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ROAD CONSTRUCTION EMPLOYMENT IN PAPUA NEW GUINEA

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Abstract

The focus of this paper is on employment in road construction and maintenance in five provinces in PNG. It is based on consultations with national and provincial government departments, private contractors and training providers. Road construction provides employment opportunities for a considerable number of Papua New Guinean men, and with companies drawing their workforce from communities close to the project sites, many rural Papua New Guineans will at some point in their lives find casual employment in the area. However, most employment opportunities are short term and very few Papua New Guineans build a career in construction. The quality of formal training is generally poor and as a result, few Papua New Guineans have formal qualifications in the field.

Many construction companies employ foreign workers at managerial and supervisory levels including as engineers and technicians while government departments with responsibility for roads struggle even more to find qualified staff. The increasing number of foreign construction companies operating in PNG has become a concern in all case study provinces because foreign companies often bring the bulk of their workforce from overseas, even for lower skilled positions. This practice adversely affects employment opportunities of rural Papua New Guineans.

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ROAD CONSTRUCTION EMPLOYMENT IN PAPUA NEW GUINEA¹

By Carmen Voigt-Graf, Chris Banga, Matthew Dornan and Ronald Sofo²

Introduction

Papua New Guinea (PNG) has recorded impressive GDP growth rates since its political independence in 1975, with significant periods of consecutive growth notably between 2000 and 2008. Economic growth has largely been built around the extractives industry, including most recently the PNG LNG project. In spite of this there have been relatively few lasting employment benefits for the population. It is estimated that in 2014, the total working-age population in PNG was 4.6 million but only 465,000 people were employed in the formal economy, while the vast majority were employed in the informal and subsistence economy (Jones & McGavin, 2015). At the same time, skill shortages are widespread and many skilled positions are filled by foreign workers.

Most formal employment opportunities are located in urban centres and around mining sites. Road construction, rehabilitation, upgrading and maintenance present some of the few employment opportunities for rural Papua New Guineans as most companies recruit casual workers from villages alongside road projects. Yet, employment on road projects has not been researched in depth in PNG. The focus of this paper is on employment issues in road construction and maintenance in five provinces. It will fill a gap in the literature by investigating road employment in private businesses and government departments, labour supply, skill shortages, the role of provincial Labour Offices and the employment of foreign workers. It is part of a more comprehensive research project on non-national roads' management and employment in PNG in five of PNG's 22 provinces. The decentralisation of government functions from the national to subnational levels is linked to a decentralisation of employment opportunities.

¹ This paper is an outcome of the research project 'Provincial roads in Papua New Guinea: Issues of management and employment' which was funded under the NRI-ANU Research Partnership. The project was managed at PNG National Research Institute (NRI) by Carmen Voigt-Graf, and involved researchers from NRI and the Australian National University. Other NRI Issues Papers based on the project, focusing on the road management component of the project, will be published in due course.

² Carmen Voigt-Graf drafted this paper and is the primary and corresponding author. The three co-authors were part of the research team and were involved in conducting the fieldwork of the project.

This paper is based on consultations with national and provincial government departments, private contractors and training providers in the provinces of Eastern Highlands, Gulf, Madang, Milne Bay and New Ireland (see List of interviews).

Overview of the national labour market

Employment in PNG's (road) construction industry

The lack of reliable and up-to-date labour market data and the non-existence of a labour market information system hampers labour market analysis in PNG. The most recent employment data are from the 2011 Population Census. Based on the census, a brief summary of the employment situation in PNG's construction industry is provided to set the context. The construction industry includes building construction and construction of roads and other infrastructure. No information specifically on road construction is available.

In 2013, the share of the construction industry was 9.6 percent of GDP (ADB, 2016). This was an increase from 6.7 percent in 2001 and 9.0 percent in 2011 (Jones & McGavin, 2015: 127), which was linked to the construction industry's crucial role during the construction phase of the LNG project (2007 to 2013).

Table 1 includes both formal and informal employment and shows that the construction industry was the third largest industry in terms of employment after 'agriculture, hunting and forestry', and 'wholesale and retail trade'. In 2011, 64,147 people worked in construction, which was equivalent to 2.0 percent of all workers, 8.1 percent of the non-agricultural workforce and 12.5 percent of the non-agricultural male workforce.

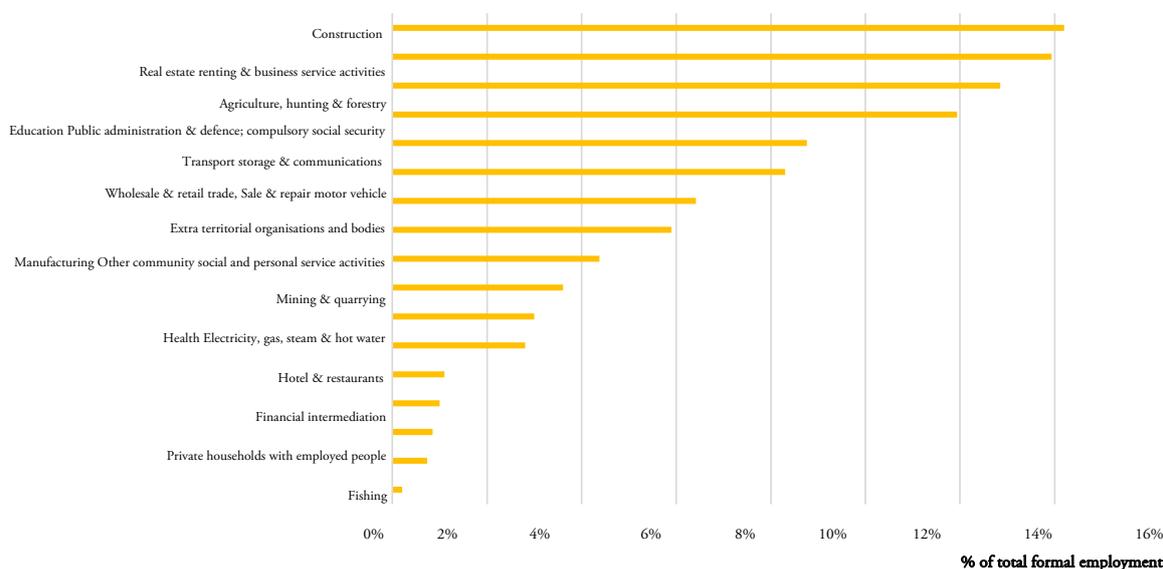
Table 1: People employed in PNG, disaggregated by selected industry and gender, 2011 Census

Industry category	Men		Women		Total	
	People	%	People	%	People	%
Agriculture, hunting and forestry	1,205,628	71.1	1,276,981	81.0	2,482,610	75.9
Mining and quarrying	19,842	1.2	4,901	0.3	24,743	0.8
Manufacturing	17,028	1.0	8,215	0.5	25,243	0.8
Construction	61,010	3.6	3,137	0.2	64,147	2.0
Wholesale and retail trade	171,167	10.1	188,056	11.9	359,223	11.0
Education	34,899	2.1	24,434	1.5	59,333	1.8
Transport, storage and communications	35,876	2.1	3,076	0.2	38,952	1.2
Other	149,324	8.8	68,452	4.30	217,776	6.7
Total	1,694,774	100.0	1,577,252	100.0	3,272,027	100.0

Source: National Statistical Office (2013) Table D4.

