

ROTARIANS AGAINST MALARIA



LONG LASTING INSECTICIDAL NET DISTRIBUTION REPORT

WESTERN HIGHLANDS PROVINCE Mul Baiyer and Tambul Nebiliya Districts

Carried Out In Conjunction With The Provincial Government And Church
Health Services Of Western Highlands Province

With Support From The Global Fund

26th June to 22nd July 2023



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Executive Summary

Western Highlands Province is a Highlands Province on the mainland of Papua New Guinea (PNG). It is made up of four districts, Dei, Mount Hagen, Mul Baiyer and Tambul Nebilyer. While it is a highlands province with mountains over 3,500 metres, it also has low lying areas going down to below 800 metres. The low lying regions below 1200 metres are endemic for malaria while those areas above 2000m are malaria free. Areas between 1200-1600 metres are considered endemic for malaria though presently malaria free. In reality, only about 2.5% of the population live in endemic malaria zones with about 39% living in epidemic areas and 50% living in areas between 1600-2000 metres where malaria transmission (if it occurs) is limited to *Plasmodium vivax*. The rest of the population live in areas above 2000 metres where malaria does not occur. About 80% of Mul Baiyer and Tambul Nebilyer are accessible by road with about 20% only accessible by trekking, particularly in the low lying areas of Mul Baiyer.

During this program, the family level survey and distribution of Long-Lasting Insecticidal Nets (LLINs) was carried out in the districts of Mul Baiyer and Tambul Nebilyer in areas below 1600m only between 26th June to 22nd July 2023. Table One shows the estimated population to be covered by the program together with the actual population found along with the number of LLINs distributed by district. In total, 54,652 LLINs were distributed to a population of 105,050 people. This resulted in distribution of 52.0 nets for every 100 people in the population given nets. Please note the people who received nets in these two districts represent about 52% of the population of these two districts.

TABLE ONE – Population And Nets Distributed

District	Population from 2000 Census	Population Of Targeted Areas In 2020	Target Population 2023	Population Surveyed 2023	House Holds Surveyed 2023	Nets Issued 2023	Nets Distributed Per 100 People
Mul Baiyer	56,686	53,858	58,852	54,935	11,895	28,828	52.5
Tambul Nebilyer	60,823	46,427	50,732	50,115	10,504	25,824	51.5
Totals	117,509	100,285	109,584	105,050	22,399	54,652	52.0

A further 46 LLINs were donated to health centres for use for antenatal nets or for use over beds in the health facility. Donations only occurred where there were a few loose nets left or it was difficult to return the nets to the central stores in Mount Hagen.

The overall operational cost of the programme was 210,039.50 Kina (Approximately US\$ 58,345) resulting in a cost of about 3.84 Kina or US\$1.07 per net delivered. This was about 18% under budget with most of the saving being seen under human resources. Financially, this was a very efficient program.

Other than this, overall, the distribution went well in Western Highlands Province with excellent collaboration from provincial and district health authorities which resulted in all targeted communities being eventually reached and all household receiving nets.

Feedback from partners and communities suggest they were happy with the methodology used as the process appeared transparent to all concerned. However, as always, there were a few families who complained that they did not receive enough nets but for the most part it is believed that this was a result of families not fully understanding the allocation system used.

Global Fund donated, supplied and covered all distribution costs for all the nets for Western Highlands Province. The nets distributed in Western Highlands Province are called Duranet

which came from India. This is different from nets distributed in the past as it is made from polyethylene and we hope that this net will be more efficacious and longer lasting than nets supplied in the last few years.

The history of LLIN distribution in PNG and Western Highlands Province is discussed in Appendix One and the malaria situation and stratification of malaria in Western Highlands Province are discussed in Appendix Two and Appendix Three. Historically it can be said that LLINs have had a tremendous impact on malaria in Papua New Guinea but recent distributions in lower lying provinces have not resulted in decreased malaria except in the highlands of PNG where malaria appears to have been practically eliminated. We hope that these nets are sufficient to keep malaria at low levels in all these areas of Western Highlands for another three years.



Fig.1 – Initial Planning Meeting With Director Of Public Health (Left) And Microplanning Meeting At Simbimali HC (Right)

Background

Rotarians Against Malaria (RAM) is a nationally based organisation which was formed in 1997 by the Port Moresby Rotary Club in recognition of the tremendous burden that malaria imposes on the people of PNG.

RAM has an organizational mandate to work in malaria control and the distribution of LLINs in Papua New Guinea and has been working for many years with the National Department of Health (NDOH) and other partners including multilateral and bilateral agencies such as UNICEF and WHO (World Health Organisation), NGOs (Non-Governmental Organisations) and church groups. (See Appendix One for full history of LLIN Distribution)

Since 2010, RAM has been coordinating the distribution of nets to all districts and provinces on a three-year recurrent cycle. This effectively means that RAM visits every targeted village in PNG every three years. RAM has been funded by the Global Fund since 2009 and from 2017 to 2020 also from Against Malaria Foundation (AMF) which supplied PNG with the majority of its nets in 2017 and from 2018 onwards to all areas below 1600m only where most of the malaria transmission can be found. During the period 2017 to 2020, the Global Fund resources were therefore mainly used to fund the LLIN distribution costs and other relevant administration costs. However, in 2020, PNG was also lucky to receive a donation of net from the Chinese Government and these were used for all areas between 1600-2000m of altitude.

It should also be noted that since 2015, the National Malaria Control Program no longer distributes nets in areas above 2000m as these altitudes are now considered too cold for malaria transmission to occur. The situation has changed in 2021. AMF no longer is a donor

to PNG and all costs have now reverted to Global Fund. With this change, RAM started to have difficulties covering areas from 1600-2000m but we are very fortunate in that the Global Fund allowed saving from 2020 to be used to procure nets for 2021 for this altitude. At present, the funding situation for LLIN distribution to altitudes of 1600-2000 after 2022 has stopped and it appears at this moment that all LLIN distributions in the future will be limited to below 1600m only.

Generally, LLINs have been distributed to household level throughout the country but when shortage of funds occurred, different strategies of distribution have been used as mentioned above.

PNG can be roughly divided into five epidemiological zones.

- a) Areas which lie above 2000m in altitude which no longer receive LLINs as malaria transmission is not considered likely at these altitudes.
- b) Low lying areas of the country up to 1200m which have stable malaria endemicity and often have poor access to health continue to have household distributions.
- c) Areas from 1200 to 1600m which are generally considered to be of low transmission potential but traditionally have had occasional malaria epidemics due to poor immunity and changing weather conditions. LLIN distribution continue in these settings.
- d) Highlands regions between 1600 to 2000m in altitude such as Mount Hagen which have low malaria endemicity and generally easy access to health services. These are low priority areas and when funding is not available are left out. However, up until 2021, these areas have been covered. From 2015 to 2016, these areas received nets for Under Five children only, and since 2017 up until 2021, RAM has managed to find alternative sources to cover these areas. For example, in 2020, nets for these areas were sourced from a donation of the Chinese Government and in other areas from the Global Fund. Fortunately, there was sufficient funds to cover these areas in 2021. Sadly, from 2022 there are no funds to cover these areas nor likely to be for the foreseeable future.
- e) In urban and peri-urban areas such as Port Moresby which are low lying areas with easy access to health, nets will not be distributed during funding constraints. Nets to these areas will be supplied through the private sector. Similarly, due to funding constraints in 2015, Lae City had Under Five Campaign LLINs only.



Fig.2 – Microplanning Meetings In Bukapena HC (Left) And Antenge HC (Right)

As a result of this stratification and when funds had been reduced such as at the end of 2014, areas above 2000m no longer received nets and areas from 1600 to 2000m only received under five campaigns in 2015 and 2016. However, fortunately, due to the LLIN donation from the Against Malaria Foundation (AMF) in 2017, all areas received household distribution of

nets except areas above 2000m, and some urban areas such as NCD, Goroka, Mount Hagen and Mendi. After 2018, AMF only donated nets to areas below 1600m but the country has been lucky to find funding to fill this gap of between (1600-2000m) in 2019, 2020 and for 2021 through donations from the Global Fund (2018-2021) and the Chinese Government (2020). However, funding for areas between 1600-2000 metres has now stopped as the Global Fund allocations are not presently enough to cover these areas above 1600m.

One of the conditions of the AMF donation is that RAM would strengthen the way in which surveys are carried out. These new innovative processes are described in the Methodology Section. These methodologies are now being carried out since the beginning of 2017. The major change to the survey methodology suggested by AMF is that previously a village meeting was called after a survey was carried out where names of family members were read out to ensure that all households had been surveyed. Instead of this process, a summary of every village surveyed is posted for 24 hours in a public place so that villages can ensure that all their family members have been included in the survey. As a further verification process, members of RAM and local health staff team carry out random house surveys of 6% of households in every village to ensure that the survey process has been carried out correctly.

For household LLIN distributions, regardless of where they are carried out, they must include a survey and a distribution phase though implementation methods may considerably vary depending on specific circumstances. RAM's approach has been to concentrate on programme quality thus RAM develop methodologies that ensure that all recipients in an area actually receive nets and that this can be reported accurately.



Fig.3 Training Village Survey Volunteers At Bukapena HC (Left) And Togoba HC (Right)

The other major change to the original PNG programme of 2004 to 2009 carried out by the NDOH is that nets are allocated to families on a needs basis rather than simply the number of people in the family. Data analysis of National Capital District (NCD) data has shown that this gives a ratio of nets needed to be about 47 for every 100 people. In the previous LLINs distribution of Round-3 in 2006 to 2010, nets were allocated at a rate of one net to every 2.5 people. With the programme only receiving 80% of LLIN needs, and most provinces distributing for example two nets to families of three, in practically every province, nets ran out before the end of the distribution. The RAM programme makes all attempts to assure that this distribution anomaly does not happen by collecting all population information at the beginning of the program and then allocate the nets based on family needs. This strategy is practiced to ensure that all families receive nets throughout any given province. The only scenario where survey and net distribution may be done simultaneously is in very remote locations where it is not practically possible to return a second time to a location. This is particularly the case in remote villages which can only be reached by boat or very long treks and it is costly and impractical to return to the villages for a second time.

In terms of coordination, RAM officers are allocated to specific LLGs or health centres where they coordinate the programme together with local health staff. In this capacity, RAM officers act as facilitators in terms of technical guidance to district health teams in each LLG as well as acting as financial officers and assuring quality control of activities taking place.

Schedule

TABLE TWO
General Timetable Of Activities In Western Highlands Province

District	Survey		Distribution	
	Start	Finish	Start	Finish
Mul Baiyer	29.06.23	07.07.23	07.07.23	22.07.23
Tambul Nebilyer	26.06.23	30.06.23	07.07.23	18.07.23

Referring to Table Two, it can be seen that the main distribution in Western Highlands Province started in later April and was completed in late July.

Methodology

Prior to planning and implementation, a master list of all villages of Western Highlands Province was drawn up using data from the 2000 Census and the last RAM survey of 2020 in Western Highlands Province. Villages in the list were organised by LLG and Ward. In this master list, the estimated population for 2023 for each village was estimated and recorded in two ways. Firstly, the population of each village is estimated using population figures from the 2000 Census and the estimated annual growth rate for Western Highlands Province and then secondly, by taking the population surveyed in 2020 and applying the annual growth rate to each village. In addition to this, based on altitude maps, all villages in highlands provinces are categorised and colour coded by altitude zones of below 1200m, 1200 to 1600 metres, 1600 to 2000 metres and lastly those villages above 2000 metres. Only those villages below 1600 metres will receive nets.

In all areas, Health Centres form the hub from which distribution takes place to the respective villages in each health centre’s catchment area. Therefore, with the planning data at hand, RAM staff work together with the Provincial Health Office to allocate every village to its nearest health centre (government or Church Based) and outlines how each village is reached from each health centre. From this it is possible to create a budget, estimate how many nets are needed to be sent to each health centre and work out any other logistic considerations such as use of airplanes or boats to deliver nets to some remote areas.

Once all logistical needs are calculated and nets delivered to the province or district, a RAM team will travel to the province. Once they are in the province, RAM officers are allocated to work with each health centre which becomes the centre of operations for that area.

With the arrival of RAM officers, each health facility identifies health staff members or non-health community volunteers to be involved with the programme. If local health staff are selected, then they are referred to as District Health Team (DHT) but if a non-health staff is selected then they are termed as a Team Leader. Both DHTs and Team Leaders are responsible for the survey and distribution of nets. Each DHT and Team Leader works only in the area in which the health facility is based.

Before any activities take place, RAM officers are expected to work with health staff and other team leaders to make detailed plans (micro-planning) of their activities for training, survey,

verification and distribution of nets. This process involves making maps of the area, deciding how many teams are needed, and then making detailed work plans for each of the team members. This process also involves verifying that no villages have been left out of the census list and that the whole area is covered.

Also prior to field activities in any given LLG or health centre, a social awareness campaign was carried out in all villages informing villagers of the upcoming survey and distribution. This was also used as an opportunity for RAM officers to become familiar with each area. During this process, key malaria messages were also discussed with villagers such as the need to use LLINs every night. Where possible, RAM also uses local radio stations to create awareness on Malaria and spread messages on LLIN distribution

During the social awareness campaign, a daylong training meeting is normally held at each health facility for all DHT members in that area who jointly carry out the micro-planning exercise. These training and micro-planning sessions as well as all other activities associated with the programme are coordinated by RAM project officers together with health counterparts at provincial and district levels. RAM officers also have the responsibility to ensure the LLINs operation is kept in line with the original budget.

Survey

The survey was carried out in the following way.

- 1) When arriving at a village and before starting the census process, a meeting was held with village elders explaining the process.
- 2) If village elders have an up-to-date list of all village occupants, the team would use this list to compile a census but still visit every household to confirm this information.
- 3) Where a village is small, e.g., less than 30 families, team members may carry out the census by themselves.



