest Reserve is next to Matipa and is located in Chitipa District, Northern Region, Malawi. Matipa Forest Reserve has a length of 13 kilometres.	Matipa	Chitipa
EP23	**Nyika National Park**	Nyika National Park is Malawi's largest national park, with an area of 3200 km2. It covers the whole of the Nyika Plateau in northern Malawi, about 480 km north of Lilongwe and 60 km north of Rumphi by road.	Rumphi	Rumphi
EP24	**Bua river buffer/ rehabilitation**	Protection of Bua river from surface water run-offs that may include contaminants, as well as rehabilitation of its stream.	Kasungu	Kasungu
EP25	**Dwangwa river buffer/rehabilitation**	Protection of Dwangwa river from surface water run-offs that may include contaminants, as well as rehabilitation of its stream.	Kasungu	Kasungu
EP26	**Eco-corridor between Mwabvi Game Reserve and Elephant Marsh**	A proposed eco-corridor that connects Mwabvi reserve to the elephant marsh in order to secure a continuity between the two ecosystems.	Bangula	Nsanje
EP27	**Musissi Forest Reserve**	Musissi Forest Reserve is a forest reserve and is located in Karonga District, Northern Region, Malawi. The estimate terrain elevation above seal level is 1534 metres.	Karonga	Karonga
EP28	**Vinthukutu Forest Reserve**	Vinthukutu Forest Reserve is next to Vinthukutu Forest Reserve and is located in Karonga District, Northern Region, Malawi. Vinthukutu Forest Reserve has a length of 18.72 kilometres.	Karonga	Karonga
EP29	**Nkwadzi Hill Reserve**	Nkwadzi Hill is a hill and is located in Nkhata Bay District, Northern Region, Malawi. The estimate terrain elevation above seal level is 574 metres.	Nkhata Bay	Nkhata Bay
EP30	**Kasungu National Park**			
EP31	**Nkhotakota Wildlife Reserve**	Nkhotakota Wildlife Reserve, is the largest and oldest wildlife reserve in Malawi, near Nkhotakota. The park's hilly terrain features dambos and miombo woodlands as the dominant vegetation, which support a variety of mammal and bird species.	Nkhotakota	Nkhotakota
EP32	**Tuchila River Buffer Zone**	A proposed eco-buffer along Tuchila river to protect the river from water run-offs and agri-industrial activity around it.	Luchenza	Luchenza
EP33	**Makande River Buffer Zone**	A proposed eco-buffer along Makanda river to protect the river from water run-offs and agri-industrial activity around it.	Luchenza	Luchenza
EP34	**Tomaninjobi Pool**	Tomaninjobi pool is a lake in the southern region of Malawi with a terrain elevation above sea level of 46 meters.	Bangula	Nsanje
EP35	**Mangochi Forest Reserve**			Mangochi
EP36	**Phirilongwe Forest Reserve**			Mangochi



List of climate change projects

CC1 Climate Proofing Local Development Gains - UNDP
CC2 Salima/Chipoka Flood Zone Management and Green Infrastructure Plan
CC3 Karonga Flood Zone Management and Green Infrastructure Plan
CC4 Nkhata Bay Flood zone management and green infrastructure plan
CC5 Liwonde Flood Zone Management and green infrastructure plan
CC6 Bangula Flood Zone Management and green infrastructure plan
CC7 Kasungu Green Infrastructure Plan
CC8 Monkey Bay Flood zone management and green infrastructure plan
CC9 Luchenza Green Infrastructure Plan

Project #	Project Name	Activity	Project Location (s)	District (s)
CC1	**Climate Proofing Local Development Gains - UNDP**	The project objective is to provide knowledge, tools, capacities and methodologies for the adoption of an ecosystems and community based approach to adaptation	Rural and urban communities in the Machinga and Mangochi Districts of Malawi	Machinga & Mangochi
CC2	**Salima Green Infrastructure Flood Zone Management**	Proposed Green infrastructure and flood protection for Salima city and surrounding area	Salima	Salima
CC3	**Karonga Flood Zone Management and Green Infrastructure Plan**	Proposed Green infrastructure and flood protection for Karonga city and surrounding area	Karonga	Karonga
CC4	**Nkhata Bay flood zone management and green infrastructure plan**	Proposed Green infrastructure and flood protection for Nkhatabay city and surrounding area	Nkhata Bay	Nkhata Bay
CC5	**Liwonde Flood Zone Management and green infrastructure plan**	Proposed Green infrastructure and flood protection for Liwonde city and surrounding area	Liwonde	Machinga
CC6	**Bangula Flood Zone Management and green infrastructure plan**	Proposed Green infrastructure and flood protection for Bangula city and surrounding area	Bangula	Nsanje
CC7	**Kasungu Green Infrastructure Plan**	Proposed Green infrastructure and flood protection for Kasungu city and surrounding area	Kasungu	Kasungu
CC8	**Monkey Bay Flood Zone Management and Green Infrastructure Plan**	Proposed Green infrastructure and flood protection for Monkey Bay city and surrounding area	Monkey Bay	Mangochi
CC8	**Luchenza Green Infrastructure Plan**	Proposed Green infrastructure plan for Luchenza city and surrounding area	Luchenza	Thyolo, Mulanje