Of the 3.3 million people who were employed in 2011, only 261,682 men and 99,050 women were working in the formal economy. In 2011, construction was the main industry for male employees, employing around 14 percent of all male workers in the formal economy (see Figure 1). This points to the considerable importance of the construction industry for Papua New Guinean men.

Figure 1: Male formal employment by industry, 2011



Source: Jones and McGavin, 2015.

Skill supply and training

PNG has been experiencing rapid population growth. The population of PNG had doubled in 20 years reaching 7.3 million in 2011 and is projected to increase to 10 million by 2030. Less than 10,000 of the approximately 84,000 school leavers who enter the labour force per year are absorbed into the formal labour market (Parker et al., 2012), pointing to

a considerable oversupply of low-skilled labour. Places in higher and technical education institutions do not match the number of school leavers and the training that does not meet the requirements of businesses (e.g. Parker et al., 2012).

There are manifold reasons for this in technical and vocational areas including poor training facilities, low quality of teachers, outdated curricula, lack of private sector involvement, and fragmented responsibility for technical and

vocational education and training (TVET) across various government departments.

Vocational training centres (VTCs) provide very basic vocational training. Higher-level training is provided in PNG's eight technical and business colleges that deliver one-year certificate-level courses and two-year diploma courses (OHE and DNPM, 2010).

To encourage companies to provide training, the government charges all companies with an annual payroll in excess of K200,000 a training levy of 2 percent of the company's payroll. Companies can either pay the training levy or send documentation of their training expenses which are offset against the levy. However, the training levy system is not enforced systematically or consistently, and many companies are not even aware it exists.

The National Apprenticeship and Trade Testing Board (NATTB)³ manages a small apprenticeship programme in some trades (motor mechanics, electrical, carpentry, plumbing, metal fabrication and welding, maintenance fitting and machining). Apprenticeships are for four years and involve training at technical colleges for eight weeks per year. Apprenticeship programmes are costly for employers and as such, few companies offer apprenticeships. In 2014, only 61 apprentices completed their training and in 2015, some 150 new apprenticeship contracts were signed country wide (DLIR, 2015). As such, the apprenticeship programme is far too small to fill the existing skill gaps.

The NATTB also holds responsibility for a trade testing system which provides certification for occupational performance standards regardless of how individuals have achieved the standards (DLIR, 2015). This offers workers without formal qualifications the opportunity to receive formal certification of their skills. Trade testing is offered in carpentry, electrical, welding, fitting and turning, mechanical fabrication, plumbing, heavy machinery fitting, automotive mechanics and diesel fitting. The number of trade tests is low, largely because of shortfalls in funding for NATTB officials to travel to trade testing sites and conduct the trade tests.

With NATTB approval, companies can conduct on- and off-the-job training in a wide range of courses. Examples of companies providing NATTB approved training include Ok Tedi Mining Limited, Ela Motors, Ramu Sugar Limited, Newcrest Mining Limited and South Pacific Brewery. Overall, the mining industry and resource projects have invested most heavily in training in response to acute skill deficiencies and their remoteness from technical colleges (Parker et al., 2012).

Given the small number and poor quality of government training institutions, the number of private training providers has expanded over the last two decades, particularly offering computer training and business courses. The National Training Council (NTC)⁴ assesses these institutions, courses and trainers before registering them. There are now approximately 200 registered training organisations. After

³ NATTB is a statutory body under the Department of Labour and Industrial Relations (DLIR).

⁴ NTC is a statutory body under DLIR.

their registration, little follow up is done and the NTC keeps no record of the number of organisations by sector or of total enrolments and graduations.

Table 2 shows the number of graduates from government institutions by type of higher education institution and field of study in 2013. Since little enrolment and graduation data is available from private providers, comprehensive information on skill supply by area of training is not available in PNG. Universities graduated the largest number of students (44% of graduates), followed by technical colleges (23%). Graduate distribution by key field of study shows that education had the highest proportion of graduates (32%), followed by TVET (26%), and business and management (13%). Only 1 percent of students graduated in engineering.

The number of TVET graduates in Table 2 includes graduates from business colleges specialised in areas such as business, IT and tourism, rather than in the so-called 'hard trades'. Overall, the number of graduates from government institutions in the hard trades and in engineering is insufficient to meet the demands of PNG's economy, which is built on the growth industries of mining and construction. The mining industry addresses this shortfall by providing in-house training.

Labour market demand and skill shortages

The private sector employs a considerable number of foreign workers in order to fill positions in skill shortage areas. The number of foreign workers by occupation and industry is the best available indicator for skill shortages and labour demand in PNG's private sector. The Department of Labour and Industrial Relations (DLIR) maintains a database of work permits issued per year and of active work permits at any given time. The most recent annual work permit data available for 2014 and the latest stock data of work permit holders is from May 2015. The number of work permits issued to foreign workers peaked in 2012 at the height of PNG LNG project construction and has declined since (Voigt-Graf, 2016).

Many foreign workers work in technical and trades occupations due to severe skill shortages in these areas. As already discussed, this is due to a combination of training insufficient numbers of workers and the poor quality of training in PNG. In May 2015, 41,096 foreign workers held work permits for PNG's private sector. The specific industries in which these workers were engaged were known only for 18,901 workers. Of these, 3,937 worked in 'construction and infrastructure'. Only 'forestry and logging' employed a larger number of foreign workers. Table 3 shows the economic sub-sector and occupations of the 3,937 foreign workers in construction and infrastructure.

Table 2: Graduates from government institutions by field of study and type of higher education institution, 2013

Key study field	University	Business & technical college	Primary teacher college	Nursing college	Miscellaneous college	Total	Total (%)
Science	371	169	0	0	167	707	8%
Engineering	131	0	0	0	0	131	1%
Medicine, dentistry & health sciences	369	0	0	0	0	369	4%
Nursing	163	0	0	110	0	273	3%
Environment & natural resources	166	0	0	0	23	189	2%
Business management	953	0	0	0	290	1,243	13%
Education	1,220	59	1,570	0	154	3,003	32%
Agriculture & fisheries	275	0	0	0	10	285	3%
Humanities & social sciences	346	0	0		129	475	5%
Law	108	0	0	0	80	188	2%
TVET	0	2,283	0	0	170	2,453	26%
Total	4,102	2,511	1,570	110	1,023	9,316	100%

Source: OHE, 2014.

As indicated in Table 2, most foreign workers in the construction industry work as managers of various descriptions, technicians, trade supervisors and skilled trade workers.

As already discussed, in 2011, only 2 percent of employed people in PNG worked in the construction industry, compared with 21 percent of foreign workers working in this industry. These figures point to a severe shortage of construction-related skills which is more pronounced than in many other industries.

The Labour market in the Provinces

Employment and skill shortages at the provincial level

Employment opportunities in the formal economy in the provinces are largely restricted to positions in different levels of government (provincial offices of national departments, as well as provincial, district and local-level administrations), wholesale and retail trade, as well as to mining sites, logging sites and plantations. Some opportunities also exist in academic institutions, other private sector businesses and NGOs. In addition, there is consistent employment

Table 3: Number of work permit holders in construction and infrastructure by sub-sector and selected occupation, May 2015

Economic sub-sectors	Number of foreign workers	Selected occupations*	Number of foreign workers
Building construction	1,190	Building and construction managers Technicians and Trade coordinators and supervisors Professional builders	118 389 116
Heavy and civil engineering construction	1,027	Technicians and Trade coordinators and supervisors Specialist heavy machinery mechanics and Technicians Professional builders	270 79 69
Construction services	1,720	Technicians and Trade coordinators and supervisors Operations managers Specialist heavy machinery mechanics and Technicians	440 105 138

Source: DLIR work permit data.

