



Pacific Horticultural and Agricultural Market Access Program (PHAMA)

Report to the Solomon Islands Market Access Working
Group (SIMAWG)
Review of the Diagnostic Requirements to Ascertain Cocoa and Copra Meal Quality
Standards

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Table of Contents

Executive Summary	iii
1 Background	1
2 Cocoa Quality Testing	2
2.1 Current Situation	2
2.2 Entry Requirements for Australia.....	2
2.3 Issues and Recommended Actions	3
3 Copra Meal Testing	7
3.1 Current Situation	7
3.2 Entry Requirements for Australia and New Zealand.....	9
3.3 Issues and Recommended Actions	10
4 Summary of Recommendations	16
4.1 Cocoa Quality Testing.....	16
4.2 Copra Meal Quality Testing	16
5 Limitations	18

Abbreviations

Abbreviation	Description
AOAC	Association of Analytical Communities
AQIS	Australian Quarantine and Inspection Service
AUD	Australian Dollars
AusAID	Australian Agency for International Development
BNZ	Biosecurity New Zealand
CEMA	Commodities Export Marketing Authority
CLIP	Cocoa Livelihoods Improvement Project
DEEDI	Department of Employment, Economic Development and Innovation
ELISA	Enzyme Linked Immunosorbent Assay
FCL	Full Container Load
GAS	Giant African Snail
GPPOL	Guadalcanal Plains Palm Oil Ltd
HPLC	High Performance Liquid Chromatography
ICON	Import Conditions Database
IOCCC	International Office of Cocoa, Chocolate and Sugar Confectionery Industries
ISO	International Standards Organisation
MAL	Ministry of Agriculture and Livestock
NZ	New Zealand
NZMAF	New Zealand Ministry of Agriculture and Forestry
PARDI	Pacific Agribusiness Research for Development Initiative
PHAMA	Pacific Horticultural and Agricultural Market Access Program
PKE	Palm Kernel Expeller
ppb	Parts Per Billion
QA	Quality assurance
RDP	(Solomon Islands) Rural Development Programme
SBD	Solomon Dollars
SCHS	Sea Container Hygiene Scheme
SIAQS	Solomon Islands Agriculture Quarantine Service
SIMAWG	Solomon Islands Market Access Working Group
STP	Solomon Tropical Products
TSE	Transmissible Spongiform Encephalopathy
URS	URS Australia Pty Ltd
USA	United States of America

Executive Summary

Cocoa exports are of increasing importance to Solomon Islands and significant efforts are being made by the industry with donor assistance to increase production, improve export returns and quality. Current legislated quality standards and testing capacity are recognised by industry as being inadequate when compared to the quality requirements of targeted export markets. The industry wishes to develop a new quality standard based on target market requirements and to establish access to adequate quality testing capacity to support market access, protect exporters against reduced payments over quality issues and to support quality improvements.

Examination of the current situation showed two key issues: (1) The current reliance of Solomon Islands on importers to conduct quality testing (2) The need for interim access to independent overseas testing laboratories to provide quality testing while local quality standards and testing capacity are being developed. It was identified that quarantine access for trade samples of cocoa beans to Australia for testing was a particular issue.

Investigation of these issues determined that development of quality standards and local testing capacity will involve a coordination of resources by the Commodities Export Marketing Authority (CEMA), the Cocoa Livelihoods Improvement Project (CLIP), the Pacific Agribusiness Research for Development Initiative (PARDI) and the Pacific Horticultural and Agricultural Market Access Program (PHAMA). In this regard it is recommended:

- That PHAMA be tasked to develop a national quality standard for cocoa in consultation with CEMA, exporters and with reference to market requirements (to be determined by CLIP and PARDI) and cocoa testing standards available internationally.
- That PHAMA's inputs to improved quality testing be: development of the quality standard for testing methods, development of laboratory documentation, funding training of laboratory staff and providing technical assistance with appropriate laboratory accreditation if required. The extent of these inputs will not be clear until findings of CLIP and PARDI's work on market requirements is available, this is expected by October 2011. There is a need to establish the quality standard and functional local testing capacity before the new cocoa harvest begins in April 2012.
- To assist with gathering information on quality issues (such as moisture levels) it is recommended that CEMA notify all cocoa exporters of the legislative requirement for all "out turn report" test results from exports to be provided to CEMA for collation.