Fig.4 – Training Village Survey Volunteers In Tinsley And Rolga

- 4) Where villages are large, village volunteers were identified with the assistance of the village chiefs, elders, health staff and councillors. One volunteer was chosen for each group of about 50 families with volunteers chosen by natural divisions in the village e.g., clans where one volunteer would make a list of only one clan. These volunteers were trained to carry out the survey by actually surveying houses with the team leaders supervising and assessing the recording. Once the team leader was confident that the volunteers knew the survey methodology, they were left to continue with the household survey with survey teams returning within an agreed period to verify the work of the survey volunteers, collect survey books and also to pay the survey volunteer, provided that the work was carried out correctly. The training of volunteers may occur in groups or individually depending on access to the village and its proximity to other villages.
- 5) For each household surveyed, all family members who normally reside at the household for a minimum of nine months were recorded by Name, Age, Sex and Relationship to head

of household. All names and other information were recorded in the survey book with one survey form being used for each household.

- 6) After surveying a household, a white copy of the census form was given to the head of household or most senior person present in the household.
- 7) Where a whole household was absent, information was taken from the neighbours and the white survey form left with them.
- 8) In all cases, after the census/list was finished, all the information about the households and number of household members is entered into a summary sheet. This list is then hung in a public place where all villages can verify that the right number of family members for each household has been recorded and that all families have been included in the survey. After the list has been in a public place for 24 hours, then the volunteer requests for the RAM officer and or DHT to visit the village.
- 9) RAM officers and DHTs must visit three households randomly from each survey book (6%) and verify using a HH survey verification form that the survey has been carried out correctly. Only when this has been done, then the volunteer can be paid.
- 10) If a village was surveyed by more than one volunteer, then volunteers were asked to work together so that lists can be hung together and the village volunteers can be verified at the same time. This process also ensures that households do not appear on more than one list. After this process, both the volunteers and the village elders sign a form to verify that this was done.
- 11) All village volunteers received a standard payment of 20 kina a day. Experience has shown that volunteers can usually only survey about 25 households a day, so for the most part, they would receive up to two days' allowance to complete a survey book (50 households).
- 12) All volunteers were also given a small training manual. Contained in this training manual are key health education messages about malaria which volunteers are expected to discuss with households. This perhaps is the only project in PNG that is able to reach down to potentially every household in the country.



Fig.5 – Training Of Village Volunteers In Sanap HC (Left) And Simbimali HC (Right)

To aid with the survey, the master plan with names of all census units in all the wards in the district had been printed out and given to all the DHTs and team leaders. This document also provides the projected population per census unit as well as other information which might be useful to the area concerned.

After collecting survey data from each village, the information is immediately compared with the data on the master sheet. Where the surveyed population is very different from the projected population, the project staff make enquiries into the reasons for these discrepancies.

Following the survey, all data was entered into a computer where possible or entered into a master sheet of the area concerned. For each village, nets were allocated to each family on a

needs basis and this is also entered into the computer or master sheet. This process ensured that all villages received nets and that there would be no shortfalls.

The needs basis in PNG is based on the assumption that children under the age of six sleep with their parents, after which boys and girls are grouped separately from their parents. Nets are also allocated based on the number of children in the house, their ages, and whether there are other dependents living in the households such as grandparents. A full description of the allocation system can be obtained from RAM officers but suffice to say a family of four could receive between one to four nets depending on the sex and age of family members.

Nets are allocated to each LLG based on assumed populations of each LLG and it was important prior to the distribution to ensure that when allocations had been carried out to families and villages that there were enough nets available to cover each and every family.

Distribution

There was no official launch for the LLINs distribution in Western Highlands Province. However, prior to distribution there was a social awareness phase where the project teams informed communities about the arrival of the distribution teams, especially those accessible by road.

The LLINs were then distributed to teams depending on the needs of each village. The LLINs were then distributed by village or wards depending on whether villages were close together. In this latter case, a central location was identified in the ward and then distribution of nets was carried out. In terms of distribution sites, villages were organised in different ways to make the flow of nets easy and effective. However, the actual organisation depended on each team and the structure of the various groups receiving nets.

All net packaging was opened at distribution site with a district code printed on each net e.g., WHP23 meaning Western Highlands Province 2023. This code is added to identify nets to assist in future monitoring exercises as well as discouraging householders from selling the nets on the open market.

Some examples of the process used to control the crowd includes;

- Arranging the people according to the serial numbers in the survey books e.g., 72001 - 72050 and then calling the names and the serial numbers.
- Call the names of the owners of the households, collect the white copy and give the nets.
- Wait for everyone to come to the distribution site, collect all the white copies and sort the copies with the pink copies. Call the names on the white copies and give the nets.

Some of the following control methods were used.

- Everyone who presented with a white copy was given LLINs at the distribution site with LLINs only given to the owner of the house or a member of the house whose name is written on the back of the survey form.
- People carrying white receipts are verified by the local volunteers and asked to sign or provide thumb print before receiving the nets. This is being done to avoid any duplication or avoid people receiving nets without valid white receipts
- Those people who lost the white receipts were left to the end of each distribution, with nets only being issued if the name of the person collecting the nets was found on the back of the pink copies.
- For those families who were absent at the time of distribution, their names were written in a form – MOSQUITO NETS HELD IN TRUST BY VILLAGE CHIEFS FORM and the nets

allocated to missing families were given to chiefs or any person entrusted by the community with the forms for these families to collect their LLINs later.

It should also be noted that surveys and distributions took place at more or less the same time in some remote places of Western Highlands Province. This is particularly true for mountainous villages or villages at the end of rivers which might take several hours or days to reach. In these instances, estimations based on the 2000 Census data and local knowledge used to pre-allocate nets. Teams were then dispatched to these areas with nets. On arrival in these remote places, surveys took place and were immediately followed by a distribution based on the survey results.

Other details

In the case of Western Highlands Province, all the LLINs were ultimately delivered to Lae by ship from India in five containers. These nets are known as Duranet and are light blue in colour and made from polyethylene. All nets arriving in Lae were custom cleared by Express Freight Management and then stored primarily in their premises in Lae. After this, containers were moved to Mount Hagen by road then stored at the yard of Nelma Transport yard. From the containers the nets were moved to the various health facilities in the province by road.

Results

Table Three shows the LLIN distribution data by district and Table Four by Local Level Government (LLG). These tables give the actual population surveyed together with the number of LLINs distributed by district. In total, 54,652 LLINs were distributed to the targeted population of 105,050 people in the two districts. This resulted in distribution of 52.0 nets for every 100 people in the province.

TABLE THREE
Nets Distributed At District Level In Western Highlands Province

District	Population from 2000 Census	Population Of Targeted Areas In 2020	Target Population 2023	Population Surveyed 2023	House Holds Surveyed 2023	Nets Issued 2023	Nets Per 100 People	Growth Rate Against 2023 Survey
Mul Baiyer	56,686	53,858	58,852	54,935	11,895	28,828	52.5	0.66
Tambul Nebilyer	60,823	46,427	50,732	50,115	10,504	25,824	51.5	2.58
Totals	117,509	100,285	109,584	105,050	22,399	54,652	52.0	1.56

TABLE FOUR
Nets Distributed At LLG Level In Western Highlands Province

LLG	District	Population from 2000 Census	Population Of Targeted Areas In 2020	Target Population 2023	Population Surveyed 2023	House Holds Surveyed 2023	Nets Issued 2023	Growth Rate Against 2023 Survey	Nets Distributed Per 100 People
Baiyer	Mul Baiyer	20,319	36,904	40,326	35,898	8,338	18,910	-0.92	52.7
Lumusa	Mul Baiyer	5,976	10,215	11,162	11,623	2,359	6,270	4.40	53.9
Mul	Mul Baiyer	30,391	6,739	7,364	7,414	1,198	3,648	3.23	49.2
Mt Giluwe	Tambul Nebiler	31,617	0	0	0	0	0	ND	ND
Nebiler	Tambul Nebiler	29,206	46,427	50,732	50,115	10,504	25,824	2.58	51.5
Totals		117,509	100,285	109,584	105,050	22,399	54,652	1.56	52.0

Referring to Table Three and Table Four, it can be seen that the overall population growth rate in the areas concerned is only 1.56% which suggests people are moving out of these areas, particularly in Baiyer LLG though growth has been a lot in the neighbouring Lumusa LLG.

Referring to Table Five, a further 46 LLINs were donated to health centres for use for antenatal nets or for use over beds in the health facility. Donations only occurred where there were a few loose nets left or it was difficult to return the nets to the central store in Mount Hagen.

TABLE FIVE
Nets Donated To Health Centres

District	LLG	HC	Donated
Tambul Nebilyer	Nebilyer Rural	Pabarabuk HC	26
Tambul Nebilyer	Nebilyer Rural	Togoba HC	20
TOTAL			46

Referring to Table Six, it can be seen that overall operational cost of the programme was 210,039.50 Kina (Approximately US\$ 58,345) resulting in a cost of about 3.84 Kina or US\$1.07 per net delivered. This was about 18% under budget with most of the saving being seen under human resources. Financially, this was a very efficient program.

TABLE SIX
Cost Of Programme In Western Highlands Province (All Costs in Kina)

Expense Types	Budget	Actual	Variiances	% Variiances
Human Resources	K106,156.53	K77,458.48	28,698.05	73.0
Fuel Cost	K23,562.00	K21,495.62	2,066.38	91.2
Car Hire Cost	K110,000.00	K107,850.00	2,150.00	98.0
Boat Hire Cost	K0.00	K0.00	0.00	
Aircraft Hire Cost	K0.00	K0.00	0.00	
Stationeries/Supplies	K3,000.00	K2,290.63	709.37	76.4
5% Contingency Costs	K12,135.93	K944.77	11,191.16	7.8
Total Costs	K254,854.45	K210,039.50	44,814.95	82.4

Referring to Table Seven, this shows the cell phone coverage for Western Highlands Province is very good but radio coverage is low in Mul Baiyer. This means that getting health messages out to the low lying areas of Mul Baiyer is a problem.

TABLE SEVEN
Cell and Radio Coverage In Western Highlands Province

District	Villages	House Holds Surveyed	Digicel	Bmobile	Houses with Phones	Houses with Radios	Villages With Radio Networks
Mul Baiyer	136	11,895	134	11	3,890	1,314	26
Tambul Nebilyer	75	10,504	75	51	7,102	695	74
Total	211	22,399	209	62	10,992	2,009	100

Conclusions

Overall, it can be said that the LLIN distribution in Western Highlands Province was generally a huge success both in terms of results and great collaboration between staff from RAM, provincial and district health authorities, and the Baptist, Seventh Day Adventist, PNG Bible Church Health Services who have a presence in the areas receiving nets. Through this collaboration, the data suggests that all villages were reached and practically all families in those villages received nets despite any local challenges.

There were some challenges which included the following:

- Poor road conditions worsened by rainy weather made it very challenging to access certain villages in Mul Baiyer district.
- The preferred ten-seater hired vehicle allocated for Antenga Community Health Post couldn't continue its journey due to very poor road conditions. This led to further complications when trying to hire a local vehicle, as the first local hire vehicle broke down which then required to look for a second local hire. In the end an open-back land cruiser with greater capability was organized but this took time and caused a one-week delay in the operation.



Fig.6 – Household Survey Verification In Bukapena (Left) And Togoba HC (Right)

On the other hand, there were very positive experiences which included excellent collaboration between all health staff and RAM and the program eventually reaching all target villages and supplying nets.

Other than this, as with other provinces in the country where RAM has operated in over the last ten years, the methodologies used this time, including survey verification processes appeared practical and were openly welcomed by both villagers and implementers, particularly the practice of hanging up the list of names in the middle of the village following a survey. This allowed communities to feel that they were part of a transparent process. This is not to say that perhaps some extra people managed to slip into the books, but in general, it was felt that the system was fair and included practically everyone concerned. The use of the master lists also ensured that all villages were reached and accounted for.

The review of the data prior to the distribution was also important. This ensured that all villages and families received the correct numbers of nets. The 2000 Census Lists were very important to ensure that survey teams reached all villages: without the complete list of villages, it would be very difficult to make a detailed report.

The greatest complaint still received from communities was the number of nets they received. Even though the team explained the logic of how the allocation of nets is calculated, some families still expect one net per person, others expect it to be based on a fixed allocation based on the number of people in the family, and yet others thought they would be given nets based on the number of nets they stated they already had. This highlights that a better system of explaining the allocation system still needs to be developed. In general, unlike some previous districts covered by RAM and DHTs of Western Highlands Province assisted in the allocation of the nets which meant they were in a better position to explain the distribution system on the ground. Nevertheless, despite all the difficulties involved, it would appear that the vast majority

of community members accepted the outcome and there were no real problems or complaints encountered.

Acknowledgements

On behalf of the Rotarians Against Malaria household distribution team who worked in Mul Baiyer and Tambul Nebilyer districts, we would like to sincerely acknowledge and thank the Western Highlands Health Authority and the District Health Staff of the two districts for the excellent help and cooperation during the Long Lasting Insecticide Nets (LLINs) distribution programme.

In particular, we would like to thank at provincial level Ms Jane Holden (Chief Executive Officer) and her team with special thanks to Mr Dannex Kupamo (Director Public Health), Mrs Fredah Pyanyo (Deputy Director Health Promotion & Prevention), Ms Rebecca Waiya (Disease Control Officer), Mrs Elis Aveling (Provincial Health Information Officer) and Mrs Salome Minar (Provincial Malaria Supervisor).