* The table lists only selected occupations within the three economic sub-sectors. This is why the numbers do not match those of the economic sub-sector.

in construction with occasional spikes during major infrastructure or building projects. The extent and nature of skill shortages depend on the economic profile and the existence of training institutions in each province. A short labour market overview of the five provinces where fieldwork for this project was conducted will be provided. Table 4 includes background data on the provinces.

provincial labour officers in Goroka:

“There is skills shortage in the province, but then it depends on the level of industries that will generate employment. There is not much happening in the province, except for agricultural activities including coffee and fresh produce.”

Table 4: Overview of five case study provinces

Province	Population (2011)	Provincial capital	Major commercial industries	Government higher education institutions	Private higher education institutions
Eastern Highlands	579,825	Goroka	Coffee, agriculture	University of Goroka, Goroka Technical College, Highlands Regional School of Nursing	International Training Institute ⁵
Gulf	158,197	Kerema	Agriculture, forestry	-	-
Madang	493,906	Madang	Fisheries, mining, agriculture	Madang Technical College	Divine Word University
Milne Bay	276,512	Alotau	Logging, palm oil, agriculture, tourism	-	International Training Institute
New Ireland	194,067	Kavieng	Mining, logging, palm oil, agriculture	National Fisheries College, Kavieng campus, Port Moresby Business College	International Training Institute

Eastern Highlands Province

The economy of Eastern Highlands Province relies predominantly on subsistence agriculture with surplus produce (fresh vegetables, chickens, pigs and others) being sold at local and national markets. Fresh vegetables such as broccoli, carrots and tomatoes are often freighted to Lae and Port Moresby where the demand is high. With ideal climatic conditions, the province is a leading producer of Arabica coffee beans. The production of coffee is dominated by smallholder farmers who grow the crop on their customary land.

There are few employment opportunities in the formal economy outside of government, retail and wholesale trade and the transport sector. Infrastructure projects provide some employment in construction. As such, specific skill requirements vary and are linked to projects at the time. In a recent employer survey on demand for vocationally trained workers in six provinces including Eastern Highlands, Imbun (2015) found that Eastern Highlands’ shortage of trades people was not as serious as in the other provinces. This was confirmed in interviews of both government officials and private sector stakeholders in the province. According to

There was a shortage of mechanics (mechanical repairs, heavy diesel mechanics, drivers) and there were skill shortages in tourism and hospitality including in comparatively low-skilled areas such as catering, housekeeping, bed making and flower arranging. The higher education institutions in the province include the University of Goroka, Goroka Technical College and the Highlands Regional School of Nursing.

Gulf Province

Gulf Province is one of PNG’s least developed provinces, partly as a result of the lack of roads connecting rural households to markets. Since the rehabilitation of the road from the provincial capital Kerema to Port Moresby, economic activities in Kerema have increased dramatically. Betel nut has become the biggest cash crop in Gulf, which is sold in Port Moresby. Logging is another source of economic activity in Gulf, with logging camps which are often remote, a source of employment for unskilled workers.

⁵The International Training Institute was established in Goroka in 2017, after our fieldwork in 2016.

The province is endowed with hydrocarbon resources and will host the second LNG liquefied natural gas project which will boost construction activities and employment opportunities.

According to the provincial Labour Office in Kerema, the construction company Dekenai, which was contracted to rehabilitate the segment between Epo and Malalaua of the Port Moresby-Kerema road, has become the main private employer in Gulf Province.

The only other major company is the Malaysian logging company Rimbunan Hijau with logging camps all over Gulf Province. Asian-owned shops also provide some employment opportunities.

Gulf Province lacks skilled people and most skilled workers come from elsewhere. As an official from the Department of Works (DOW)⁶ explained, it is very hard to attract and retain skilled workers:

“There is no refrigeration person, no mechanic, no radio technician to fix TVs, no IT person – for all these skills you need to go to Port Moresby... The reason for this is because of the lack of services in Kerema. Some people are now settling in Kerema because the road to Port Moresby has been re-established. BSP Bank set up a branch in 2014 for the same reason... Before, it took us days to travel by road to Port Moresby. We all slept on the road many times... There was a mass exodus of skilled people as a result.”

One of the major challenges associated with recruiting skilled workers such as surveyors and engineers from outside is to find housing for them. An official from the Provincial Administration explained:

“One engineer here had only recently completed his studies at Unitech. He is from Eastern Highlands and he has been here for one year. I’ve still not been able to get a house for him... The problem is that Kerema town cannot expand. The land on the outskirts is owned by traditional owners. So it is very hard to house people who are not from here. They have to stay in guesthouses which is not good.”

One reason for severe skill shortages in Gulf Province is the lack of training institutions. There are only two VTCs (located in Malalaua and Baimuru) providing basic training in carpentry, plumbing, mechanical and electrical skills. There are no higher education institutions in the province.

Madang Province

The economy of Madang Province is dependent on agriculture (in particular cocoa, copra and cattle), mining,

⁶The Department of Works (DOW) is the government’s implementing agency for infrastructure in PNG. It is the only government department with an office in each province.

logging and fishing. According to the provincial Labour Office, the major employers in the province are the Ramu Nickel Mine (over 4,000 workers), a timber company (2,000–3,000 workers), the fishing company RD Fishing PNG Ltd (some 4,000 workers), and RD Tuna Cannery (over 5,000 workers). Building construction also provides employment opportunities although figures are not available.

A major development in Madang Province is the Pacific Marine Industrial Zone (PMIZ) which is a national government project located on the coast approximately 30 km north of Madang. It is in the construction phase and is expected to eventually employ some 30,000 people at a major wharf and tuna processing plants. It is also expected that a four-lane road will be built from Madang to the PMIZ by a private contractor.

In contrast to widespread skill shortages in Gulf Province, there are few skill shortages in Madang, according to a labour official. On the contrary, the limited skilled employment opportunities mean that many graduates from university and business and technical colleges cannot find work. As a labour official said:

“The employment situation in Madang Province is critical. You currently have many young university graduates but no jobs... The situation is somehow different in technical areas. We have some graduates from Unitech. At least they often find jobs in mining... Employment opportunities come and go with major developments and projects in infrastructure and mining.”

Labour officials identified technical skills, especially in operating machines, and electrical skills as the most serious skill shortage areas in Madang Province. Compared with the other case study provinces, Madang is well served by training institutions. This partly explains why there are comparatively few skill shortage areas and why many graduates cannot find work.

Madang is home to one of PNG’s private universities, Divine Word University, and to one of four technical colleges. Madang Technical College offers diplomas in business studies (accounting and office administration) and certificates in office administration, building construction, plumbing, sheet metal, furniture timber trade, painting, sign writing, carpentry and tourism (tour guiding). However, the college receives just enough funding to pay for the salaries of teaching staff. There are no funds to maintain or upgrade the facilities, which are in a poor state. The skills of college graduates are far below the requirements of industry. At the same time, Madang Technical College is not affiliated with any university and there is no clear pathway for students to

upgrade their qualifications. In contrast, most graduates from the government's Maritime Training College in Madang find employment in the shipping industry. The college is PNG's only maritime college offering internationally recognised maritime training.