The issue of quarantine entry for samples to Australia was resolved through discussions with the Australian Quarantine and Inspection Service (AQIS) and a package of additional documentation to accompany future samples was agreed. This information will be shared with stakeholders. It was determined that while local testing capacity is being developed CLIP has adequate resources to support interim quality testing in laboratories in Asia if needed and that access to independent quality testing in Australia will be affordable for exporters.

Containerised copra meal and palm kernel expeller (PKE) meal have been exported to Australia and New Zealand (NZ) as an ingredient for stock feed for many years. Recent significant changes in the supply sources and demand for these products have occurred due to cheaper bulk shipments from Asia and concerns over aflatoxins in copra meal fed to dairy cattle in NZ. A number of quarantine issues have occurred recently with export consignments and exporters have expressed the view that pre-export testing capacity may improve market access.

Examination of the current situation showed three key issues: (1) Quarantine problems affecting recent PKE shipments into NZ, (2) The potential need for pre-export testing of copra for aflatoxin levels to ensure compliance with market requirements, and (3) The need for a country visit by AQIS to renew current import permits held by Solomon Island meal exporters.

Investigation of these issues determined that NZ quarantine standards are appropriate and the quarantine issues experienced have resulted from weaknesses in pre-export container hygiene and fumigation procedures. To avoid recurrence it is recommended that:

- PHAMA staff be tasked to assist exporters with development of documented procedures to ensure containers are checked consistently and pre-export fumigation conducted correctly.
- PHAMA facilitate discussion between exporters, shipping agents and the Ports Authority on access to containers for pre-export fumigation and potential for water blasting to damage fumigation taping.

No pre-export quality testing is required by either New Zealand or Australia and aflatoxin testing is not a market entry requirement. Aflatoxin levels and testing requirements are in both countries set by industry standard. To date no issues have been detected with Solomon Islands imports; however, there is no quality assurance (QA) in place and the risk of noncompliance with the market industry standard is real. It was determined that development of local capacity to conduct pre-export testing compliant with market industry testing requirements is not feasible. To limit the risk of aflatoxin issues it is recommended that:

- PHAMA staff be tasked to assist exporters with development of basic QA documentation for copra meal production.
- It is recommended that exporters verify QA outcomes for aflatoxins by utilising rapid test kits or sending pre-export samples to Australian laboratories for quality testing. However, it was determined that this testing should be a commercial decision and it is not recommended for PHAMA funding.

Current AQIS import permits held by Solomon Island meal exporters will expire 17 June 2011. Policy changes by AQIS mean that permit renewal requires an inspection visit to assess the exporter's process. The visit cost is prohibitive given the small scale of exports. Without a permit in place exports to Australia will cease. AQIS are unwilling to waive the visit requirement or to accept a third party audit (e.g. by PHAMA). However, dependent on compliance demonstrated, they would give consideration to third party audits being conducted in the future by Solomon Islands Agriculture Quarantine Service (SIAQS) if appropriate audit capacity is able to be established. It is recommended that:

- PHAMA fund the required inspection visit to renew the current import permits and this visit is used to inspect any copra meal and PKE processor who may wish to consider exporting. PHAMA staff will need to liaise with AQIS and exporters on objectives and expectations for the visit.
- That pre-visit inspections are carried out by PHAMA staff and they enter into a dialogue with AQIS on identified issues and possible remedial actions to increase the likelihood of a positive outcome from the AQIS visit. It is also recommended that PHAMA consult with the Solomon Islands Rural Development Programme to ensure coordination in longer term building of audit capacity in SIAQS.

Background

The Solomon Islands Market Access Working Group (SIMAWG) in its February 2011 meeting identified the currently limited access of Solomon Island exporters to the diagnostic facilities required to determine quality and compliance with quality standards as a potential constraint to the export of copra meal and cocoa. It was decided that further examination of the issue was required and a report commissioned. The specific objectives set by the SIMAWG for the report were that it determine:

- Quarantine entry requirements for samples of cocoa beans to Australia.
- Probable costs for testing of cocoa bean samples in Australia to establish quality standards for Solomon Islands cocoa.
- Australian and New Zealand testing requirements for copra meal for animal feed.
- Possible options for future testing of copra meal and cocoa beans.