For the district staff, we would like to sincerely thank all those who tirelessly took part in the programme, and in particular we would like to mention the following people who were instrumental in providing the local expertise and advice from planning to implementation of the programme in the two districts namely:

Mul Baiyer District

Name	Occupation	Institution
Mr. Sent Kora	Community Health Worker	Bukapena Health Centre
Mr. James Puri	Community Health Worker	Nengil Community Health Post
Mr. Robbie Unamba	District Nursing Supervisor	Tingsley Health Centre
Ms. Carolyn Gilmai	Nursing Officer	Tingsley Health Centre
Mr. Billy Puri	Community Health Worker	Tingsley Health Centre
Mr. Timothy Lo'o	Community Health Worker	Rolga Health Centre
Mr. Richard Lore	Officer in Charge	Simbimali Health Centre
Mr. Issac Brass	Nursing Officer	Simbimali Health Centre
Mr. Jason Tom	Community Health Worker	Simbimali Health Centre
Mrs. Ruth Tukusyaku	Community Health Worker	Mondaiyanda Aid Post
Mr. Philip Pumea	Community Health Worker	Kunjilama Aid Post
Mrs. Lina Agere	Officer in Charge	Sanap Community Health Post
Mrs. Betty Konga	Officer in Charge	Atenga Community Health Post
Mr. Allie Philip	Community Health Worker	Atenga Community Health Post

Tambul Nebilyer District

Name	Occupation	Institution
Ms. Jullie Kiso	Officer in Charge	Togoba Health Centre
Mr. Tua Komia	Nursing Officer	Togoba Health Centre
Mr. Malcom Yuants	Nursing Officer	Togoba Health Centre
Ms. Vero Kara	Community Health Worker	Togoba Health Centre
Mr. Rex Jack	Officer in Charge	Pabarabuk Health Centre
Ms. Melly Herot	Nursing Officer	Pabarabuk Health Centre
Mr. John Hickey	Community Health Worker	Pabarabuk Health Centre

RAM would like to specially acknowledge the support received from established and local service providers for logistical support namely; Nelma Transport for delivering five containers from Lae to Hagen and stored at Airport Resort yard (Nelma's yard).

RAM also thanks Fly Hire Cars, Airport Hire Cars, Manawa Hire Cars, Pishon Hire Cars and all the local hire car owners, for allowing their cars for these operations. We would not have reached many communities without the dedication of the drivers.

RAM would like to also thanks Nambi Investment Limited and Puma Energy for supplying bulk fuel for the operation.

RAM also thanks all the church run health facilities coordinated under Baptist Church, Seventh Day Adventist Church, PNG Bible Church and lastly to all the Government run facilities for allowing their staff to work with the RAM team.

Last but not the least, RAM would like to extend our acknowledgement and appreciation to all the hard working volunteers and local community leaders for ensuring all homes were surveyed and assisting in distributing all the nets. RAM thanks you all very much for your hard work, support and local expertise in making the overall program a success.

Appendix One – History Of LLIN Distribution In PNG

The use of Insecticide Treated Nets (ITNs) started in PNG in 1985 when the PNG Institute of Medical Research (IMR) conducted one of the first trials demonstrating the health impact of treating mosquito nets with insecticide. The study, done near Madang, showed a reduction of *P. falciparum* incidence and prevalence in children below five years of age sleeping under permethrin-treated nets. The protective effect of insecticide-treated nets (ITNs) was also confirmed in many other trials around the world. As a consequence of such findings, the national malaria control program in PNG started emphasizing the use of ITNs in 1989. However, no regular or large-scale distribution of ITNs was carried out at this time.

In the following years, coverage with mosquito nets and other control interventions remained patchy and low in many parts of PNG. It was during this period that Rotarians Against Malaria (RAM) was created from the Port Moresby Rotary Club in 1997. Using a donation of 150,000 treated nets given to them from the National Department of Health (originally from AusAid), RAM successfully ran a revolving fund of nets in which nets were sold at a price which allowed the proceeds to buy more nets. RAM did this successfully for many years distributing about 45,000 treated nets a year from 2000 to 2004.

Prior to 2004, most treated nets had to be re-treated every six months or a year which requires a lot of work and organisation. In early 2004 everything changed with the introduction of Long-Lasting Insecticidal Nets (LLINs) which would last for 20 washes and effectively no longer required to be treated repeatedly. This change in nets also coincided with the introduction of the Global Fund into PNG known as the Global Fund Round 3.

From 2005 to 2009 the malaria programme in PNG received and delivered about 2.3 million nets throughout the country at a rate of one net for every 2.5 people. The delivery of nets to village level was under the provincial health authorities and reached most parts of the country with Rotarians Against Malaria (RAM) being responsible in delivering the containers of nets to the provinces from Port Moresby and Lae where the nets arrived from overseas.

While the programme was very successful in some areas it was not so successful in others. Problems included slow release of funds from central to provincial level, some provinces not following technical guidelines given resulting in some areas not been covered, and technical and financial reporting leaving a lot to be desired in many of the provinces. When further funds became available in what is known as the Global Fund Round Eight, it was decided that Rotarians Against Malaria (RAM) would take over the coordination of the LLIN programme under the supervision of the National Malaria Control Program.

This change has resulted in RAM being responsible for the overall coordination of the LLIN distribution of LLINs in the country particularly in the areas of quantification, procurement, reporting and delivery to provincial and district level. However, the actual delivery of nets to village level is a collaboration between RAM, provincial health authorities and district health and health centre staff.

Fig.1 shows the distribution of nets to districts and provinces from 2006 to 2009 while Fig.2 shows the distribution of nets from 2010 to 2014 and Fig.3 shows the distribution from 2015 to 2017 which includes under five distributions in 2016 and 2017. Under Five distributions had been carried out in areas above 1600m and in Port Moresby and Lae City due to lack of funds. This situation changed when support from Against Malaria Foundation was received.

Up until June 2022, a total of 14.7 million LLINs had been distributed to household level under the coordination of RAM. Therefore, with the 2.5 million nets distributed from 2006 to 2009, this means that about 17.2 million nets have been delivered to household level in PNG since 2006. This is more than one net per every person in PNG. RAM has also distributed about

another 1.5 million nets to health centres for distribution to pregnant women and for prisons and boarding schools.

It should also be noted that alongside developments related to treated mosquito nets, the first cases of chloroquine-resistant malaria were reported in 1976. This progressed rapidly to widespread resistance of *P. falciparum*, and to a slightly lesser extent *P. vivax*, to chloroquine, amodiaquine and sulphadoxine-pyrimethamine (SP). In studies conducted between 2003 and 2005, even combination regimens of these drugs faced up to 29% resistance of *P. falciparum*². This situation together with Global Fund Round 8 also saw the introduction of artemether lumefantrine branded as Malawan and IPT (Intermittent Preventative Treatment) for antenatal women using Fansidar (Pyrimethamine Dapsone).

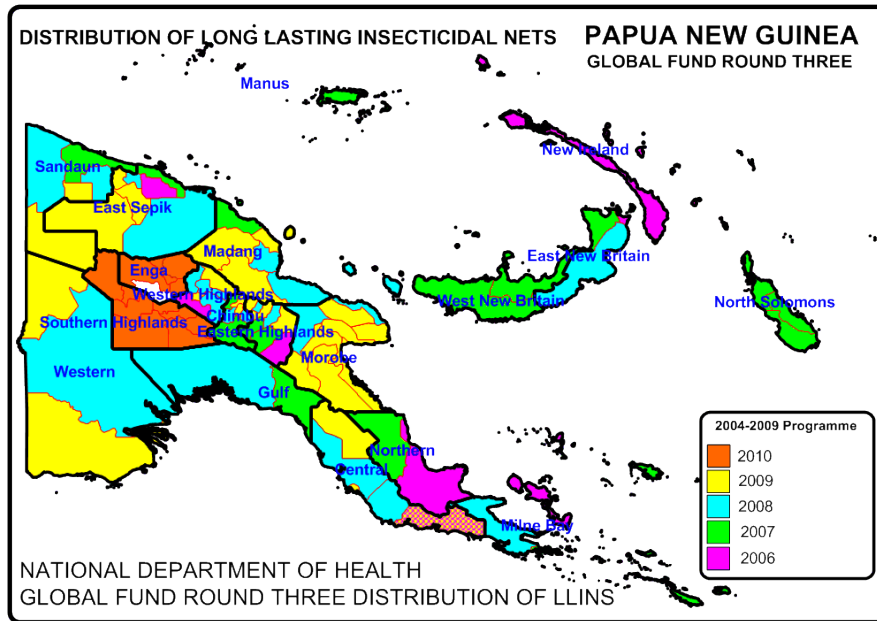


Fig. 1 Distribution Of Nets Under National Department Of Health From 2006 To 2010

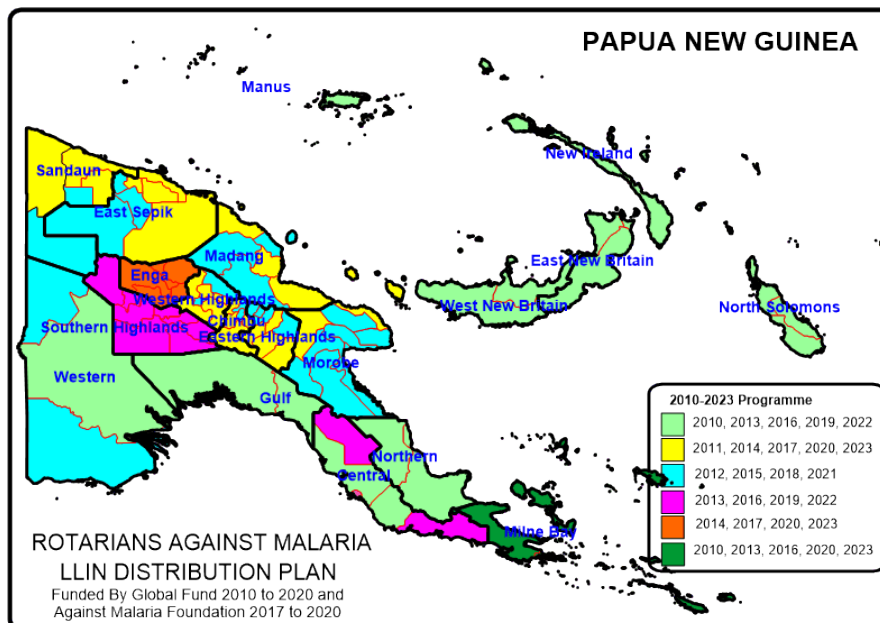


Fig.2 Distribution of LLIN Programme 2010 to 2023

TABLE ONE - LLINs Delivered In PNG Under Coordination Of RAM From 2010

Period	Dates	Districts	Provinces	Nets Delivered	Type Of Net Delivered
Phase One (2010-2011)	Nov 09 - Oct 11	50 Districts	18 Provinces	1,890,448	Permanet 2
Year 3 (2012)	Nov 11 - Sep 12	27 Districts	10 Provinces	832,671	Permanet 2
Year 4 (2013)	Oct 12 - Sep 13	28 Districts	12 Provinces	1,210,391	Permanet 2
Year 5 (2014)	Oct 13 - Sep 14	23 Districts	11 Provinces	1,374,791	Permanet 2
Year 5 (2014) No Cost Extension	Oct 14 - Dec 14	Okapa, Lufa, Madang, Angoram, Maprik, Yangoru Saussi, Wewak, Aitape Lumi, Nuku and Vanimo Green	EHP, Madang, East Sepik and Sandaun	454,806	Permanet 2
Year 6 (2015)	Jan - Dec 2015	29 Districts	11 Provinces	932,822	Permanet 2
Year 7 (2016)	Jan - Dec 2016	27 Districts	13 Provinces	805,597	Permanet 2
Year 8 (2017)	Jan - Dec 2017	36 Districts	13 Provinces	1,543,947	Permanet 2
Year 9 (2018)	Jan - Dec 2018	27 Districts	11 Provinces	1,211,922	Permanet 2
Year 10 (2019)	Jan - Dec 2019	26 Districts	12 Provinces	1,266,525	Permanet 2
Year 11 (2020)	Jan - Dec 2020	28 Districts	13 Provinces	1,495,368	Safenet, Interceptor, Yorkool and Royal Sentry
Year 12 (2021)	Jan - Dec 2021	30 Districts	9 Provinces	1,301,456	Yahe
Year 13 (2022)	Jan - Dec 2022	28 Districts	11 Provinces	973,829	Magnets, Yorkool, Yahe
Year 14 (2023)	Jan- Mar 2023	Talasea, Kandrian Gloucester, Rabaul, Kokopo, Pomio, Gazelle, Wabag	West New Britain, East New Britain and Enga	266,336	Magnet, Duranet
	Apr - Jun 2023	Alotau, Samurai Murua, Es'sala, Kiriwina Goodenough, Mul Baiyer and Tambul Nebilyer	Milne Bay, Western Highlands	334,278	Magnet, Duranet
New Funding Model (2015-2021)				10,132,080	
Round Eight (2010 - 2014)				5,763,107	
Overall Total Phase One and Phase Two And NFM				15,895,187	

Appendix Two – Malaria In Western Highlands Province Compared With Other Provinces

Fig.1 shows the decrease of malaria from 2007 to 2015 in all provinces, Fig. 2 shows the actual suspected malaria incidence in 2020 compared with other provinces and Fig.3 shows annual malaria trends from 2017 to 2021 and Fig. 4 the malaria incidence against LLIN distribution. In Western Highlands Province, it can be seen from Fig.1 that malaria decreased from 2007 to 2015 by only 86% which was one of the highest decreases of malaria in the PNG together with Eastern Highlands and Southern Highlands. In Fig. 2, in 2020 it can also be seen that in Western Highlands Province the suspected malaria incidence is 30 per 1000 which is highest malaria incidence recorded in the Highlands. Fig. 3 and Fig.4 show the suspected malaria incidence by year compared with net distributions in Western Highlands Province. It can be noted that in general, LLIN distributions prior to 2015 resulted in a significant decrease of malaria, but after this, malaria incidence has remained steady. It is now believed that Western Highlands except for the very low lying areas in Mul Baiyer and Dei are essentially malaria free and all reported cases are imported from elsewhere. The reason we can say this is because the majority of malaria cases, outside of Dei and Mul Baiyer are predominantly adult cases and the majority of under five cases come Rulna, Antenga and Tinsley in the low lying areas of the province. However, it is considered necessary to continue distribution of LLINs in these areas to avoid malaria returning to Western Highlands in general.