Another government training institution in Madang is the Department of Works's (DOW) Civil Training Centre. The centre is PNG's only training centre for technicians, technical officers and engineers from DOW and the Provincial Works and Supply Unit⁷, specialising in road maintenance and bridges. The centre was established around 1978 and used to award certificates in civil engineering that were a pathway into diploma and degree courses. At the time of our visit the centre was about to undergo major restructuring and rehabilitation. Only some short courses were being offered.

In Madang Province, the mismatch between graduates of the province's training institutions and the requirements of the economy are more obvious than in the other provinces. As a consequence, the number of foreign workers is high and has caused some resentment. A lecturer at Madang Technical College said:

“Our graduates cannot find work. Many go back to their villages. We try to prepare them for this at the College... In my opinion, the government should reserve some activities for locals. Our graduates should be given some opportunities... It's a big issue in Madang. Foreigners have taken over many activities and most small businesses... The problem is that Chinese businesses employ Chinese workers but they should be using local labour.”

Milne Bay Province

The economy of Milne Bay is dependent on palm oil plantations, small holder cocoa and copra cultivation, logging and tourism. New Britain Palm Oil is the biggest employer in Milne Bay, directly employing over 3,000 workers in Milne Bay Estate, which is one of five palm oil plantations operated by New Britain Palm Oil in PNG. Although largely requiring low-skilled workers, Milne Bay Estate struggles to find and retain enough workers. As the Estate Manager explained:

“There is little incentive for Papua New Guineans to earn high wages as they have to share their income among wantoks. We have therefore had several resignations from relatively senior people in their mid-40s... There is also a general lack of work ethic. For example, we require a 90

⁷The provincial department responsible for road building and maintenance is called by different names in different provinces. It is known as the Provincial Works and Supply Unit in Madang and New Ireland Provinces, the Transport and Civil Works Division in Eastern Highland Province, Technical Services in Gulf Province, and Provincial Works Supervision Unit in Milne Bay Province.

percent turnout to work during harvesting times but we only achieve 82 percent. The turnout of upkeep workers is even lower, although these workers are crucial... In recent years it has become even harder to find workers because people are now less willing to work and live on plantations. They prefer an urban lifestyle.”

The estate manager mentioned the need to mechanise in order to remain competitive and compensate for the high labour costs because even if workers were only paid the minimum wage, labour costs were high as the company also provided housing, power, water, health, education, superannuation and sick leave.

Milne Bay Estate's difficulties recruiting workers is in direct contrast with the general labour market situation in Milne Bay which is characterised by a severe lack of employment opportunities at all skill levels. As a labour official said:

“We have some Uni graduates who have returned to Alotau after completing university who now work as drivers or shop assistants. And this is if they are lucky.”

While local graduates struggle to find employment, there are a considerable number of foreign workers in Alotau. The provincial Labour Office estimated the number of foreign work permit holders in Alotau at around 200 while the number in the province was unknown. Within Alotau, the construction company Nawae is the largest employer of foreign workers (54), followed by the wholesaler and retailer Alotau Enterprises (38), the construction company Mecca 44 (10), and the restaurant Chongs (10). Most foreign work permit holders are employed in management positions and as engineers. The majority are Filipinos, Malaysians and Bangladeshis.

Outside of Alotau, many foreign workers are employed in logging operations. The main logging companies in Milne Bay are the foreign-owned companies Rimbunan Hijau and Saban Enterprises, which both employ a large but unknown number of foreign workers.

The only government training institutions in Milne Bay are VTCs. One centre is located in each of the four districts and these provide basic training in areas such as carpentry and hospitality. There are no trade testing facilities in Milne Bay. Workers who want to have their skills officially recognised have to travel to Port Moresby to undergo trade tests, which is prohibitively expensive to do.

Most workers in Milne Bay have no formal qualifications, which, however, was not an issue of concern for either the provincial Labour Office or for private businesses. During interviews, it was stressed that people in Milne Bay were

highly skilled craftspeople and there were enough skilled plumbers, electricians and carpenters, although they might not have any formal qualifications. In the words of a labour official:

“They pick up the necessary skills very quickly. This is because of the expert boat building skills in the province that have been passed down from generation to generation... People in Milne Bay are naturally good at technical stuff... It doesn’t matter whether or not they have formal qualifications.”

Some companies, such as Nawae and Milne Bay Estate, provide internal training. Milne Bay Estate also sends some of its workers on external training, and the company has 20 apprentices in mechanical, electrical and diesel fitting. It has recently been accredited as a training provider by NTC offering a range of NTC-accredited training courses.

With no government higher education institutions in Milne Bay, the privately owned International Training Institute (ITI) is filling a gap. ITI has branches in eight locations around PNG and offers full-time and online courses. In Alotau, ITI was established in August 2015, enrolling a first batch of 42 students in 2015. The student intake increased to 140 in 2016. ITI offers three different 17-week certificate courses (accounting, HR management, computing) as well as a 34-week diploma course (accounting). The increase in student numbers indicates the demand for training, although it is unclear whether training will lead to formal employment, given the dearth of employment opportunities in the province.

Overall, the main skill gaps in Milne Bay, according to the Labour Office, are in the areas of managerial, supervisory and engineering skills. Whether training provided at ITI will lead to the localisation of some managerial and supervisory roles is questionable. A labour official explained that it is not merely an issue of skills but also of culture and acceptance:

“Locals from Milne Bay get jealous when they have a supervisor that is from here and is like them. They will not follow instructions. Many companies have to hire outsiders for managerial and supervisory positions because otherwise the workers will not listen to them... We had one example of a construction company where the workshop manager position was localised after a foreigner had been in the position for many years. This didn’t work out because the workers didn’t listen to their new supervisor. The company came back to us and asked to de-localise the position again. We agreed to this... It is a common problem... It’s a pity because sometimes qualified locals cannot be given management roles because of these

cultural issues.”

New Ireland Province

According to the provincial Labour Office, the main employers in New Ireland are the provincial government, logging, gold mining and the palm oil industry. There are four major Asian-owned logging companies in New Ireland, which operate mostly in Namatanai and on New Hanover Island and employ between 2,000 and 3,000 workers. The palm oil industry also employs between 2,000 and 3,000 workers. The two gold mines Lihir and Simberi employ thousands of workers but exact figures are unknown. The tourism industry creates some employment opportunities with some guesthouses along the Boluminski Highway and on New Hanover. There are also employment opportunities in construction, with numbers fluctuating depending on the scale of current projects.

The main skill gaps are in the construction trades and include carpenters, plumbers and electricians. However, most respondents agreed that skill shortages was not a major issue in New Ireland. As an official from the provincial administration argued:

“I don’t see any difficulties attracting more technical people to Kavieng. Kavieng is an attractive place with an urban character. Many people want to move here. If there are skill gaps, we can easily fill them.”

The only government training institutions in New Ireland are four VTCs offering basic training. At present there are no pathways for graduates to upgrade their vocational qualifications and most VTC graduates return to their villages because their qualifications are insufficient for formal employment. Port Moresby Business College opened a training facility in one of the VTCs offering courses in accounting and IT.

As well as these government institutions, the owner of Lihir mine, Newcrest, operates a training institution for the mining workers and other Lihirians who aspire to work in the mine. Government trade tests are conducted by NATTB at Newcrest’s training centre. This is the only trade testing centre operated in the province.

In addition, ITI opened a campus in Kavieng in 2015. Labour officials raised concerns about ITI duplicating courses that were already offered by Port Moresby Business College when the real need is in hard trades, which currently are only taught at a basic VTC level. In contrast, there is an oversupply of graduates in business studies.