The purpose of this report is to provide to the SIMAWG clear information in relation to these objectives and provide relevant recommendations on actions to be taken.

Cocoa Quality Testing

2.1 Current Situation

Cocoa exports in 2010 were valued at SBD115 million with 5400 tonnes exported. This compares with 4000 tonnes valued at SBD 74 million exported in 2009. At current rates of increase cocoa will soon overtake fishing as the second largest source of trade based income for Solomon Islands.

There are 6 main cocoa exporters buying from approximately 20,000 registered growers. Currently all exports go to Indonesia, Malaysia and Singapore. Exports are containerised. Container numbers exported vary based on harvesting cycle and production but average container volumes are around 30–40 full container loads (FCLs) per month.

In terms of export controls cocoa was previously a prescribed commodity under the Commodities Export Marketing Authority (CEMA) Act (1984) with exports being directly controlled by CEMA under standards set under the Cocoa Regulations (1986). With the liberalisation of the commodities trade in 2002 and amendment of the Act CEMA's role is now mainly that of licensing the various exporters. However, it does carry out a degree of inspection of export consignments for quality mainly by simple visual grading¹ with some limited testing being conducted of quality parameters such as physical characteristics of the bean and moisture content (as %) using electronic probes². The Solomon Islands Agriculture Quarantine Service (SIAQS) provides phytosanitary certification to support cocoa exports based on importing country requirements. They do not carry out any testing of cocoa.

All export consignments are tested upon arrival in the importing country by the contract buyers based upon their market requirements. Testing is usually conducted for physical characteristics (bean count, cut bean test, colour), composition (moisture, fat, pH and free fatty acids) and for organoleptic properties (flavour, smokiness). These “out turn report” test results are actually required to be provided to CEMA under the Cocoa Regulations but in reality this rarely occurs.

The cocoa industry has recently been receiving support via the AusAID funded Cocoa Livelihoods Improvement Project (CLIP). This project has been providing support to try and raise production levels to between 15,000–20,000 tonnes/year through better plantation management, pest control and improvements in the post-harvest supply chain. CLIP is also supporting market development work examining how to make improvements in export returns through better marketing, improved contractual relationships with buyers, value added certification arrangements and addressing quality issues. CLIP is currently scheduled to finish in June 2012.

2.2 Entry Requirements for Australia

Entry requirements for cocoa beans (*Theobroma cacao*) into Australia for all purposes other than animal feeds, fertilisers or growing purposes are listed on the Australian Quarantine and Inspection Service (AQIS) Import Conditions Database (ICON database). For a sample of fermented dried cocoa beans the requirements can be summarised as:

- No import permit is required; however, the sample must be declared to AQIS.
- No phytosanitary certificate is required

¹ As defined in the CEMA Cocoa Export Inspection and Grading Procedure

² Basic quality specifications for cocoa are outlined under the Cocoa Regulations (1986)

- The sample must be contained in a clear plastic bag and be free of any visual contamination such as soil, other seeds, or insects.
- Upon arrival the sample will be inspected by an AQIS inspector for visible contaminants such as other seeds or plant material, soil or infestation with insects. If the sample is compliant it will be passed without condition.
- Should any contaminant be found that is deemed to be of quarantine concern (such as viable seeds, presence of insects, and presence of animal material) then a series of measures for further identification, testing and/or treatment such as fumigation are defined.

The requirements are straight forward, essentially if the sample is visually free of contamination particularly of insects, seeds, or soil then entry will be granted. There is no need for any form of pre-export diagnostic testing or certification.

2.3 Issues and Recommended Actions

Discussions with CEMA, CLIP and members of the cocoa industry identified a number of issues in relation to quality testing for cocoa which require resolution.

The first issue raised was that in the course of their work on markets and quality CLIP staff have attempted on two occasions to import trade samples of cocoa beans into Australia for testing, and to carry samples through Australia with the intention of travelling to Singapore to have testing conducted. On each occasion the samples have been refused entry by Australian quarantine and been required to be held for re-export. As a result CLIP has had discussions with Symbio Alliance Laboratories in Brisbane who are in process of gaining AQIS approval as a transitional quarantine facility where testing of samples could be conducted.