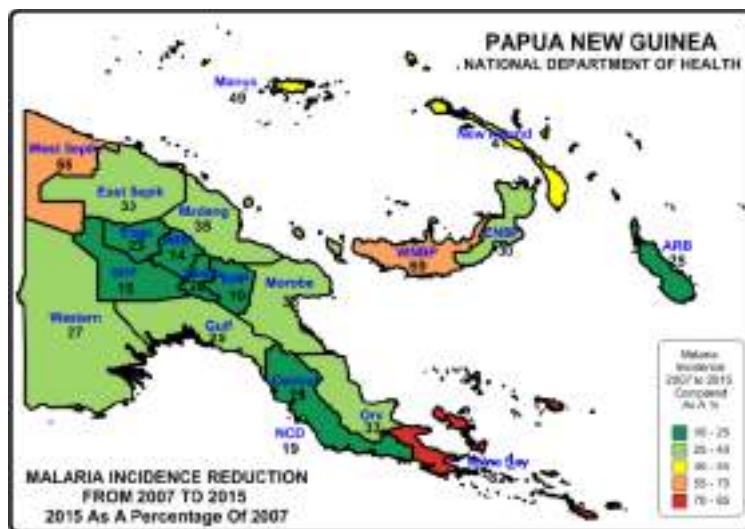


Fig.1 – Relative Reduction Of Malaria In Provinces Of PNG

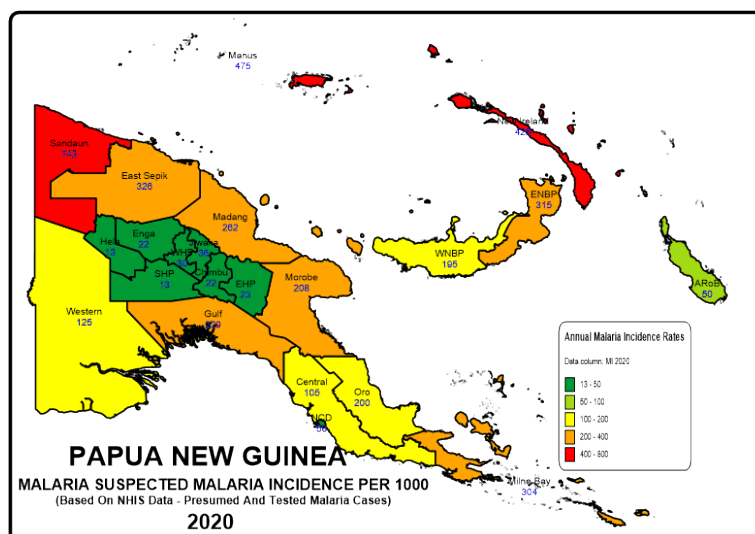


Fig.2 – Reported Malaria Incidence In 2020

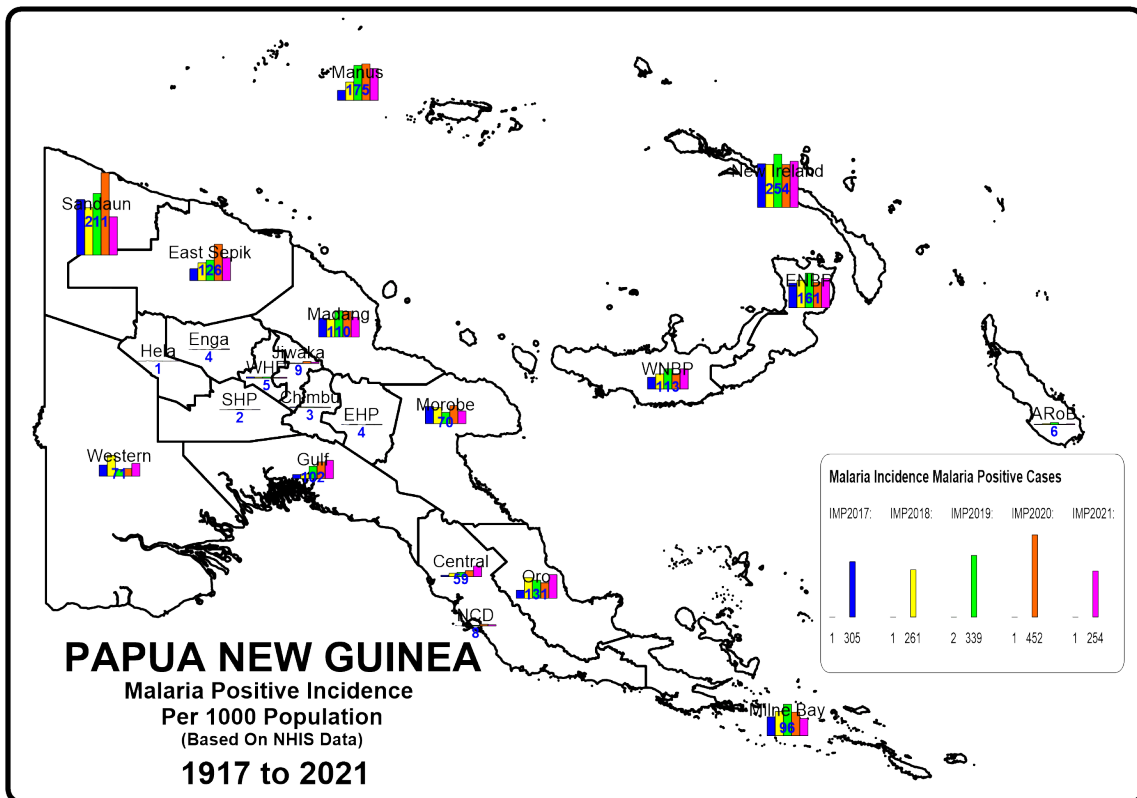


Fig. 3 - Reported Malaria Incidence In PNG From 2016 To 2020

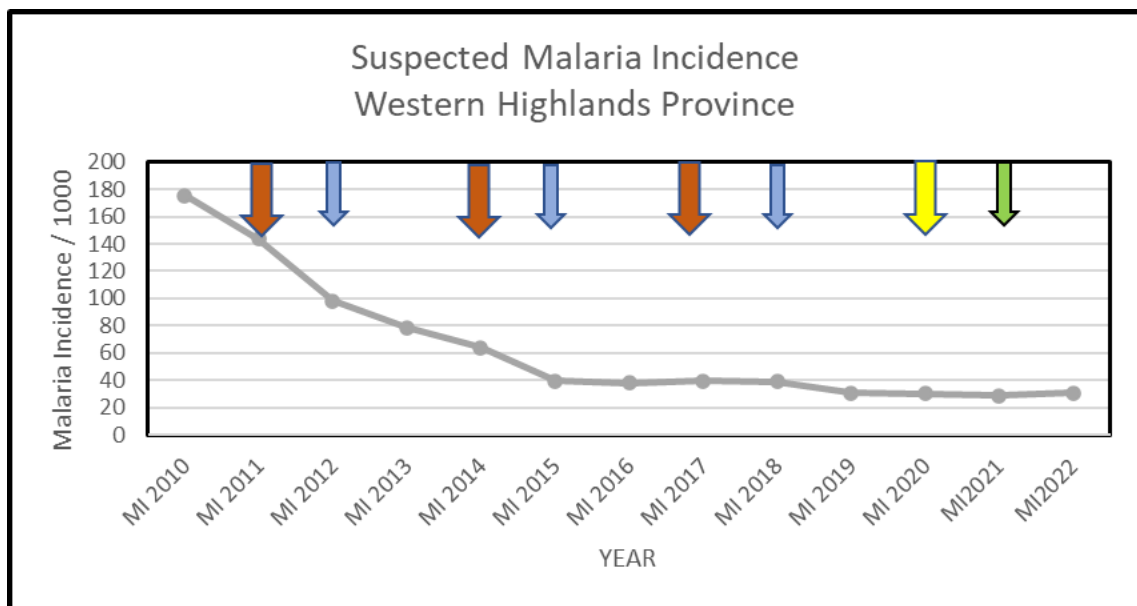
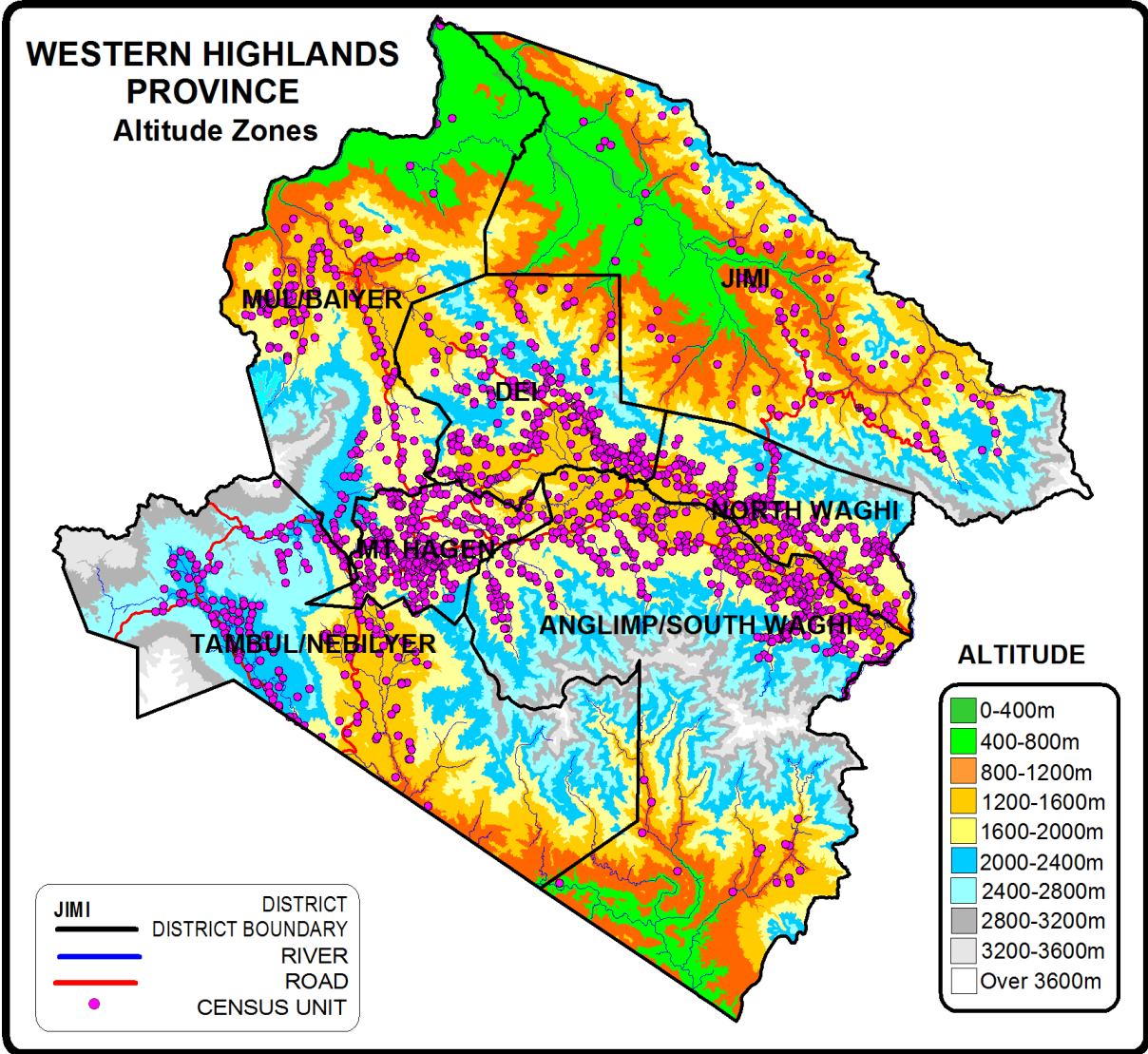


Fig. 4 – Malaria Suspected Malaria Incidence Versus Distribution Of Nets
Brown arrows represents LLIN distributions done in Western Highlands Province in 2011, 2014, 2017 in Dei, Mul Baiyer and Tambul Nebilyer, light blue arrows represent LLIN distributions in Mount Hagen in 2012, 2015 and 2018, while the yellow arrow represents LLIN distributions only in Mul Baiyer and Tambul Nebilyer in 2020 and the green arrow LLIN distributions in Dei and Mount Hagen in 2021.

Appendix Three - Malaria By Altitude

Western Highlands Province is a Highlands Province on the mainland of Papua New Guinea (PNG). It is made up of four districts, Dei, Mount Hagen, Mul Baiyer and Tambul Nebilyer. While it is a highlands province with mountains over 3,500 metres, it also has low lying areas going down to below 800 metres. The low lying regions below 1200 metres are endemic for malaria while those areas above 2000m are malaria free. Areas between 1200-1600 metres are considered endemic for malaria though presently malaria free. In reality, only about 2.5% of the population live in endemic malaria zones with about 39% living in epidemic areas and 50% living in areas between 1600-2000 metres where malaria transmission (if it occurs) is limited to *Plasmodium vivax* . The rest of the population live in areas above 2000 metres where malaria does not occur. About 80% of Mul Baiyer and Tambul Nebilyer are accessible by road with about 20% only accessible by trekking, particularly in the low lying areas of Mul Baiyer.