MSCP FULL COORDINATING TEAM

Commissioners of the National Planning Commission
Prof. Richard Mkandawire – Chairperson
Dr. Winford Masanjala – Deputy Chairperson
Dr. Evance Mwathunga
Ms. Mercy Masoo
Mr. Phillip Madinga
Ms. Natasha Nsamala

National Planning Commission Secretariat
Dr. Thomas Munthali - Director General
Dr. Joseph Nagoli - Director for Knowledge and Learning
Dr. Grace Kumchulesi - Director for Development Planning
Mr. Chrighton Chimombo - Director of Finance and Administration
Dr. Andrew Jamali - Research Manager
Mr. Sipho Billiat - Development Planning Manager
Mr. Austin Chingwengwe - Monitoring and Evaluation Manager
Ms. Jennifer Nkaonja Mjuweni - Partnerships and Resource Mobilization Manager
Mr. Thomson Khanje - Public Relations and Communications Manager
Mr. Mtamandeni Liabunya - Legal Counsel
Mr. Maxwell Maida - Senior Development Planning Specialist
Mr. Hope Chavula - Senior Development Planning Specialist
Mr. Tayani V. Banda - Senior Development Planning Officer
Mr. Adams Chikapa Guys - Development Planning Officer
Mr. Salim Ahmed Mapila - Development Planning Officer
Ms. Linly Kufeyani - Development Planning Officer
Ms. Ruth Mkisi - Development Planning Officer
Mr. Frank Kamanga - Research Officer
Mr. Jabulani Nyengere - Research Officer
Mr. Harold Fote - Monitoring and Evaluation Officer
Ms. Tissie Nadzanja - Monitoring and Evaluation Officer
Ms. Yuna Chikanda - Senior Administration Officer
Mr. Maphumuzana Jere - Senior ICT Officer
Ms. Maleni Mangazi - Senior Accountant
Ms. Maureen Madengu - Accountant
Mr. Henry Lukuchuwire - Accountant
Ms. Chikondi Saukira - Senior Executive Assistant
Ms. Olive Khonje - Team Assistant
Mr. Robert Tambala - Procurement Officer
Ms. Harriet Mauwa - Intern
Mr. Martin Ngwira - Driver
Mr. Lightwell Mughogho - Driver
Mr. Davie Simale – Driver

ORG Permanent Modernity
Mr. Kobi Ruthenberg – Director and Program lead (Technical assistance)
Ms. Garine Boghossian – Architect, Urban Designer (Design lead)
Dr. Alexander D'Hooghe – Principle in Charge
Mr. Aleksander Cebotariov - Imagineer
Mr. Heinrich Altenmueller - Urbanist
Mr. Nitay Lehrer – Architect
Mr. Jon Vandenheuvel (First Hectares) – Senior Project Advisor

Ministry of Economic Planning, Development & Public Sector Reforms
Dr. Winford Masanjala - Secretary for Economic Planning and Development
Ms. Emma Mabvumbe - Director for Development Planning
Mr. Charles Mtonga – Chief Economist
Ms. Esmie Nhlane - Monitoring and Evaluation Specialist

Ministry of Lands, Housing and Urban Development
Mr. Bernard Sande – Secretary for Lands, Housing and Urban development
Mr. James Chiusiwa – Secretary for Local Government
Mr. Reyneck Matemba –Secretary for Lands
Ms. Mercy Dube – Director of Urban Development
Mr. Mphatso Kadaluka – Deputy Director of Urban Development
Ms. Euphemia Bota – Deputy Commissioner for Lands
Mr. Davie Chilonga – Deputy Commissioner for Lands
Mr. Julius Chisi – Surveyor General
Mrs. Alice Gwedeza – Deputy Surveyor General
Mr. Silence Chirwa – Surveys Department
Mr. Robins Lukasi – Ag Commissioner for Physical Planning
Mr. Gladson Mchoma - Ag Commissioner for Physical Planning (Retired)
Mr. Jailos Lungu – Chief Physical Planner
Mr. Phillimon Mkwezalamba - Principal Physical Planning Officer
Mr. Wiseman Kamwiyo- Urban Development Officer

Ministry of Local Government and Rural Development
Mr. Charles Kalemba - Secretary for Local Government and Rural Development
Mr. Lukes Kalilombe - Director (Planning and Policy)
Mr. Flemings Nyirenda – Director for Rural Development
Mr. Walusungu Kayira – Deputy Director (Planning and Policy)
Mr. Richard Hara
Mr. Charles Makanga
District Commissioners and Directors of Planning from various local councils