This problem with quarantine entry of samples is unwarranted and does not correctly reflect the AQIS import conditions. In order to resolve this issue discussion was had with AQIS to clarify the standards and to identify reasons for the denial of entry. It was concluded that AQIS staff at the airport had probably misidentified the cocoa beans or misinterpreted the standard in regard to mandatory fumigation for beans still contained in their seed pods. It was agreed with AQIS that to avoid similar issues the following steps would be taken to facilitate entry of future samples:

- The bag containing the sample shall be clearly labelled with a description of the cocoa beans (*Theobroma cacao*) and their processing state, identify the sample as product of Solomon Islands, identify the sample as intended for testing purposes only, and include a unique identifying number for the sample.
- The sample shall be accompanied by an official phytosanitary certificate from SIAQS stating the same information as per the label, refer to the unique identifying number, and note the testing laboratory as the consignee.
- The sample shall be accompanied by a brief explanatory letter from an agency such as CEMA, Ministry of Agriculture and Livestock (MAL) or CLIP describing the purpose of the sample as intended for quality testing.
- The sample shall be accompanied by a copy of the AQIS ICON database standards for cocoa bean imports to ensure the correct standard is referred to by inspecting officers.
- In the case of samples that are couriered to an Australian laboratory they should also be accompanied by a completed laboratory submission form, and the originals of all documents affixed to the outside of the courier packaging with duplicates contained within the packaging.

Assurances were provided by AQIS that as long as samples are compliant with the import standard, and accompanied by the additional documentation described above, then there should not be any issues with future samples being permitted entry. It is **recommended** that information on this clarification of quarantine entry for cocoa samples to Australia be provided to CLIP, CEMA and SIAQS including a description of the additional documentation. Should samples end up being sent to Australia for testing on a regular basis then it is likely that with improved familiarity of AQIS staff with the samples that some of the pieces of additional documentation such as the letter and phytocertificate could be phased out with time.

The second issue raised was the present reliance upon testing conducted by buyers to assess quality and the subsequent dependence upon their interpretation of results when decisions are made relating to payments made based on quality. The issue of moisture content was of particular concern with significant variation of up to 1% moisture content being detected by buyers in comparison to the levels determined by pre-export moisture testing carried out by CEMA. Quality requirements for moisture levels are in the range of 6–7% and the current variations can result in exporters having payments reduced up to SBD 900/tonne.

Currently a basic set of quality parameters are contained in the Cocoa Regulation 1986. However, these are outdated and are no longer necessarily all commercially relevant. What is required is a standard that reflects the quality requirements of the target markets that Solomon Islands wishes to export to and identifies the appropriate testing methods for verification of those parameters. The development of a cocoa quality standard should not be a difficult or prolonged task as it will likely mainly involve adoption of standards and testing methods from more developed cocoa producing nations or cocoa organisations such as the Malaysian Cocoa Board, International Office of Cocoa, Chocolate and Sugar Confectionery Industries (IOCCC), or Ghana Cocoa Board all of whose standards are readily available. These standards refer to a range of testing methods based on amongst others International Standards Organisation (ISO), Association of Analytical Communities (AOAC) and IOCCC specified methods. It is, however, important to ensure that the standards and testing methods adopted adequately reflect the needs of Solomon Islands target markets as this will also determine local testing equipment needs, training requirements for staff, and any requirements for validation of testing methods and need for any form of laboratory accreditation.

It is clear that there is a need to develop a Solomon Islands cocoa quality standard and support its implementation through adequate access to appropriate testing capacity. A national standard will assist with improving quality control in the industry and facilitate the potential development of adequate local testing capacity to provide adequate pre-export assurance of compliance with market contract parameters and provide a defensible testing record to protect exporters against quality claims. For these reasons it is **recommended** that the Pacific Horticultural and Agricultural Market Access Program (PHAMA) short term technical staff be tasked to develop a national quality standard for Solomon Islands cocoa in consultation with CEMA, exporters and CLIP with reference to market requirements and existing international standards available. Such a standard could be voluntarily adopted by industry or incorporated into amended national legislation including definition of the responsibilities and process relating to quality testing both for exporters and CEMA. This choice of industry standard or legislated standard will require further discussion between industry and CEMA