Fig. 1 Altitude Zones In Western Highlands And Jiwaka Province



Appendix Four – Other Photographs



Verification In Antenga (Left) And Simbimali



Distributions In Bukapena (Left) And Togoba (Right)



Distributions In Tinsley



Distributions In Sanap, Antenga and Simbimali



Loading Trucks And Nets In Containers In Mount Hagen

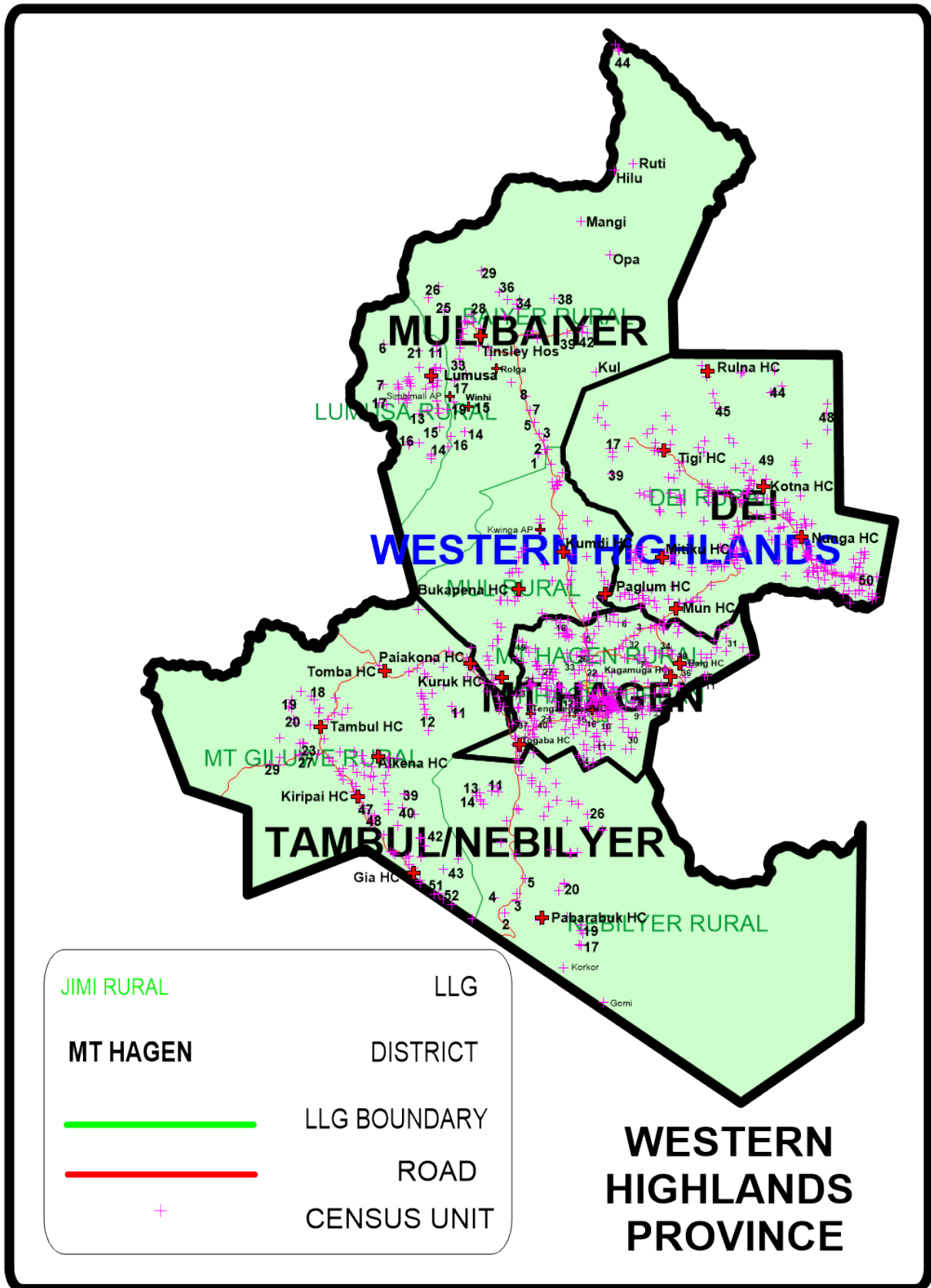


Happy Customers In Bukapena



Giving Health Education In Togoba (Left) and Happy Customers In Simbimali

Appendix Five - Map Of Western Highlands Province Showing Census Points Of 2000 Census



ANNEX ONE

WESTERN HIGHLANDS PROVINCE MUL \ BAIYER DISTRICT POPULATION 2023 LLIN PLANNING SUMMARY SHEET

	Altitude
	Above 2000 m
	1600-2000 m
	1200-1600 m
	Less than 1200m

LLG	WARD	VILLAGE	Estimated 2023 Data Based On 2000 Census	Estimated 2023 Data Based On 2020 Data	Health Centre	Population Surveyed	House Holds Surveyed	Nets Issued	Date Of Distribution	Villages	Digicel	Emobile	Houses With Phones	Houses With Radios	Radio Networks	Comments
MUL \ BAIYER DISTRICT			90,641	90,641		54,868	11,895	28,807								
MUL RURAL			48,595	39,152		7,410	1,198	3,646								
1	Bukapena		1,409	1,457												
		Bukapena	1,271		Bukapena HC											Road
		Bukapena Station	138		Bukapena HC											Road
2	Kileg .1		803	816												
		Kileg.1	357		Bukapena HC											Road
		Elimp	446		Bukapena HC											Road
3	Kileg.2		1,223													
		Kileg.2	1,223		Bukapena HC											Road
4	Kileg.3		835	504												
		Kileg.3	835		Bukapena HC											Road
5	Kalinga 1		780	1,040												
		Kalinga 1	780		Bukapena HC											Road
6	Kalinga 2		873	705												
		Kalinga 2	873		Bukapena HC											Road
7	Wurup		953	1,402												
		Wurup	953		Bukapena HC											Road
8	Kwinga.1		975	1,269												
		Kwinga.1	975		Bukapena HC											Road
9	Kwinga.2		923	900												
		Kwinga.2	470		Bukapena HC											Road
		Mun	453		Bukapena HC											Road
10	Kwinga.3		1,011	836												
		Bur /Kwinga 3	1,011		Bukapena HC											Road
11	Kwinga.4		700	734												
		Malts	700		Bukapena HC											Road
12	Bita		985	1,106		1,118	186	552		1	1	1	188	14		
		Bita	985		Bukapena HC	1,118	186	552	14.07.23	1	1	1	188	14	95.5FM	Road
13	Kum		1,385	1,721		1,919	311	934		1	1	1	160	311		
		Kum	1,385	1,721	Bukapena HC	1,919	311	934	13.07.23	1	1	1	160	311	95.5FM	Road
14	Mabulga.1		1,257	1,433		2,153	324	1,056		2	2	2	340	43		
		Mabulga.1	185	971	Bukapena HC	1,657	224	804	12.07.23	1	1	1	240	34	95.5FM	Road
		Nengil	1,071	461	Bukapena HC	496	100	252	14.07.23	1	1	1	100	9	95.5FM	Road
15	Mabulga.2		876	1,499		1,131	216	549		2	2	2	213	93		
		Mabulga.2	497	782	Bukapena HC	412	79	195	14.07.23	1	1	1	79	70	95.5FM	Road
		Ralga	379	717	Bukapena HC	719	137	354	12.07.23	1	1	1	134	23	95.5FM	Road
16	Mabulga.3		825	733		670	94	329		1	1	1	94	43		
		Nengil	825	733	Bukapena HC	670	94	329	13.07.23	1	1	1	94	43	95.5FM	Road
17	Mabulga.4		835	872		419	67	226		2	2	2	67	0		
		Pultimp	433	527	Bukapena HC	253	40	137	16.07.23	1	1	1	40	0	95.5FM	Road
		Kurumul	401	345	Bukapena HC	166	27	89	16.07.23	1	1	1	27	0	95.5FM	Road
18	Rugli.1		964	1,071												
		Rugli.1	939		Kumdi HC											Road
		Rugli Community School	26		Kumdi HC											Road
19	Rugli.2		1,198	1,245												
		Rugli.2	233		Kumdi HC											Road
		Pyai	964		Kumdi HC											Road
20	Keregamp		1,306	1,207												
		Keregamp	1,306		Kumdi HC											Road
21	Kopalge		483	581												
		Kopalge	256		Kumdi HC											Road
		Kupula	227		Kumdi HC											Road
22	Kumdi		1,382	1,973												
		Kumdi	478		Kumdi HC											Road
		Manda	822		Kumdi HC											Road
		Notre Dame High School	82		Kumdi HC											Road
23	Nambe		1,743	1,698												
		Nambe	814		Kumdi HC											Road
		Pentina	513		Kumdi HC											Road
		Ralaga			Kumdi HC											Road
		Minjigina Tea Estate	112		Kumdi HC											Road
		Pulgimp Tea Estate	304		Kumdi HC											Road
24	Murip		1,146	1,337												
		Murip	1,146		Kumdi HC											Road
25	Kilika		1,116	1,991												
		Kilika	729		Kumdi HC											Road
		Kuwal	387		Kumdi HC											Road
		Benem			Kumdi HC											Road
26	Minimp		625	873												
		Minimp	625		Kumdi HC											Road
27	Koibuga.1		1,314	550												
		Koibuga.1	398		Paglum HC											Road
		Bapolga	838		Paglum HC											Road
		Paglum High School	78		Paglum HC											Road
28	Koibuga.2		878	562												

LLG	WARD	VILLAGE	Estimated 2023 Data Based On 2000 Census	Estimated 2023 Data Based On 2020 Data	Health Centre	Population Surveyed	House Holds Surveyed	Nets Issued	Date Of Distribution	Villages	Digicel	Bmobile	Houses With Phones	Houses With Radios	Radio Networks	Comments
		Kamaka	878		Paglum HC											Road
		Watpena (New Village)			Paglum HC											Road
		Komba (New Village)			Paglum HC											Road
29	Koibuga.3		1,122	1,101												
		Koibuga.3	550		Paglum HC											Road
		Kuntum	540		Paglum HC											Road
		Koibuga Community School	32		Paglum HC											Road
30	Koibuga.4		1,553	2,496												
		Koibuga.4	705		Paglum HC											Road
		Banem	612		Paglum HC											Road
		Koibuga Plantation	235		Paglum HC											Road
		Komaka (New Village)			Paglum HC											Road
		Kombuk (New Village)			Paglum HC											Road
31	Angiki.1		833	0												
		Waiaka	833		Paglum HC											Road
32	Angiki.2		680	0												
		Angiki.2	296		Paglum HC											Road
		Popaipana	384		Paglum HC											Road
33	Kilimp		2,000	0												
		Kilimp	1,289		Paglum HC											Road
		Taimalka	712		Paglum HC											Road
34	Wara.1		836	0												
		Ramund	836		Bukapena HC											Road
35	Wara.2		697	0												
		Mantima	697		Bukapena HC											Road
36	Wara.3		553	0												
		Wara.3	553		Bukapena HC											Road
37	Kogl		983	0												
		Kogl	213		Bukapena HC											Road
		Milip	771		Bukapena HC											Road
38	Kwip.1		988	0												
		Kwip.1	988		Bukapena HC											Road
39	Kwip.2		1,623	0												
		Kwip.2	1,623		Bukapena HC											Road
40	Tondomong.1		552	0												
		Tondomong.1	301		Kuruk HC											Road
		Wap Kona	251		Kuruk HC											Road
41	Tondomong.2		398	0												
		Tondomong.2	398		Kuruk HC											Road
42	Tondomong.3		1,386	0												
		Wakanom	1,386		Kuruk HC											Road
		Poncry			Kuruk HC											Road
		Angpena			Kuruk HC											Road
43	Balk.1		1,501	1,222												
		Balk.1	947		Kuruk HC											Road
		Rau	555		Kuruk HC											Road
44	Balk.2		990	1,118												
		Balk.2	182		Kuruk HC											Road
		Ganapkona	499		Kuruk HC											Road
		Takil	309		Kuruk HC											Road
		Gulpuk			Kuruk HC											Road
45	Balk.3		1,207	1,179												
		Balk.3	400		Kuruk HC											Road
		Pakmong	489		Kuruk HC											Road
		Kuruk Catholic Mission	318		Kuruk HC											Road
		Ogpena			Kuruk HC											Road
		Engawal			Kuruk HC											Road
46	Balk.4		673	585												
		Balk.4	101		Kuruk HC											Road
		Elgem	572		Kuruk HC											Road
47	Ebuga		1,215	521												
		Ebuga	1,215		Kuruk HC											Road
			0													
BAYER RURAL			32,490	40,326		35,835	8,338	18,891		70	71	2	1,025	479	17	
1	Pokotapugl		959	963		887	200	471		2	2	0	0	196		
		Pokotapugl	918	792	Sanap CHP	703	150	376	10.07.23	1	1	0	0	146		Road
		Kombolopa High School	42	170	Sanap CHP	184	50	95	10.07.23	1	1	0	0	50		Road
2	Manjip		991	3,315		2,281	477	1,214		4	4	0	0	268		
		Apwara		818	Sanap CHP	664	148	360	09.07.23	1	1	0	0	75		Road
		Komgolopa		593	Sanap CHP	485	100	242	10.07.23	1	1	0	0			Road
		Kamind Plantation		90	Sanap CHP	65	15	36	11.07.23	1	1	0	0	9		Road
		Manjip (Kingaringa)	991	1,814	Sanap CHP	1,067	214	576	12.07.23	1	1	0	0	184		Road
3	Sanap		1,127	1,456		1,159	285	629		1	1	0	0	0		
		Sanap	1,127	1,456	Sanap CHP	1,159	285	629	12.07.23	1	1	0	0			Road
4	Keluape.1		686	661		530	123	280		1	1	0	0	0		
		Keluape.1	686	661	Sanap CHP	530	123	280	11.07.23	1	1	0	0			Road
5	Keluape.2		913	976		1,046	250	558		1	1	0	0	0		
		Keluape.2	913	976	Sanap CHP	1,046	250	558	11.07.23	1	1	0	0			Road
6	Lyaporambo.2		633	729		763	195	424		1	1	0	0	0		
		Lyaporambo.2	633	729	Sanap CHP	763	195	424	11.07.23	1	1	0	0			Road
7	Lyaporambo.1		792	719		865	196	446		1	1	0	0	0		
		Lyaporambo.1	792	719	Sanap CHP	865	196	446	11.07.23	1	1	0	0			Road
8	Kaleta		1,295	2,933		1,743	427	897		2	2	0	2	0		