In sum, all five provinces are characterised by skill shortages as well as a lack of formal employment opportunities.

However, the extent and gravity of skill shortages varies considerably. Gulf Province is short of all skills which is partly due to a lack of training institutions. The province also fails to attract and retain skilled workers because of its remoteness and lack of development. In Eastern Highlands, skill shortages are widespread and exist even at relatively low levels. Given its predominantly agricultural economy and income opportunities through the cultivation of cash crops, the lack of skills in other areas is not as severe as in Gulf. Madang is relatively well endowed with government training institutions although the quality of training falls short of labour market requirements. In Madang and Milne Bay, the main labour market concern is the lack of employment opportunities where many graduates from universities and colleges are unable to find employment. At the same time, there are many foreign workers in managerial and technical positions. In New Ireland, a certain level of skills is available through training in the mines and skill shortages are not a major concern.

The role of provincial labour offices

The DLIR is responsible for the administration of labour policy and associated activities, including industrial relations, labour inspection and employment services as mandated under 23 pieces of labour legislation, 22 International Labour Office-ratified conventions, and 12 labour policies (DLIR, 2015).

Through the National Employment Division (NED), DLIR oversees employment promotion and labour market services, the licensing of employment agents, seasonal worker programmes and employment statistics. A lack of labour market data and limited resources have made it impossible for NED to provide effective employment services and match jobseekers to vacancies. Similarly, at the provincial level, Labour Offices do not provide employment services. There are also no private recruitment agencies or labour hire companies in any of the five case study provinces and as such there are no support services at all for jobseekers. When a new project – such as a road maintenance project – starts, word of mouth gets around and potential workers generally turn up at the work site or the company or government department involved.

DLIR maintains labour offices in many provinces with usually three to four labour officials dealing with labour disputes around working conditions (such as wage and leave entitlements), terminations, occupational safety and health, workers compensation, insurance cover and work permit issues. Labour officials are expected to carry out regular labour inspections in private businesses and government institutions to check compliance with employment conditions,

occupational safety and health, licences for storing and operating dangerous materials, work permit conditions and other issues. Provincial labour offices report to DLIR in Port Moresby if they encounter instances of non-compliance.

None of the provincial labour offices had current employment data or information on the number of foreign work permit holders in the province. While employment data is generally scarce in PNG even at the national level, DLIR maintains a database of work permits. Information on work permit holders at the provincial level could easily be generated from this national database. Yet, the labour offices in all provinces were unaware of the number of foreign workers in their province.

While provincial labour offices receive funds to operate their offices, they lack funds to travel and conduct inspections outside of the provincial capital. In Gulf Province, labour officials do not have a vehicle. In the other four provinces, they appear to have vehicles but no funds for petrol. Labour officials admitted that they are unable to enforce compliance with labour law given the limited funds they have available. In Kavieng, for instance, each labour official is expected to conduct 10 inspections per month but due to funding constraints, they can only conduct inspections in Kavieng town and surrounding palm oil plantations but are unable to travel to more remote locations or islands.

In some provinces, the labour offices did not have the statutory power to investigate work permit issues. Labour officials in Madang explained that this power had been removed from them in 2007 and they can no longer check on foreign workers. The nearest work permit inspectors are based in Lae and Wewak. If labour officials in Madang come across a suspicious issue relating to foreign workers, they report this to DLIR's Foreign Employment Division hoping that inspectors will be sent out to the province to investigate.

With limited financial and human resources, the Labour Office in Milne Bay did not have the capacity to do many inspections and without funds for petrol, inspections could only be done within Alotau itself. In 2016, they did one round of inspections in Alotau on work permit compliance and did not find any breaches in the 23 companies inspected.

In contrast, in Gulf Province, most companies did not comply with labour regulations and did not even respond to letters from the Labour Office. The last major inspection was conducted in Kikori and included an Oil Search camp of the PNG LNG project and several logging camps. According to a labour official:

“Lots of penalties were issued, mainly related to work permits. Many foreign workers had a work permit for a

particular job but were actually doing different work.”

Asked whether companies paid fines if they were found in breach of work permit conditions, the labour officials were unsure, as they did not follow up after issuing the fine. They assumed that if the companies did not pay the fines, the matter would go to court in Port Moresby.

In New Ireland, the Labour Office conducts monthly labour inspections during which officials look at employment conditions and foreign workers. If they find a breach in work permit conditions, they report the case to DLIR's Foreign Employment Division in Port Moresby which is then supposed to send work permit inspectors to New Ireland. A regional work permit inspector based in Manus is responsible for New Ireland and accompanies the inspector from Port Moresby. A labour official explained:

“Some time ago we received information from villagers that a logging company on New Hanover was breaching work permit conditions. Foreign workers were driving trucks and bulldozers... These jobs should be done by locals... The villagers provided photos as evidence and we organised a compliance officer who travelled there from Port Moresby. In this case, the company was fined... This was some time ago. Most of the time, we do not have funds to travel. For instance, there are four Asian logging companies operating in New Hanover and we know that there are many breaches continuing today but we are not able to inspect them... If the department does not have funds to send an inspector we cannot do anything about it.”

Logging companies in particular regularly transfer foreign workers between their subsidiaries, which is not permitted if the subsidiary is registered under a different name.

Officials from the Eastern Highlands Labour Office had inspected road construction companies along the Highlands Highway shortly before we interviewed them. Common areas of complaints by workers included language difficulties with their Chinese employers and co-workers. There were several complaints about a Chinese company that had undertaken a number of road projects along the Highlands Highway around language barriers, occupational safety and health, remuneration and other benefits. The labour officials found obvious breaches of work permit conditions, in that foreign workers were doing low-skilled work although their work permit was for skilled positions. Labour officials issued fines to the company and reminded it of its legal responsibilities. However, there was no follow up and it is unclear whether the issues have been addressed.

Labour officials admitted that the work permit system was

not being enforced. One official said:

“In the past, our government was interested in building human resources. That's why they had the training requirement and foreigners had to train locals. Nowadays, the only interest is in making money by issuing work permits. They don't care anymore about the enforcement of regulations... There is a need to balance the demand for foreign workers with local interests. This has not always been the case. For instance, sometimes Chinese companies bring in Chinese as so-called executive managers who really work at cash registers or as shop supervisors.”

In all five provinces, Labour Offices had received complaints from the public about the increasing number of foreign-owned businesses in the retail and food industries, particularly Chinese-owned, and the large number of Chinese workers in these businesses. In Madang, the Labour Office received many complaints about communication difficulties with Chinese business owners and workers. Yet, the Labour Office was unable to estimate the number of Chinese-owned businesses and Chinese workers in Madang Province and was not able to confirm whether foreign workers had valid work permits. Many Papua New Guineans travelled to Madang from remote parts of the province to lodge complaints about working conditions in Chinese companies with the Labour Office.

Growing concerns about the increasing number of foreign workers and foreign workers working in low-skilled positions have had political consequences. In May 2017, the Secretary of DLIR was suspended pending investigations into allegations relating to the “influx of foreigners” into PNG (Tarawa, 2017)⁸. The Secretary of the Department of Personnel Management, who leads a government team investigating the allegations, said that the government was concerned about the influx of foreigners into the country who were unqualified, did not speak English and were doing jobs that Papua New Guineans should be doing. It is suspected that senior DLIR officials are also implicated. There have long been rumours that some work permits have been issued after bribes were paid to DLIR officials, and that a portion of the work permit fees of K1,000 per worker per year has regularly been siphoned off into the pockets of DLIR officials. The government has finally taken steps to holding DLIR officials accountable in what clearly are irregularities and abuses of the work permit system.