Definition of the relevant market requirements for quality is the subject of ongoing work by CLIP with a mission just having returned from a visit to Singapore, Malaysia and the Netherlands. This mission included establishing contact with three Singaporean laboratories seeking quotes for testing and

samples being submitted for testing at one of these. Discussions were also held with a Malaysian laboratory regarding potential training of Solomon Islands staff in organoleptic testing. Another similar mission is planned for September this year to further examine market aspects of quality. There will also be a project activity funded under the Pacific Agribusiness Research for Development Initiative (PARDI) starting in July of this year examining quality and market aspects for cocoa from Solomon Islands and Vanuatu in different niche markets. Discussions were held with CLIP and PARDI and it was agreed that the establishment of the Solomon Islands quality testing standard could be conducted by PHAMA dependent upon the market findings of the CLIP and PARDI work. Once these findings are clear then the specific type of testing method, equipment, training, method validation and the need for any accreditation can be finalised.

Initial discussions have been held with laboratory equipment providers by CLIP and CEMA and at this stage it is considered feasible and sustainable to establish adequate local testing equipment capacity. Indications from CLIP are that Solomon Islands Government and CLIP will be in a position to adequately fund laboratory equipment. It is expected that establishment of any testing capacity would likely be with CEMA and that this may require alteration to their building. Discussions with CEMA showed that options for extension to part of their building have already been considered but that no decision has been made. This will require further discussion and possible identification of funding. In terms of potential testing technicians CEMA staff currently includes one bachelor degree qualified food technologist and another staff member is currently undergoing similar training in Australia. It is envisaged these two technical staff would be adequate to the needs of the laboratory with support from CEMA inspection staff.

It is apparent that the progression of improvements in Solomon Islands cocoa quality standards and testing will require a coordinated effort by CEMA, CLIP, industry stakeholders, PARDI and PHAMA. It is **recommended** that PHAMA's inputs be in the form of technical assistance to develop the quality standard (dependent upon market requirements as identified by CLIP/PARDI), development of appropriate laboratory documentation to support testing, funding support for appropriate training of laboratory staff on testing methods, and providing technical assistance with laboratory accreditation if appropriate. It is the question of what type of laboratory accreditation may be required by the importing market which could prove the most problematic as a barrier to establishing compliant local testing capacity. This will not be clear until the findings of CLIP and PARDI's work on markets is available. It was discussed that there is a need to establish the new quality standard and have adequate functional local testing capacity in place preferably before the end of 2011 but at least before the new cocoa harvest begins in April 2012.

The third issue raised was that while the industry is awaiting development of local testing capacity there is a need for interim access to adequate testing facilities to support export quality testing and to assist with resolution of some particular quality issues such as the current moisture variation issues. This will require samples being sent overseas for testing for which there are a number of options. CLIP has already established a testing relationship with an accredited laboratory in Singapore which has experience with cocoa testing. Analysis of moisture content, fat, and pH by this laboratory cost Singaporean \$170 (approximately SBD1000). Quotes are being awaited by CLIP for testing at two other Singaporean laboratories. There are no quarantine entry issues with Singapore; however, courier or freight costs may prove to be expensive for regular testing. Testing capacity for these parameters is likely also to be available in Fiji and Papua New Guinea and a quote is being sought from the University of the South Pacific's Institute of Analytical Science. Quarantine entry requirements for Fiji are yet to be investigated pending confirmation of testing capacity and costs.

Resolution of the quarantine entry issue for Australia means that laboratories in Australia are likely to be the most practical and cost effective choice for interim testing. Symbio Alliance Laboratories in Brisbane have confirmed to CLIP that they have the testing capacity required and are providing a quote. CLIP has also established contact with staff at the Department of Employment, Economic Development and Innovation (DEEDI) Laboratory in Brisbane. This is not a commercial laboratory but may be able to assist with testing and provide technical support to CLIP in resolution of some quality issues such as variable moisture content and the examination of potential factors involved such as fermentation periods. To assist with investigation of these quality issues it is **recommended** that CEMA notify all cocoa exporters of the requirement for the provision of “out turn report” test results for each export consignment under the Cocoa Regulations 1986. This will assist in gathering testing history records on moisture content and other quality aspects in order to analyse trends and assist with qualifying the scale of issues and their potential causes.