LLG	WARD	VILLAGE	Estimated 2023 Data Based On 2000 Census	Estimated 2023 Data Based On 2020 Data	Health Centre	Population Surveyed	House Holds Surveyed	Nets Issued	Date Of Distribution	Villages	Digicel	Bmobile	Houses With Phones	Houses With Radios	Radio Networks	Comments
		Kaleta	785	1,202	Tinsley HC	1,341	303	676	12-15.07.23	1	1	0	1	0	95.1 FM	Road
		Ukup	510	1,731	Tinsley HC	402	124	221	12-13.07.23	1	1	0	1	0	95.1 FM	Road
9	Kuipbaut.1		785	551		857	245	452		1	1	0	1	6		
		Kuipbaut.1	785	551	Tinsley HC	857	245	452	12-14.07.23	1	1	0	1	6	95.1 FM	Road
10	Kuipbaut.2		625	709		617	161	327		1	1	0	1	0		
		Kuipbaut.2	625	709	Tinsley HC	617	161	327	12-13.07.23	1	1	0	1	0	95.1 FM	Road
11	Rolga		1,011	1,046		1,467	322	739		1	1	0	1	9		
		Rolga	1,011	1,046	Rolga HC	1,467	322	739	12-16.07.23	1	1	0	1	9	95.1 FM	Road
12	Endemane		662	569		654	156	354		1	1	0	1	0		
		Endemane	662	569	Tinsley HC	654	156	354	14-15.07.23	1	1	0	1	0	95.1 FM	Road
13	Jukuna		707	507		306	69	174		2	2	0	69	0		
		Jukuna	707	507	Simbimali HC	191	43	110	08.07.23	1	1	0	43	0		25mins Road & 1Hr Trek
		Angapalusa		NEW	Simbimali HC	115	26	64	08.07.23	1	1	0	26	0		25mins/ 1Hr Trek
14	Tapiakama.1		577	291		472	125	267		1	1	0	122	0		
		Tapiakama.1	577	291	Simbimali HC	472	125	267	07.07.23	1	1	0	122	0		30mins Road & 4Hrs Trek
15	Tapiakama.2		454	491		482	120	272		1	1	0	104	0		
		Tapiakama.2	454	491	Simbimali HC	482	120	272	07.07.23	1	1	0	104	0		30mins Riad & 3Hrs
16	Kaliponga		678	428		413	100	243		1	1	0	97	0		
		Kaliponga	678	428	Simbimali HC	413	100	243	08.07.23	1	1	0	97	0		45m Road & 4Hrs Trek
17	Yaramanda.1		595	1,032		597	132	353		2	2	0	131	0		
		Wapsuklakaiya	595	594	Simbimali HC	249	50	143	08.07.23	1	1	0	43	0		30mins Road
		Winyu		437	Simbimali HC	348	82	210	08.07.23	1	1	0	88	0		30mins Road
18	Yaramanda.2		462	480		602	140	349		2	2	0	130	0		
		Yuku	462	480	Simbimali HC	376	91	224	07.07.23	1	1	0	82	0		20mins Road
		Kopanda		NEW	Simbimali HC	226	49	125	08.07.23	1	1	0	48	0		25mins & 1HrTrek
19	Yaramanda.3		478	514		664	150	370		1	1	0	142	0		
		Simbimali	478	514	Simbimali HC	664	150	370	07.07.23	1	1	0	142	0		5mins Road
20	Pakalis.1		387	352		280	66	159		1	1	0	63	0		
		Kumulama	387	352	Simbimali HC	280	66	159	09.07.23	1	1	0	63	0		35mins Road
21	Pakalis.2		704	613		410	97	227		1	1	0	96	0		
		Pakalis 2 (Kwaisungu)	704	613	Simbimali HC	410	97	227	09.07.23	1	1	0	96	0		45mins Road
22	Dalapana.1		587	805		386	113	211		1	1	0	0	0		
		Dalapana.1	587	805	Tinsley HC	386	113	211	13-14.07.23	1	1	0	0	0		Road
23	Dalapana.2		262	815		583	150	313		1	1	0	0	0		
		Dalapana.2	262	815	Tinsley HC	583	150	313	11-12.07.23	1	1	0	0	0	99.5 FM	Road
24	Dalapana.3		368	620		445	100	240		1	1	0	0	0		
		Kenankyausa	368	620	Tinsley HC	445	100	240	11-12.07.23	1	1	0	0	0	99.5 FM	Road
25	Kulimbu.1		740	814		918	226	468		1	1	0	1	0		
		Kulimbu.1	740	814	Tinsley HC	918	226	468	11-13.07.23	1	1	0	1	0	95.1 FM	Road
26	Kulimbu.2		785	813		890	209	470		2	2	0	0	0		
		Wania	392	576	Tinsley HC	667	159	354	11-12.07.23	1	1	0	0	0	99.5 FM	Road
		Mulen	393	237	Tinsley HC	223	50	116	11-12.07.23	1	1	0	0	0	99.5 FM	Road
27	Mandawasa.1		1,078	1,792		1,922	471	986		3	3	1	1	0		
		Mandawasa.1	561	684	Tinsley HC	1,141	241	564	11-12.07.23	1	1	0	0	0	99.5 FM	Road
		Laka	502	751	Tinsley HC	511	150	273	11-13.07.23	1	1	0	0	0	99.5 FM	Road
		Mandawasa Community School	14	357	Tinsley HC	270	80	149	11-12.07.23	1	1	1	1	0	99.5 FM	Road
28	Kyakapale		676	256												
		Kyakapale	676	256	Tinsley HC											Abandoned
29	Simunga		588	950		858	181	422		1	1	0	0	0		
		Simunga	588	950	Tinsley HC	858	181	422	09-10.07.23	1	1	0	0	0		Road
30	Kenan.1		433	370		773	137	394		1	1	0	1	0		
		Kenan.1	433	370	Tinsley HC	773	137	394	13-16.07.23	1	1	0	1	0	95.1 FM	Road
31	Kenan.2		281	338		250	88	150		1	1	1	1	0		
		Imbilama	281	338	Tinsley HC	250	88	150	11-12.07.23	1	1	1	1	0	99.5 FM	Road
32	Yakasmada.1		283	453		674	200	370		1	1	0	1	0		
		Yakasmada.1	283	453	Tinsley HC	674	200	370	13-14.07.23	1	1	0	1	0	95.1 FM	Road
33	Yakasmada.2		518	378		238	66	141		1	1	0	60	0		
		Lulyapeta	518	378	Simbimali HC	238	66	141	09.07.23	1	1	0	60	0		45mins Road & 2Hrs Trek
34	Iki 1		905	1,192		1,072	256	550		4	4	0	0	0		
		Iki 1(Bip)	437	759	Tinsley HC	591	150	300	10-11.07.23	1	1	0	0	0		Road
		Kitiman	347	0	Tinsley HC	292	44	143	10.07.23	1	1	0	0	0		Road
		Ok	106	263	Tinsley HC	114	19	54	10.07.23	1	1	0	0	0		Road
		Iki Community School	16	169	Tinsley HC	75	43	53	10.07.23	1	1	0	0	0		Road
35	Iki 2		296	570		389	100	201		1	1	0	0	0		
		Ropanda (Iki 2)	296	570	Tinsley HC	389	100	201	10-11.07.23	1	1	0	0	0		Road
36	Dekenapona		1,366	1,861		1,374	363	718		2	2	0	0	0		
		Dekenapona	467	1,073	Tinsley HC	717	213	377	09-10.07.23	1	1	0	0	0		Road
		Banam	899	788	Tinsley HC	657	150	341	09-10.07.23	1	1	0	0	0		Road
37	Antenga		656	1,439		856	188	445		2	2	0	0	0		
		Antenga	643	1,139	Antenga CHP	760	163	393	13.07.23	1	1	0	0	0		Road
		Antenga Community School	13	300	Antenga CHP	96	25	52	13.07.23	1	1	0	0	0		Road
38	Ger		598	685		736	187	390		1	1	0	0	0		
		Metai	598	685	Tinsley HC	736	187	390	10-11.07.23	1	1	0	0	0		Road
39	Gelg.1		977	968		886	188	455		2	2	0	0	0		
		Kumbu	977	493	Antenga CHP	432	88	221	13.07.23	1	1	0	0	0		Road
		Deka		475	Antenga CHP	454	100	234	13.07.23	1	1	0	0	0		Road
40	Gelg.2		1,231	1,154		823	191	449		2	2	0	0	0		
		Gelg.2	772	865	Antenga CHP	609	141	329	13.07.23	1	1	0	0	0		Road
		Mumkui	459	288	Antenga CHP	214	50	120	13.07.23	1	1	0	0	0		Road
41	Kul		558	258		234	50	118		1	2	0	0	0		
		Heturing		156	Antenga CHP	234	50	118	13.07.23	1	1	0	0	0		

LLG	WARD	VILLAGE	Estimated 2023 Data Based On 2000 Census	Estimated 2023 Data Based On 2020 Data	Health Centre	Population Surveyed	House Holds Surveyed	Nets Issued	Date Of Distribution	Villages	Digicel	Bmobile	Houses With Phones	Houses With Radios	Radio Networks	Comments
		Kul	558	102	Antenga CHP						1	0	0			Comes Under Tiki HC.
42	Pila		948	1,000	Antenga CHP	872	182	442		1	1	0	0	0		
		Pila	948	1,000	Antenga CHP	872	182	442	13.07.23	1	1	0	0			Road
43	Mangi		432	502	Antenga CHP	228	50	111		1	1	0	0	0		
		Mangi	432	502	Antenga CHP	228	50	111	21.07.23	1	1	0	0			Road
44	Ruti		1,525	1,030	Antenga CHP	1,852	331	898		6	6	0	0	0		
		Ruti	304	1,030	Antenga CHP	824	150	405	22.07.23	1	1	0	0			Road
		OPA	328	0	Antenga CHP	549	100	262	20.07.23	1	1	0	0			Road?
		Mamusi	373	0	Antenga CHP	295	44	139	22.07.23	1	1	0	0			Trek
		Mangamanau	88	0	Antenga CHP	65	14	34	22.07.23	1	1	0	0			Trek
		Penali	169	0	Antenga CHP	73	14	38	22.07.23	1	1	0	0			Trek
		Hilu	264	0	Antenga CHP	46	9	20	22.07.23	1	1	0	0			Trek
45	Tinsley Station		625	970	Antenga CHP	605	116	298		1	1	0	0	0		
		Tinsley Hospital	625	970	Tinsley HC	605	116	298	13-14.07.23	1	1	0	0			Road
46	Baiyer Station		251	959	Antenga CHP	876	159	446		3	3	0	0	0		
		Baiyer Station	214	502	Sanap CHP	414	76	213	09.07.23	1	1	0	0			Road
		Baiyer Zoo	37	179	Antenga CHP					1	1	0	0			Included Under Antenga
		DPI Station		279	Sanap CHP	462	83	233	09.07.23	1	1	0	0			Road
LUMUSA RURAL			9,556	11,162		11,623	2,359	6,270		57	54	0	1,803	331	0	
1	Laiyakama.1		761	571		741	149	422		3	3	0	139	29		Note Lumusa is Closed and All Operations now carried out from Sindimali HC
		Laiyakama.1	382	246	Simbimali HC2	274	50	156	14.07.23	1	1	0	50	3		1.5 Hr Trek
		Paraka	352	178	Simbimali HC2	217	49	118	14.07.23	1	1	0	41	24		1.5 Hr Trek
		Lumusa Station	27	148	Simbimali HC2	250	50	148	14.07.23	1	1	0	48	2		1.5 Hr Trek
2	Rombau		827	778		573	133	324		3	3	0	131	0		
		Kelumanda	347	197	Simbimali HC2	172	41	97	13.07.23	1	1	0	39	0		1.5 Hr Trek
		Lambakimba	473	245	Simbimali HC2	131	31	77	14.07.23	1	1	0	31	0		1.5 Hr Trek
		Rombau Community School	6	337	Simbimali HC2	270	61	150	13.07.23	1	1	0	61	0		1.5 Hr Trek
3	Mondaiyanda		585	653		647	146	376		3	3	0	141	24		
		Mondaiyanda	224	169	Simbimali HC2	246	50	138	13.07.23	1	1	0	46	20		1 Hr Trek
		Wanmanda	233	233	Simbimali HC2	202	47	118	13.07.23	1	1	0	46	4		1 Hr Trek
		Yusa	128	251	Simbimali HC2	199	49	120	13.07.23	1	1	0	49	0		1 Hr Trek
4	Laiyakama.2		270	364		333	91	197		2	2	0	82	2		
		Lomea	128	245	Simbimali HC2	128	41	78	14.07.23	1	1	0	36	2		1 Hr Trek
		Mamandakalenda	142	119	Simbimali HC2	205	50	119	14.07.23	1	1	0	46	0		1 Hr Trek
5	Nekerapa.1		107	264		358	73	172		1	1	0	4	0		
		Kepakanda	107	264	Simbimali HC2	358	73	172	16.07.23	1	1	0	4	0		2 Hr Trek
		Nekerapa. 2		562		541	100	264		1	1	0	72	0		
		Lungiya/Rakata		562	Simbimali HC2	541	100	264	16.07.23	1	1	0	72	0		
6	Nekerapa.3		325	356		472	100	246		1	1	0	53	0		
		Alipmanda	325	356	Simbimali HC2	472	100	246	16.07.23	1	1	0	53	0		2 Hr Trek
7	Pinapaisa.1		814	857		760	149	417		4	4	0	142	0		
		Pinapaisa.1	229	186	Simbimali HC2	196	39	108	17.07.23	1	1	0	36	0		2 Hr Trek
		Yambanaga	163	217	Simbimali HC2	305	50	167	17.07.23	1	1	0	47	0		2 Hr Trek
		Aligapeta	302	236	Simbimali HC2	214	50	115	17.07.23	1	1	0	49	0		2 Hr Trek
		Yomo	120	217	Simbimali HC2	45	10	27	17.07.23	1	1	0	10	0		2 Hr Trek
8	Pinapaisa.2		401	611		540	77	282		3	3	0	75	0		
		Maramanda	288	366	Simbimali HC2	424	50	218	17.07.23	1	1	0	48	0		1 Hr Trek
		Koyapisa	58	214	Simbimali HC2	83	17	43	17.07.23	1	1	0	17	0		1 Hr Trek
		Takyeta	56	31	Simbimali HC2	33	10	21	17.07.23	1	1	0	10	0		1 Hr Trek
9	Mano		478	257		384	84	210		2	2	0	48	3		
		Kumiakama	181	215	Simbimali HC2	171	37	93	14.07.23	1	1	0	3	0		1.5 Hr Trek
		Kanapeta	297	42	Simbimali HC2	213	47	117	14.07.23	1	1	0	45	3		1.5 Hr Trek
10	Minigiwa		315	372		164	40	96		2	2	0	37	0		
		Kinjanmanda	229	240	Simbimali HC2	126	27	71	14.07.23	1	1	0	26	0		1 Hr Trek
		Baptist Mission	86	131	Simbimali HC2	38	13	25	14.07.23	1	1	0	11	0		1 Hr Trek
11	Wangumali		273	397		234	58	133		2	1	0	49	4		
		Wangumali	195	197	Simbimali HC2	234	58	133	14.07.23	1	1	0	49	4		1 Hr Trek
		Ambankeusa	78	200	Simbimali HC2					1						Included Under Wangumali
12	Kumbakosa.1		539	552		602	150	336		3	3	0	138	15		
		Sinangamanda	233	235	Simbimali HC2	212	50	117	13.07.23	1	1	0	42	14		Trek
		Trakaninga	157	201	Simbimali HC2	196	50	107	13.07.23	1	1	0	48	1		Trek
		Penunga	149	116	Simbimali HC2	194	50	112	13.07.23	1	1	0	48	0		Trek
13	Kumbakosa.2		662	473		683	133	357		2	2	0	73	86		
		Kapareta	304	284	Simbimali HC2	393	72	198	13.07.23	1	1	0	59	71		Trek
		Kamuli	358	189	Simbimali HC2	290	61	159	13.07.23	1	1	0	14	15		Trek
14	Yangomanda		665	415		386	84	218		5	5	0	82	80		
		Yangomanda	139	115	Simbimali HC2	63	13	35	13.07.23	1	1	0	13	13		2 Hr Trek
		Ausa	309	153	Simbimali HC2	172	40	99	13.07.23	1	1	0	38	36		2 Hr Trek
		Raumareta	88	76	Simbimali HC2	55	10	29	13.07.23	1	1	0	10	10		2 Hr Trek
		Papmanda	72	26	Simbimali HC2	49	12	28	13.07.23	1	1	0	12	12		2 Hr Trek
		Kamakop	58	45	Simbimali HC2	47	9	27	13.07.23	1	1	0	9	9		2 Hr Trek
15	Singuamanda		305	150		252	50	135		2	1	0	45	2		
		Singuamanda	133	110	Simbimali HC2					1						Included Under Kopalo
		Kopalo	173	39	Simbimali HC2	252	50	135	16.07.23	1	1	0	45	2		2 Hr Trek
16	Jikama		265	399		318	60	168		2	2	0	57	36		
		Jikama	115	164	Simbimali HC2	142	26	74	16.07.23	1	1	0	25	3		2 Hr Trek
		Ambuamanda	150	235	Simbimali HC2	176	34	94	16.07.23	1	1	0	32	33		2 Hr Trek
17	Kunjilama		782	873		1,075	176	549		4	4	0	115	42		