⁸ The Secretary was reinstated by a court in September 2017

Non-National roads employment

Employment in private companies

Overview of employment in companies

The six companies interviewed for this research were locally owned (see list in Annex). **Dekenai** was the largest company in the sample with PNG-wide operations. It was interviewed in Gulf and New Ireland provinces. It has over 900 staff nationwide including highly skilled staff such as engineers, heavy machine fitters and operators and low-skilled workers recruited from the project areas. Dekenai came to Gulf Province in 2014 to rehabilitate the road between Epo and Malalaua town. Five of its 10 skilled staff in the province are foreigners. The total workforce at the time of the interview was 300 – a decline from a peak of 600. Given its nationwide operations, senior national and foreign workers are moved around PNG to different project sites. Some local employees recruited for a specific project are also sometimes transferred to other project sites, especially if they have acquired skills that are in demand elsewhere, such as operating graders. For instance, shortly before our interview with Dekenai in New Ireland, a grader operator had been transferred from New Ireland to Gulf and a heavy machine fitter had been transferred to Bougainville.

Equiplant Hire Ltd is a locally owned company with operations in Madang, Manus and Wewak. The company has been operating for almost a decade, specialising in road construction including drainage, bridges and maintenance work. It employs about 50 staff. The civil construction workers include three civil engineers, two surveyors, and mechanics, machine fitters and machine operators. There are two foreign workers from India who run the crusher plant.

Rodcliffe has been operating in Eastern Highlands for eight years and employs about 50 permanent staff who are national, except for the General Manager who has recently joined. The company has been contracted by the provincial and district administration to undertake road maintenance on several occasions. If the company wins a contract, it uses subcontractors to arrange the workforce.

Sigma is one of the pioneer construction companies in PNG and has been operating in Madang since the 1960s, working on roads, bridges, pile driving and wharves. Sigma has around 55 staff but laid off around 10 workers two weeks before our interview due to a lack of work. No foreigners are employed by Sigma. Its staff include a civil engineer, a civil technician and several team leaders for welding, construction and others. Most team leaders are qualified tradesmen who have done an apprenticeship. Other skilled workers have no

formal qualifications.

PNG Quality Construction Ltd has been operating in Alotau since 1992, specialising in road maintenance and construction, sawmilling and tourism. It has 72 employees, with more than half of the workforce working in the construction arm of the company. Like Sigma, it has had to downsize and laid off around 80 workers in 2016. Most workers are from Milne Bay and have gained experience while on the job or had already acquired experience in previous employment. The staff includes 29 security guards. If required, PNG Quality Construction brings in qualified people temporarily to undertake specialised work. This is more cost effective than sending its workers for training to Port Moresby or Lae.

Nawae Construction is the biggest construction company in Milne Bay and has been operating in PNG for 40 years. Nawae used to work on roads and bridges all around PNG, but has increasingly specialised in marine infrastructure (wharves, jetties, seawalls) — partly due to facing less competition in these areas. The company's headquarters are located in Alotau but it also runs a pre-cast facility and lab in Lae. Nawae prides itself on its high safety standards. It is an ISO-accredited company which involves high compliance costs. Nawae's workforce varies between 300 and 500 workers, depending on the size of current projects. The workforce includes around 20 security staff, a number that is not reduced even if staff in other areas are laid off. Most workers have trade skills which they acquired on the job but few hold formal qualifications. Nawae has not sent workers for formal trade testing with NATTB to become certified as there is no real benefit for the company to have formally qualified tradespeople. Nawae is the only company in the sample that does not use casual labour. Whenever it employs someone, it is done on the basis of a permanent contract. If there is not enough work, workers are laid off and may be re-hired later. Overall, however, staff turnover rates are low.

All companies except Nawae recruit most unskilled workers from communities that are close to their project sites. Recruitment is done through public relations officers who represent villages along the road which is being built or maintained. Dekenai in Gulf Province for instance hires about 60 percent of its workers from villages close to project sites. They are employed on a casual basis through verbal rather than written contracts. They are given some on-site training when their employment starts and are paid daily at the minimum wage rate of K3.36 an hour. Most workers receive a letter of reference on completion of employment.

When road construction or maintenance moves to another stretch of the road, most of these locally recruited casual

workers are dismissed and workers from the next village closest to the new work site are employed. This practice ensures that employment opportunities are spread widely throughout rural areas, and also safeguards the operations of the project within those localities. Road employment is the main formal employment available in rural areas which are not located near plantations, mines or logging operations. While most casual workers have few skills and are employed in low-skilled roles such as road marshals, some are offered more permanent employment and might eventually become operators. Despite the spread of benefits, casual workers regularly complain to labour offices about being dismissed when road projects move to a new stretch of road.

Skilled workers, skill shortages and training

The companies consulted for this study experienced skill shortages, especially in engineering and other specialised roles such as grader operators, general electricians, high voltage electricians, air conditioner technicians and technicians in some other areas. As already discussed, most Papua New Guineans in skilled positions have no formal qualifications and have acquired skills on the job. The few Papua New Guineans with formal qualifications have often acquired these in the mining industry. Due to the international nature of PNG's mining industry with international shareholders, the mining industry is expected to perform to international standards and maintain high safety standards. As such, there is an incentive for training in the industry. In contrast, construction companies generally provide little formal training and are typically satisfied with workers who have no formal qualifications as long as they are competent in the workplace. Construction companies sometimes employ mining workers who have left their jobs and returned to their home provinces. Many Papua New Guineans return to their home provinces before they reach retirement age. In the process they bring skills and work experience home.

When looking for workers, the companies in our sample face few difficulties and recruit workers either through word of mouth, by putting up vacancy notices on noticeboards around town, or by advertising in national newspapers. Nawae, for instance, recruits workers without specialist skills by word of mouth in Alotau, while specialist tradespeople are recruited through newspapers. Many Papua New Guineans looking for work also send their resumes to construction companies which these might draw on when required. Several companies stressed that they strongly prefer to employ people from the province so they do not have to find and pay for accommodation.

As already discussed, in Gulf Province almost all skilled workers have to be sourced from elsewhere. In the case of

Dekenai with nationwide operations, most skilled workers in Gulf are permanent Dekenai staff sent to the province from elsewhere in PNG. At the time of the interview, Dekenai had five Australian workers in Gulf Province including a workshop manager, workshop attendant and three crusher operators. All five had already been working in PNG before being sent to Gulf Province. If no skilled workers are available to be transferred within Dekenai, the company's head office advertises positions in the two national newspapers. Dekenai expects managers, surveyors and engineers to have formal qualifications while this is not expected of operators.

Nawae employs the largest number of foreign workers of the surveyed companies. The main skill requirements in Nawae are in the areas of concrete production, senior vessel crew, telecommunications and electronics technicians due to a lack of experience with the latest technology in PNG. Nawae also finds it hard to find specialist welders (such as marine welders), plumbers and gas fitters in PNG. Most foreign workers are hired from the Philippines. Previously, Australians and South Africans dominated Nawae's foreign workforce. Currently, Nawae employs only two Australians, one South African, a few Cypriots and 16 Filipinos. As the manager explained:

"Australians are whingers. They are too expensive and too difficult compared with Filipinos who are nice, quiet and have no alcohol problem... We only started recruiting from the Philippines seven years ago and already they are our dominant foreign workforce... Education and training standards have decreased in PNG in recent years... Education in Milne Bay is still better than in many other parts of PNG. But it has gone backwards. The older generation are better educated than the younger generation... As long as the situation remains like this, we need to bring in foreign workers... If specialists were available in PNG, we would not bring them in from the Philippines. In fact, we try to upskill Papua New Guineans using the foreign labourers, so that we can replace them eventually."