Ministry of Forestry and Natural Resources
Dr. Yanira Ntupanyama - Secretary for Forestry and Natural Resources
Dr. Friday Njaya – Director of Fisheries
Mrs. Jacqueline Kazembe – Department of Fisheries

Ministry of Transport and Public Works
Ms. Madalo Nyambose - Director of Transport Planning
Cpt. John Mhango – Director for Marine Services
Mr. Ganizani Liwewe - Economist
Mr. Bright Mbirika - Economist

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1. Population Distribution and Growth Trends

- Census population EA level - 1998
  Source: National Statistics Office
- Census population EA level - 2008
  Source: National Statistics Office
- Census population EA level - 2008
  Source: National Statistics Office
- High Resolution Settlement Layer(HRSL) population counts for Malawi.
  Source: Facebook Connectivity Lab, Center for International Earth Science Information Network - CIESIN - Columbia University. Source imagery provided by DigitalGlobe.
- Urban Settlement Footprints
  Source: ORG Desktop Mapping

2. Jurisdiction and Land Tenure Subdivision

- National Boundary - 1st Level
  Source: Department of Surveys and GIS, MoLHUD
- Regional Boundary - 2nd Level
  Source: Department of Surveys and GIS, MoLHUD
- District Boundary - 3rd Level
  Source: Department of Surveys and GIS, MoLHUD
- Traditional Area (TA) and Urban Boundaries - 4th Level
  Source: Department of Surveys and GIS, MoLHUD
- Estate boundaries
  Source: downloaded from MASDAP - unknown source

3. Water Resources and Hydrology

- Waterbodies
  Source: Department of Surveys and GIS, MoLHUD
- Rivers and Streams
  Source: OSM
- Topography
  Source: USGS, SRTM DEM
- Watershed units
  Source: Water resource units: Water Resources Investment Strategy project, Atkins 2012
- Wetland Areas
  Source: Geological Survey of Finland, Espoo (GTK)

4. Natural Ecosystems
- Topography / Hill shade
  Source: USGS, SRTM DEM
- Soil degradation areas
  Source: RCMRD and Malawi Department of Disaster Management Affairs (DoDMA)
- Watershed units
  Source: Water resource units: Water Resources Investment Strategy project, Atkins 2012
- Land Cover 1990, 2000, 2010
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- Landscape Restoration Priority Areas
  Source: International Union for Conservation of Nature (IUCN) as part of Malawi's National Forest Landscape Restoration Assessment (2017)
- Soil Classification in Malawi
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- Estate boundaries
  Source: MASDAP - unknown author
- Green Belt Authority Sites
  Source: Green Belt Authority
- Agro Ecological Zones
  Source: MASDAP - unknown author

6. Fisheries and Aquaculture
- Development and Status of Freshwater Aquaculture in Malawi
  Source: Russell et al, 2008. WorldFish Center Studies and Reviews No. 1869.
  Source: ORG Desktop research and Stakeholder consultation

7. Transportation
- Roads
  Source: MASDAP - unknown author
- Rail Lines
  Source: Ministry of Transportation, National Transportation Master Plan (NTMP)
- Airports
  Source: Ministry of Transportation, National Transportation Master Plan (NTMP)
- Water ports
  Source: Ministry of Transportation, National Transportation Master Plan (NTMP)
  Source: ORG mapping Analysis

8. Manufacturing and Processing
- Agricultural Markets
  Source: MASDAP - unknown author
- Industrial Districts
  Source: ORG mapping Analysis
- Special Economic Zones (SEZ) Proposed locations
  Source: Malawi Public Sector Investment Programme (PSIP)
- Locations and Activity of Processing (value addition) and manufacturing facilities
  Source: ORG Desktop Mapping and Stakeholder consultation

9. Energy
- Power plants (Existing)
  Source: MASDAP - unknown author
- Power plants (Planned)
  Source: Malawi Public Sector Investment Programme (PSIP)
- Earth at Night Orthophoto
  Source: NOAA 2016

10. Mining
- Mining activity
  Source: Malawi Mining Cadastral Portal (un-editible format)
- Mining Opportunities
  Source: Malawi Mining Cadastral Portal (un-editible format)
  Mineral Resources and Occurances 1990 (un-editable format)

11. Tourism
- Hotel and Lodges Locations
  Source: MASDAP - unknown author
- Nature reserves and National parks
  Source: MASDAP - unknown author
- Touristic Attractions
  Source: ORG Desktop research and Stakeholder consultation

12. Climate Change and Resiliency
- Flood Frequency Analysis
  Source: GIS processing UNEP/GRID-Europe, with key support from USGS EROS Data Center, Dartmouth Flood Observatory 2008
- Flood zone analysis
  Source; Atkins - 2012
- Economic Vulnerability and Disaster Risk Assessment
  Source: RMSI with WBG

Contributing authors contact information:

National Planning Commission,
Private Bag B316,
Capital City, Lilongwe 3, Malawi.
dg@npc.mw
npc.mw

ORG Permanent Modernity
info@orgpermod.com
orgpermod.com

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