LLG	WARD	VILLAGE	Estimated 2023 Data Based On 2000 Census	Estimated 2023 Data Based On 2020 Data	Health Centre	Population Surveyed	House Holds Surveyed	Nets Issued	Date Of Distribution	Villages	Digicel	Bmobile	Houses With Phones	Houses With Radios	Radio Networks	Comments
		Kunjilama	206	247	Simbimali HC2	232	38	118	17.07.23	1	1	0	31	21		2 Hr Trek
		Isepasa	262	245	Simbimali HC2	254	50	130	17.07.23	1	1	0	34	17		2 Hr Trek
		Samokota	150	268	Simbimali HC2	329	50	168	17.07.23	1	1	0	50	4		2 Hr Trek
		Kalungamanda	163	114	Simbimali HC2	260	38	133	17.07.23	1	1	0	0	0		2 Hr Trek
18	Kakemali.1		405	440		408	73	197		2	2	0	70	0		
		Kakemali.1	315	186	Simbimali HC2	285	50	137	18.07.23	1	1	0	47	0		2 Hr Trek
		Ambua	90	255	Simbimali HC2	123	23	60	18.07.23	1	1	0	23	0		2 Hr Trek
19	Kakemali.2		363	352		529	100	306		2	2	0	100	0		
		Kiakapale	289	241	Simbimali HC2	311	50	183	18.07.23	1	1	0	50	0		2 Hr Trek
		Laukanda	74	110	Simbimali HC2	218	50	123	18.07.23	1	1	0	50	0		2 Hr Trek
20	Kakemali.3		325	459		380	85	194		3	2	0	34	0		
		Raka	96	151	Simbimali HC2	193	47	103	18.07.23	1	1	0	15	0		2 Hr Trek
		Sipsmanda	118	174	Simbimali HC2	187	38	91	18.07.23	1	1	0	19	0		2 Hr Trek
		Rapunasa	110	134	Simbimali HC2					1						Included Under Raka
21	Keimanda		88	529		537	99	300		2	2	0	44	0		
		Keimanda		269	Simbimali HC2	291	50	163	16.07.23	1	1	0	30	0		2 Hr Trek
		Lomana	88	260	Simbimali HC2	246	49	137	16.07.23	1	1	0	14	0		2 Hr Trek
22	Kumasina 0			241		244	49	119		1	1	0	27	0		
		Pembeta		241	Simbimali HC2	244	49	119	16.07.23	1	1	0	27	0		2 Hr Trek
23	Kumasina 2			237		211	50	110		1	1	0	36	0		
		Ambankusa		237	Simbimali HC2	211	50	110	16.07.23	1	1	0	36	0		2 Hr Trek
24	Kumasina 3			0		251	50	142		1	1	0	9	8		
		Kumasina 3		0	Simbimali HC2	251	50	142	16.07.23	1	1	0	9	8		2 Hr Trek

ANNEX TWO

WESTERN HIGHLANDS PROVINCE
TAMBUL NEBILYER DISTRICT POPULATION 2023
LLIN DISTRIBUTION SUMMARY SHEET

	Altitude
	Above 2000 m
	1600-2000 m
	1200-1600 m
	Less than 1200m

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TAMBUL NEBILYER DISTRICT			66,076	66,076		50,115	10,504	25,824		75	75	51	7,102	695	74	0
MT GILUWE RURAL			34,348	15,344		0	0	0		0	0	0	0	0	0	
	1	Gihamu 1	854	1,313												
		Gihamu	485		Togoba HC											Road
		Enamong	364		Togoba HC											Road
		Gihamu C/S	5		Togoba HC											Road
	2	Gihamu 2	559	2,984												
		Tiria	108		Togoba HC											Road
		Malpunga	179		Togoba HC											Road
		Marapul	273		Togoba HC											Road
		Elpulga			Togoba HC											Road
		Mendei			Togoba HC											Road
	3	Mugu	778	1,058												
		Mugu	238		Paiakona HC											Road
		Tapolga	192		Paiakona HC											Road
		Kapil	348		Paiakona HC											Road
	4	Paiakona.1	671	1,028												
		Paiakona 1	336		Paiakona HC											Road
		Torika	331		Paiakona HC											Road
		Paiakona Community School	4		Paiakona HC											Road
	5	Paiakona.2	898	1,648												
		Paiakona 2	351		Paiakona HC											Road
		Pinje	253		Paiakona HC											Road
		Melpawakti	294		Paiakona HC											Road
	6	Torika	241													
		Lomongopugl	241		Paiakona HC											Road
	7	Kamuga 1	1,585													
		Kamuga 1 (Gaplel)	493		Paiakona HC											Road
		Landu	640		Paiakona HC											Road
		Kulilika	440		Paiakona HC											Road
		Kuskomb Community School	12		Paiakona HC											Road
	8	Kamuga 2	600													
		Kamuga 2	217		Paiakona HC											Road
		Pepka	235		Paiakona HC											Road
		Ambtul	148		Paiakona HC											Road
	9	Tomba	1,163													
		Tomba	626		Tomba HC											Road
		Porowe	538		Tomba HC											Road
	10	Tsinsibai.1	601													
		Karapia	385		Paiakona HC											Road
		Oamug	216		Paiakona HC											Road
	11	Tsinsibai.3	647													
		Oamug	302		Paiakona HC											Road
		Karapia	339		Paiakona HC											Road
		Oamug Community School	7		Paiakona HC											Road
	12	Tsinsibai 2	886													
		Wapukola	212		Paiakona HC											Road
		Siepeng	448		Paiakona HC											Road
		Kaimapulg	227		Paiakona HC											Road
	13	Tsinsibai 4	422													
		Oamulg	138		Paiakona HC											Road
		Kondis	137		Paiakona HC											Road
		Kumbapulg	147		Paiakona HC											Road
		Tsinsibai Comm. Sch	0		Paiakona HC											Road
	14	Karapangi	749	0												
		Karapangi	311	0	Tambul HC											
		Panjamu	240	0	Tambul HC											Road
		Ambapulg	198	0	Tambul HC											Road
	15	Pulgmong	700	0												
		Pulgmong	388	0	Tambul HC											Road
		Lama	312	0	Tambul HC											Road
	16	Kikuwa	596	0												
		Kikuwa	282	0	Tambul HC											Road
		Sakalem	314	0	Tambul HC											Road
	17	Pombol	446	0												
		Pombol	446	0	Tambul HC											Trek
	18	Kambalupulg	751	0												
		Kambalupulg	329	0	Tambul HC											Trek
		Kalapolo	422	0	Tambul HC											Trek
	19	Maltaka	716	0												
		Maltaka	338	0	Tambul HC											Trek
		Uka	364	0	Tambul HC											Trek
		Yombikul C/ School	14	0	Tambul HC											Trek
	20	Kamindi	713	0												
		Kamindi	302	0	Tambul HC											Trek
		Pausa	411	0	Tambul HC											Trek
	21	Pagapena 1	437	0												
		Pagapena 1	437	0	Tambul HC											Road
	22	Pagapena.2	767	0												

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		Tope	502	0	Tambul HC											Road
		Komambi	265	0	Tambul HC											Road
23	Pagapena 3		752	0												
		Pagapena 3	216	0	Tambul HC											Road
		Tambul Station	281	0	Tambul HC											Road
		Tambul Bible School	254	0	Tambul HC											Road
24	Opiapulug 1		398	0												
		Opiapulug 1	398	0	Tambul HC											Road
25	Opiapulugl.2		636	0												
		Kulumindi	266	0	Tambul HC											Road
		Kariwi	369	0	Tambul HC											Road
26	Anambo		468	0												
		Anambo	468	0	Tambul HC											Road
27	Laiagam 1		491	0												
		Pambakola	478	0	Tambul HC											Road
		Yano Community School	13	0	Tambul HC											Road
28	Laiagam 2		521	0												
		Laiagampena	285	0	Tambul HC											Road
		Tapangi	237	0	Tambul HC											Road
29	Malke 1		712	0												
		Malke	294	0	Tambul HC											Road
		Mapupu	202	0	Tambul HC											Road
		Lama	215	0	Tambul HC											Road
30	Malge 2		418	0												
		Pokari	418	0	Tambul HC											Road
31	Kagop 1		302	0												
		Koltapu	302	0	Kiripia HC											Road
32	Kagop 2		380	0												
		Gatakapena	273	0	Kiripia HC											Road
		Kolea	108	0	Kiripia HC											Road
33	Kagop 3		324	0												
		Alipe	58	0	Kiripia HC											Road
		Telma	266	0	Kiripia HC											Road
34	Alkena 1		622	0												
		Purunupul	244	0	Alkena HC											Road
		Kopiri	81	0	Alkena HC											Road
		Kapiapulug	297	0	Alkena HC											Road
35	Alkena 2		595	0												
		Alkena.2	183	0	Alkena HC											Road
		Olowang	232	0	Alkena HC											Road
		Kolomalel	180	0	Alkena HC											Road
36	Alkena.3		895	0												
		Kondapul	242	0	Alkena HC											Road
		Pokorapugl	129	0	Alkena HC											Road
		Elga	247	0	Alkena HC											Road
		Olowang	75	0	Alkena HC											Road
		Kondopi	202	0	Alkena HC											Road
37	lapauga		513	0												
		lapauga	144	0	Alkena HC											Road
		Papurale	226	0	Alkena HC											Road
		Kumbukupul	142	0	Alkena HC											Road
38	Wambul.1		616	0												
		Wambul	330	0	Alkena HC											Road
		Lama	257	0	Alkena HC											Road
		Tambul High School	28	0	Alkena HC											Road
39	Wambul.2		636	0												
		Konjilel	445	0	Alkena HC											Road
		Winjaka	190	0	Alkena HC											Road
40	Kopine		978	0												
		Kopine	79	0	Alkena HC											Road
		Olgiamb	177	0	Alkena HC											Road
		Makarapi	331	0	Alkena HC											Road
		Kulpena	257	0	Alkena HC											Road
		Numul	133	0	Alkena HC											Road
41	Bonga.1		554	1,441												
		Bonga	165		Gia HC											Road
		Manda	221		Gia HC											Road
		Kul	168		Gia HC											Road
		Wakal			Gia HC											Road
42	Bonga 2		312	460												
		Kumungapugl	198		Gia HC											Road
		Bethel	114		Gia HC											Road
43	Koroka		494	961												
		Koroka	261		Gia HC											Road
		Opule	122		Gia HC											Road
		Topila	112		Gia HC											Road
		Wapia			Gia HC											Road
44	Kiripia.1		637													
		Andomanda	175		Kiripia HC											Road
		Kiliwakul	271		Kiripia HC											Road
		Moka	191		Kiripia HC											Road
45	Kiripia.2		675													
		Napula	337		Kiripia HC											Road
		Yakip	135		Kiripia HC											Road
		Kiepul	203		Kiripia HC											Road