According to Nawae's experience, the Philippines has a large pool of skilled and reliable workers to recruit from, and the supply is consistent. The company receives some 100 applications for each vacant position and thus has a large pool of applicants to select from. The actual process of getting workers from overseas on the ground is seen as too expensive and bureaucratic:

"Our skill demand can change very quickly... like if we win a tender process. It then takes around three months to get specialists from the Philippines on the ground. This is too long for us... In my view, the work permit guidelines

themselves are good. It is the implementation that is lacking... We are also concerned that here in Milne Bay there are many companies that seem to get around the work permit regulations. This is calling for trouble... Chinese are taking jobs in Alotau including as market sellers, and they run small trade shops which could easily be done by locals."

For Rodcliffe in Eastern Highlands, the biggest challenge is not a lack of specialist expertise but the difficulty of finding honest employees. Based on past experience, the company does not trust workers with company vehicles. Another challenge is that the company has a number of supervisors and foremen who have made a career in the company but without holding formal qualifications. These long-term senior staff generally do not accept newly recruited engineers as their bosses, especially if the engineers are recent graduates and younger than they are. Rodcliffe's manager also mentioned that workers who have the necessary technical skills often lack other workplace skills such as planning and supervising. The lack of supervisory skills among team leaders was also one of Sigma's major challenges.

Companies generally provide on-the-job training but do not offer formal training opportunities such as apprenticeships, courses in training institutions, or the chance to take trade tests and receive a formal certification. Some companies in the sample were not aware of the government's training levy. Nawae was the only company with a training plan, which it needs to retain its ISO standard. Nawae provides a lot of in-house training, sometimes bringing trainers from overseas, running a training workshop registered with DLIR, and sometimes sending local staff overseas for training.

Major challenges of surveyed companies

The companies consulted for this study face various challenges, including a lack of contracts and work, skill shortages and competition from foreign, particularly Chinese, companies. Many companies in the sample have had to downsize their workforce due to a lack of contracts. Equiplant Hire for instance has only done maintenance work in recent years. Rodcliffe frequently tenders for road work, but has not won many contracts due to competition from Chinese firms (which, some allege, do not adhere to minimum work conditions). The requirements of some development partners have also disadvantaged smaller companies. Asian Development Bank road contracts, for example, must be undertaken by companies with an annual turnover of at least US\$50 million. One local company complained that "there are not many PNG firms that are this large".

In the last two years Sigma has failed to secure any major

contract, despite bidding for various road construction and maintenance projects. At the time of the interview, Sigma's work mostly consisted of maintaining Digicel's towers in parts of Madang Province. Sigma also hires out heavy equipment such as bulldozers or dump trucks:

"Our problem is that there are many paper companies that do not have equipment or workers. They often win a tender because they are cheap but they have to subcontract all the work. This is when we sometimes hire out our equipment... We would make much more money if we got the contract."

PNG Quality Construction Ltd has mostly upgraded and maintained roads including national roads for DOW and provincial roads for the Provincial Works Supervision Unit. While the company does routine maintenance of provincial roads, a lot of maintenance is undertaken by the Provincial Works Supervision Unit itself.

According to Nawae:

"Milne Bay has not experienced road construction by a foreign company as is happening in many other provinces where foreign companies bring in their own workforce from overseas and only employ few locals... Unfortunately, this is likely to happen here too... There have already been problems with foreign building construction companies, especially Chinese companies. Some have constructed buildings in Milne Bay that are of poor quality and not to PNG standards... It is only a question of time until foreign companies are engaged in road construction."

For Dekenai in Gulf Province the main challenges of operating include logistics such as bringing in food, fuel and equipment (the latter often by barge), the sourcing of gravel and other construction materials, the payment of wages (wages are brought in from Port Moresby with a security escort, which is expensive), the rainy weather, the difficulties of attracting skilled workers to Gulf, the swamp terrain (with roads being built across rivers), and landowner issues.

Most road construction or maintenance contracts are government contracts, with additional challenges arising from the government often not paying companies on time. Some companies in our survey are owed considerable sums of money, resulting in cash-flow problems. Sometimes contracts are awarded but do not go ahead because the government does not have enough money. Companies that rely on importing equipment also often face difficulties in accessing foreign currency.

Another more general issue is that most skilled workers have not been formally trained and there are therefore no

standards regulating the quality of work. This means that many operators do not use the equipment correctly, which regularly leads to premature need of repair or replacement of equipment and adds to the companies' operational costs.

There were also compliance issues in the companies of our sample. DLIR inspected Dekenai in Gulf Province in 2015 and found that employees were not wearing the safety clothing as required by law. Dekenai managers explained that all employees had been given safety gear on commencing employment, but that some had sold it. DLIR advised Dekenai to purchase more safety clothing and ensure that workers only work if they are wearing it.

Labour officials also encountered work permit breaches at companies in our sample, especially with foreign workers working in positions different from those specified in the work permits. For instance, a building constructor was found doing engineering work on a road project and a carpenter was working as a road manager. In addition, a foreign worker with a licence for handling explosives was absent and a local worker who did not have a licence was doing blasting, which is against the law. The company in question received fines but no follow up was done by the Labour Office.

Employment in government

Apart from private companies, government departments at all levels of government are involved in road construction and maintenance, partly doing the work themselves and partly outsourcing it to private companies while holding project management and supervisory roles. The main government departments involved in road works at the provincial level are the provincial offices of the DOW and a provincial department that has different names in different provinces (see footnote 8). As discussed in upcoming NRI Issues Papers based on this research project, the DOW is responsible for national roads while a provincial department holds responsibility for non-national roads. In practice this distinction is blurred, with both DOW and provincial departments working on segments of roads for which they are not legally responsible.

Department of Works

The DOW's provincial offices are comprised of different divisions of which the Civil (Engineering) Division holds responsibility for roads. Other divisions typically include plant and transport, building or architecture, and human resources.

In Madang, the DOW has four civil engineers, two supervisors, 18 civil crew (operators, drivers and machinists) and around 20 support staff across all divisions. In Eastern

Highlands, some 60–70 staff are working for DOW, while the Civil Division alone has some 30 staff. According to the DOW in Eastern Highlands, there is no skill shortage in provincial and national-level institutions. For instance, the provincial office of the DOW has enough engineers, foremen and supervisors. There is no need for them to employ many technical specialists as most construction projects are outsourced to the private sector.

Similarly to private companies, the DOW's provincial offices employ casual workers from local communities alongside their current work sites and pay them minimum wages. The casual workers receive a short induction before commencing the work. They mostly work in unskilled positions such as linesmen. Casual workers in Madang Province are occasionally given the opportunity to undergo training at the Civil Training Centre in Madang. Their contracts are continued depending on their performance. In Milne Bay, the DOW tends to employ the same workers again and again on different projects. In New Ireland, the DOW maintains a database of previous casual workers for possible involvement in future projects.