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46	Kiripia.3		539													
		Kiripia 3	445		Kiripia HC											Road
		Komakul	72		Kiripia HC											Road
		Kiripia C/Mission	22		Kiripia HC											Road
47	Tamal		1,304													
		Tamal (Kabo)	534		Kiripia HC											Road
		Wenda	241		Kiripia HC											Road
		Panie	289		Kiripia HC											Road
		Wakale	239		Kiripia HC											Road
48	Palnol		1,467													
		Palnol	475		Kiripia HC											Road
		Opule	534		Kiripia HC											Road
		Yokosil	457		Kiripia HC											Road
49	Gia.1		437	1,122												
		Tamigaka	111		Gia HC											Road
		Kumungapugl	158		Gia HC											Road
		Sipmango	51		Gia HC											Road
		Gia Community School	117		Gia HC											Road
50	Gia.2		645	1,174												
		Wapie	225		Gia HC											Road
		Akepangi	324		Gia HC											Road
		Waporo	97		Gia HC											Road
		Pograpugl	0		Gia HC											Road
51	Kombolga		664	1,150												
		Kombolga	243		Gia HC											Road
		Polipo	240		Gia HC											Road
		Komra	180		Gia HC											Road
52	Marapugl		584	1,005												
		Marapugl	266		Gia HC											I Day Trek
		Kombu	318		Gia HC											I Day Trek
			0													
NEBILYER RURAL			31,728	50,732		50,115	10,504	25,824		75	75	51	7,102	695	74	
1	Pabarabuk		1,005	2,071		2,331	475	1,159		3	3	3	422	2		
		Pabarabuk	391	598	Pabarabuk HC	467	92	231	16.07.23	1	1	1	99	0	NBC WH	Road
		Takilinga	436	1,004	Pabarabuk HC	1,036	213	519	16.07.23	1	1	1	157	2		Road
		Pabarabuk Ebm Mission	178	469	Pabarabuk HC	828	170	409	16.07.23	1	1	1	166	0	NBC WH	Road
2	Papekola		1,146	2,159		2,757	592	1,401		2	2	2	235	8		
		Papekola	614	857	Pabarabuk HC	1,062	200	537	13.07.23	1	1	1	142	8	NBC WH	Road
		Kaluwi	532	1,303	Pabarabuk HC	1,695	392	864	13.07.23	1	1	1	93	0	NBC WH	Road
3	Oamul		1,134	1,793		1,952	372	1,006		2	2	0	309	1		
		Oamul	600	1,205	Pabarabuk HC	1,063	195	524	13.07.23	1	1	0	181	0	NBC WH	Road
		Kumbu	534	588	Pabarabuk HC	889	177	482	13.07.23	1	1	0	128	1	NBC WH	Road
4	Kupeng		658	936		863	198	447		1	1	1	49	0		
		Kupeng	658	936	Pabarabuk HC	863	198	447	12.07.23	1	1	1	49	0	NBC WH	Road
5	Kongmul		445	1,951		1,823	374	930		1	1	1	194	3		
		Kongmul	445	1,951	Pabarabuk HC	1,823	374	930	13.07.23	1	1	1	194	3	NBC WH	Road
6	Malda		691	1,371		1,312	268	654		2	2	2	103	6		
		Tabaga	671	1,093	Pabarabuk HC	1,046	218	527	14.07.23	1	1	1	53	3	NBC WH	Road
		Tabaga Cath. Mission	20	279	Pabarabuk HC	266	50	127	14.07.23	1	1	1	50	3	NBC WH	Road
7	Teka 1		534	1,099		1,402	249	708		2	2	1	168	20		
		Teka 1	306	577	Pabarabuk HC	883	149	444	15.07.23	1	1	1	100	0	NBC WH	Road
		Koltum	228	522	Pabarabuk HC	519	100	264	15.07.23	1	1	0	68	20	NBC WH	Road
8	Tega 2		1,499	2,844		2,920	515	1,489		3	3	2	139	14		
		Tega 2	430	859	Pabarabuk HC	791	150	404	15.07.23	1	1	1	94	8	NBC WH	Road
		Kumak	479	530	Pabarabuk HC	452	90	224	16.07.23	1	1	1	45	6	NBC WH	Road
		Mulkona	590	1,456	Pabarabuk HC	1,677	275	861	15.07.23	1	1	0	0	0	NBC WH	Road
9	Kumbaia		1,159	1,010		809	148	428		1	1	1	141	31		
		Kumbaia	782	1,010	Togoba HC2	809	148	428	10.07.23	1	1	1	141	31	Eagle FM	Road
		Kumbu	377	0	Pabarabuk HC											Non- Existant
10	Kobuka		947	1,355		1,554	329	794		1	1	1	301	62		
		Kobuka	947	1,355	Togoba HC2	1,554	329	794	08.07.23	1	1	1	301	62	Eagle FM	Road
11	Yumbiga 1		624	1,017		1,061	218	557		1	1	1	148	55		
		Yumbiga 1	624	1,017	Togoba HC2	1,061	218	557	08.07.23	1	1	1	148	55	Eagle FM	Road
12	Yumbiga 2		455	2,114		1,889	348	986		4	4	4	319	48		
		Yumbiga 2	488		Togoba HC2	629	100	317	09.07.23	1	1	1	94	2	Eagle FM	Road
		Pakmong	190	235	Togoba HC2	199	50	107	09.07.23	1	1	1	46	14	Eagle FM	Road
		Waralge		802	Togoba HC2	659	99	342	10.07.23	1	1	1	93	17	Eagle FM	Road
		Ambul	265	589	Togoba HC2	402	99	220	07.07.23	1	1	1	86	15	Eagle FM	Road
13	Kailge 1		762	1,744		1,275	290	660		3	3	3	175	2		
		Kailge 1	402	1,280	Togoba HC2	1,024	227	527	07.07.23	1	1	1	117	2	Eagle FM	Road
		Kops 2	359	215	Togoba HC2	170	36	91	07.07.23	1	1	1	32	0	Eagle FM	Road
		Kailge Community School	1	249	Togoba HC2	81	27	42	07.07.23	1	1	1	26	0	Eagle FM	Road
14	Kailge 2		347	473		390	72	196		1	1	1	54	2		
		Ommapena	347	473	Togoba HC2	390	72	196	07.07.23	1	1	1	54	2	Eagle FM	Road
15	Irewepa		468	668		551	112	279		2	2	0	69	0		
		Irewepa	341	484	Pabarabuk HC	375	72	185	16.07.23	1	1	0	69	0	NBC WH	1 Day Trek
		Kapolame	127	184	Pabarabuk HC	176	40	94	17.07.23	1	1	0	0	0	NBC WH	1 Day Trek
16	Gomi		399	1,113		1,143	210	563		2	2	0	120	14		
		Gomi	399	758	Pabarabuk HC	752	138	369	17.07.23	1	1	0	120	14	NBC WH	1 Day Trek
		Ambupane		355	Pabarabuk HC	391	72	194	17.07.23	1	1	0	0	0	NBC WH	2 Day Trek
17	Tapia		834	773		913	224	446		2	2	0	220	0		
		Tapia	400	372	Pabarabuk HC	521	124	250	11.07.23	1	1	0	120	0	NBC WH	Road/Trek
		Kombra	435	401	Pabarabuk HC	392	100	196	11.07.23	1	1	0	100	0	NBC WH	Road/Trek
18	Korkor		707	623		829	186	435		2	2	1	44	0		
		Korkor 1	165	333	Pabarabuk HC	485	109	258		1	1	1	0	0	NBC WH	Road

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		Korkor 2	542	290	Pabarabuk HC	344	77	177	13.07.23	1	1	0	44	0	NBC WH	Road
19	Paraka		1,418	1,790		1,431	317	737		2	2	1	156	0		
		Paraka	578	965	Pabarabuk HC	698	158	355	11.07.23	1	1	0	156	0	NBC WH	Road/Trek
		Kikua	840	825	Pabarabuk HC	733	159	382	11.07.23	1	1	1	0	0	NBC WH	1.5 Day Trek
20	Alimp 1		1,888	1,123		1,218	266	611		2	2	0	240	19		
		Alimp 1	1,040	948	Pabarabuk HC	1,162	250	581	11.07.23	1	1	0	224	19	NBC WH	Road
		Alimp Plantation	848	175	Pabarabuk HC	56	16	30	11.07.23	1	1	0	16	0	NBC WH	Road
21	Alimp 2		589	1,073		879	181	450		1	1	0	140	16		
		Andakelkang	589	1,073	Pabarabuk HC	879	181	450	11.07.23	1	1	0	140	16	NBC WH	Road
22	Kumbaga		1,199	1,388		816	136	417		1	1	0	42	0		
		Kumbaga	1,167	1,388	Pabarabuk HC	816	136	417	10.07.23	1	1	0	42	0	NBC WH	Road
		Wagil Plantation	33	0	Pabarabuk HC											Non- Existant
23	Wagil		1,268	876		1,233	242	632		2	2	1	112	2		
		Numul	724	584	Pabarabuk HC	800	150	412	08.07.23	1	1	0	45	0	NBC WH	Road
		Wagil	544	293	Pabarabuk HC	433	92	220	10.07.23	1	1	1	67	2	NBC WH	Road
24	Agega		885	963		1,291	249	668		3	3	0	162	0		
		Olk	885	718	Pabarabuk HC	730	150	383	08.07.23	1	1	0	79	0	NBC WH	Road
		Tonga		245	Pabarabuk HC	208	49	108	10.07.23	1	1	0	35	0	NBC WH	Road
		Agega		NEW	Pabarabuk HC	353	50	177	10.07.23	1	1	0	48	0	NBC WH	
25	Olk		492	1,342		1,331	322	697		2	2	1	260	29		
		Ogapup	466	685	Pabarabuk HC	661	175	351		1	1	0	135	25	NBC WH	Road
		Korgua Plantation	26	657	Pabarabuk HC	670	147	346	08.07.23	1	1	1	125	4	NBC WH	Road
26	Koibuga		1,259	1,706		1,612	360	855		3	3	0	204	53		
		Koibuga	348	533	Pabarabuk HC	425	100	221	08.07.23	1	1	0	24	3	NBC WH	Road
		Koilnil	393	761	Pabarabuk HC	439	111	236	08.07.23	1	1	0	51	5	NBC WH	Road
		Gamil	518	412	Pabarabuk HC	748	149	398	08.07.23	1	1	0	129	45	NBC WH	Road
27	Punganjipup		1,244	2,277		2,034	463	1,092		3	3	3	418	12		
		Punganjipup 1	466	659	Togoba HC2	573	140	304	10.07.23	1	1	1	140	0	Eagle FM	Road
		Punganjipup 2	517	1,111	Togoba HC2	872	204	467	10.07.23	1	1	1	167	0	Eagle FM	Road
		Opral	261	507	Togoba HC2	589	119	321	10.07.23	1	1	1	111	12	Eagle FM	Road
28	Dumakona		999	1,657		1,628	332	877		2	2	2	307	19		
		Dumakona	414	528	Togoba HC2	461	92	241	11.07.23	1	1	1	90	13	Eagle FM	Road
		Kuwalga	586	1,129	Togoba HC2	1,167	240	636	11.07.23	1	1	1	217	6	Eagle FM	Road
29	Kongra		1,696	3,304		2,916	629	1,526		7	7	7	596	67		
		Kongra	342	594	Togoba HC2	562	110	296	11.07.23	1	1	1	106	55	Eagle FM	Road
		Kekral	329	649	Togoba HC2	509	89	256	11.07.23	1	1	1	85	2	Eagle FM	Road
		Kamda	337	297	Togoba HC2	360	64	180	11.07.23	1	1	1	55	0	Eagle FM	Road
		Tepuna	215	278	Togoba HC2	218	48	116	11.07.23	1	1	1	49	0	Eagle FM	Road
		Angil	414	658	Togoba HC2	584	144	313	13.07.23	1	1	1	130	9	Eagle FM	Road
		Ulga Community School	59	173	Togoba HC2	142	24	75	11.07.23	1	1	1	22	1	Eagle FM	Road
		Dun		656	Togoba HC2	541	150	290	12.07.23	1	1	1	149	0	Eagle FM	Road
30	Kend		1,215	2,761		2,543	552	1,310		4	4	4	319	18		
		Kend (Kumb)	556	1,422	Togoba HC2	1,025	255	536	12.07.23	1	1	1	211	4	Eagle FM	Road
		Kunmong	617	802	Togoba HC2	887	179	451	12.07.23	1	1	1	88	0	Eagle FM	Road
		Kilma Plantation	41	0	Togoba HC2	132	19	65	12.07.23	1	1	1	19	1	Eagle FM	Road
		Kilma	0	538	Togoba HC2	499	99	258	12.07.23	1	1	1	1	13	Eagle FM	Road
31	Arowa		1,312	1,599		1,461	437	767		3	3	3	297	108		
		Arowa	414	327	Togoba HC2	398	89	208	13.07.23	1	1	1	94	44	Eagle FM	Road
		Arowagai	401	460	Togoba HC2	436	100	238	13.07.23	1	1	1	100	46	Eagle FM	Road
		Kuga	498	812	Togoba HC2	627	248	321	18.07.23	1	1	1	103	18	Eagle FM	Road
32	Waibip		923	1,892		2,217	453	1,138		3	3	3	358	75		
		Waibip (Kamda)	556	1,438	Togoba HC2	1,675	326	863	13.07.23	1	1	1	257	53	Eagle FM	Road
		Munduka	367	453	Togoba HC2	440	106	223	14.07.23	1	1	1	81	18	Eagle FM	Road
		Walimb		NEW	Togoba HC2	102	21	52	09.07.23	1	1	1	20	4	Eagle FM	
33	Keranum		533	1,284		1,265	294	660		1	1	1	200	0		
		Keranum	533	1,284	Pabarabuk HC	1,265	294	660	14.07.23	1	1	1	200	0	NBC WH	Road
34	Kolgmul		992	582		466	91	249		1	1	1	81	9		
		Kolgmul	992	582	Togoba HC2	466	91	249	12.07.23	1	1	1	81	9	Eagle FM	Road