The main staffing-related challenges for the DOWs in all provinces are skill shortages and the lack of resources to provide adequate supervision on road projects. It is the responsibility of DOW's technical staff to supervise project sites and ensure that work is flowing and completed according to DOW's standards. In many provinces, the DOWs have insufficient resources to supervise road projects, resulting in a situation where private contractors often work below the required standards.

On skill shortages, the DOW in New Ireland for instance is short of mechanics, accounting, human resource and management professionals. There is only one engineer in the province. Due to the lack of qualified personnel, low-skilled staff frequently occupy high-level positions in the DOW, compromising the quality of work as a whole. Asked about the reasons for the lack of engineers, the respondent explained:

“The Department does not offer competitive pay and housing conditions. We are not able to attract and retain qualified people... For engineers in particular, there is little incentive to work for the government. Most go to the private sector where they get much better housing and pay packages.”

Provincial government

At the provincial level, a provincial department (known as a provincial works and supply unit, transport and civil works division, technical services or provincial works supervision

unit) holds responsibility for provincial roads. In contrast to the provincial offices of the DOW, provincial departments are generally more constrained by funding and lack of technical personnel, limiting their ability to adequately monitor private contractors of road projects. During the provincial consultations, it was revealed that when provincial teams face issues with technical skills, they often consult and seek the DOW's experience and expertise in engineering standards. This is necessary for the successful implementation of road construction and maintenance projects. In Gulf Province, for instance, a shortage of personnel is the main challenge. There are only four engineers working for the whole provincial government. They are responsible for all infrastructure and construction projects across the entire province and roads are only a small part of their work. It is not surprising that Technical Services is unable to properly supervise projects outsourced to private contractors.

In Milne Bay, the Provincial Works Supervision Unit sometimes seeks assistance from the provincial office of the DOW. The Provincial Works Supervision Unit's 22 permanent staff includes only one civil engineer who is unable to prepare all the required project documentation. Assistance is sometimes provided by the DOW.

While skill shortages exist at the provincial level, they are even more severe at lower levels of government including district and local level governments. No engineers and surveyors work at the district and local levels and projects organised at these levels regularly use trades people as project planners, managers and supervisors. Some districts seek the assistance of engineers based at the DOW's provincial offices or the respective provincial department for project planning. Another difficulty arises in Gulf Province where works supervisors looking after all districts in the province live in Kerema because housing is not available in any of the district towns. They are therefore unable to provide supervisory and project management services to the districts for which they were employed in the first place.

Discussion

The construction industry provides employment opportunities for a large number of Papua New Guinean men and through the rotation of casual workers with companies drawing their workforces from communities close to the project sites, many rural Papua New Guineans will at some point get a casual employment opportunity. However, employment opportunities are short term and only very few workers are offered long-term employment and are able to build a career in construction. Most Papua New Guinean construction workers, even if employed in skilled positions,

do not have formal qualifications but have learnt their skills on the job. This is a result of the inadequate number of training institutions in PNG and the low quality of training provided in those that do exist. However, companies are not concerned about the lack of formal qualifications as long as workers are competent in the workplace. Construction companies generally provide little formal training, except if they are ISO accredited – which only one of the six companies in our sample was.

Most construction companies employ foreign workers at managerial and supervisory levels and in other highly skilled positions such as engineers and technicians. This is partly due to such skills not being available in PNG and partly due to cultural issues such as local workers not accepting fellow Papua New Guineans as their supervisors. Companies are adversely affected by a lack of supervisory, planning and general workplace skills of their workers.

In contrast to private companies, government departments in the provinces are adversely affected by a lack of skills, particularly engineering skills. Government departments struggle to recruit engineers and cannot compete with private companies for engineers. The lower the level of government, the more severe the skill shortages in technical areas. Skill shortages are most severe in provinces without higher training institutions, such as Gulf Province. With the current process of decentralisation of government services in PNG, an increasing number of employment opportunities will become decentralised, despite it being extremely difficult to attract skilled workers to districts or local-level governments. Without skills available at these levels, it will be impossible to successfully decentralise government services, including the supervision of road building and maintenance. The large number of foreign companies operating in PNG has become a concern in all case study provinces. In construction, foreign companies have increasingly been successful in winning government tenders. Labour Offices reported various compliance issues around working conditions and the employment of foreign workers. The provincial Labour Offices are under-resourced and often unable to check or follow up on compliance issues, meaning non-compliant companies are rarely fined and fines are not enforced. If foreign-owned companies are awarded government contracts, governments have to use their influence to enforce standards and push for favourable employment outcomes for Papua New Guineans such as through the upskilling of local workers. For the locally owned companies in the sample, competition from foreign-owned companies has become a major challenge for their businesses operations as local companies have increasingly missed out on winning major government contracts. While governments might go for

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the cheapest company – which in PNG is often a foreign-owned company — they need to be aware that this practice negatively affects employment opportunities for Papua New Guineans. This is because foreign companies often bring the bulk of their workforce from overseas. With road projects offering the only employment opportunities in many rural areas, this effect will eventually be felt across the country if the current trend continues.

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ANNEX: List of interviews

Institutions interviewed

Madang Province

- Provincial Administration, Madang Province, 23/05/2016
- Provincial Works and Supply Unit, Madang Province, 23/05/2016
- Policy and Planning Office, Madang Province, 23/05/2016
- National Department of Works, Madang Office, 23/05/2016
- Civil Training Centre, under National Department of Works, 24/05/2016
- Department of Labour and Industrial Relations, Madang Office, 24/05/2016
- Equiplant Hire Ltd, 24/05/2016
- Sigma Constructions Ltd, 24/05/2016
- Madang Technical College, 24/05/2016

Eastern Highlands Province

- Provincial Administration, Eastern Highlands Province, 14/06/2016
- Planning, Policy and Monitoring, Eastern Highlands Province, 14/06/2016
- National Department of Works, Eastern Highlands Office, 14/05/2016
- District Administration, Henganofi District, 14/05/2016
- Transport and Civil Works Division, Eastern Highlands Province, 15/05/2016
- Department of Labour and Industrial Relations, Eastern Highlands Office, 15/05/2016
- District Administration, Unggai Bena, 15/05/2016
- Rodcliffe Ltd, Civil Contractor, 15/05/2016

Gulf Province

- Provincial Administration, Gulf Province, 17/05/2016
- Planning and Treasury, Gulf Province, 17/05/2016
- Technical Services, Gulf Province, 17/05/2016
- National Department of Works, Gulf Province, 17/05/2016
- Department of Labour and Industrial Relations, Gulf Province Office, 18/05/2016
- District Administration, Kerema District, 18/05/2016
- Dekenai, 18/05/2016

Milne Bay Province

- Provincial Administration, Milne Bay Province, 07/03/2016

- Provincial Works Supervision Unit, Milne Bay Province, 07/03/2016
- Provincial Supply and Tenders Board (PSTB), Milne Bay Province, 07/03/2016
- National Department of Works, Milne Bay Province, 07/03/2016
- Department of Labour and Industrial Relations, Milne Bay Province Office, 07/03/2016
- International Training Institute, 08/03/2016
- PNG Quality Construction Ltd, 08/03/2016
- Milne Bay Estates, New Britain Palm Oil, 08/03/2016
- Nawae, 08/03/2016

New Ireland Province

- Provincial Administration, New Ireland Province, 05/09/2016
- Kavieng District Administration, New Ireland Province, 05/09/2016
- Dekenai Construction Limited, 05/09/2016
- Department of Labour and Industrial Relations, New Ireland Province Office, 06/09/2016
- National Department of Works, New Ireland Province, 06/09/2016

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