Discussions with CLIP have shown that they have funding to support interim testing of samples as necessary. Also it is likely that testing at Symbio Alliance Laboratories will be sufficiently affordable for exporters to fund their own quality testing as required. At this stage it is recommended that PHAMA does not take a role in funding interim testing but be ready to provide technical assistance to resolve any market entry issues as necessary.

Copra Meal Testing

3.1 Current Situation

Currently in Solomon Islands copra meal is produced by three companies, all of which are based in Honiara. Two of these companies produce the meal as a by-product of their soap production business, while the remaining company produces copra meal on a limited scale as an animal feed for the local market and to produce coconut oil to sell to local small businesses. Domestic demand for copra meal as a pig and poultry feed appears strong and all three companies sell to the local market (indicative pricing is SBD60/30kg bag). No official figures were available on total copra meal production but estimates provided by the three companies indicate a total monthly production in the order of 60–70 tonnes.

Copra meal production may increase significantly in the coming years with one of the companies (SolFish) currently in the process of importing equipment to develop a new large copra mill operation. The company intends to develop a vertically integrated poultry and pig production and processing business to supply strong local demand for poultry and pork meat, and are currently developing large poultry and pig production units on the Guadalcanal plains as well as examining corn production. The new mill will provide the necessary increased feed production required to support their poultry and pig units. Solfish indicated that the processing capacity for the mill could be as much as between 2000–4000 tonnes of copra month. It is worth noting that this scale of processing capacity would likely impact upon the availability of copra for processing by other companies and alter the availability of meal for export and local market prices.

Currently only one company exports copra meal (Solomon Tropical Products, STP). Export volumes are approximately 20–30 tonnes per month and are exported in bags in FCLs. Average export container volumes are 1–2 FCLs per month. Exports go to ports in Eastern Australia. No information was available on the value of these exports. The other two copra meal producers expressed interest in exporting in the future, but only if export prices were to improve.

Solomon Islands has for many years exported copra meal to New Zealand and Australia as an animal feed ingredient as have a number of other Pacific Island Countries including Kiribati, Fiji and Vanuatu. The New Zealand and Australian markets have both seen considerable change in recent years in terms of demand and increased competition in sources of supply. This is particularly true of the New Zealand market which has seen significant growth in demand for animal feed in the past 10 years due to rapid expansion of the dairy industry and increased competition from cheap bulk shipments of meals from Asian producers such as Malaysia, Philippines and Indonesia. The importance of bulk shipments of palm kernel expeller (PKE) meal as a source for animal feed in these markets has also increased, again being supplied from Asia. These changes mean that the margins and competitiveness of smaller containerised exports of copra meal for animal feed such as conducted by Solomon Islands have decreased significantly.

The New Zealand market has also experienced changes in recent years due to concerns over noncompliant levels of aflatoxin levels being detected in milk and this being attributed to high levels of aflatoxins in some imported copra meals used in dairy cattle feed. This has resulted in the New Zealand dairy industry and feed manufacturers setting standards to limit the levels of copra meal that their members can include in processed stock rations to a maximum of 15%. This has resulted in importers reducing their demand for copra meal and consequently pricing. In comparison to copra meal PKE is not considered to be a risk in relation to aflatoxins and demand for this commodity

remains strong in New Zealand; however, it is subject to significant seasonal changes in demand and pricing. In Australia demand for copra meal for feed for beef cattle remains strong as aflatoxins are not of the same concern when compared to dairy cattle.

Solomon Islands currently also exports PKE to New Zealand³, unlike copra meal there is no local market for it. As it is a very similar commodity to copra meal in terms of risks and follows similar export pathways it is considered appropriate to include it within the scope of this report. Gaudalcanal Plains Palm Oil Ltd (GPPOL) is the only producer of PKE; however, the product is actually exported under contract by STP. The overseas buyer for the New Zealand market is the same company as purchases the copra meal exported by STP into Australia; this buyer on sells both commodities to feed manufacturers. No official figures are available for PKE production; however, exports are estimated to be around 200 tonnes /month. The product is exported containerised in bulk. Numbers of containers exported are in order in order of 10–20 FCLs/month. PKE production would increase in line with any future expansion in palm oil planting; however, it is understood that this is likely to be limited.

In terms of export controls copra meal was previously a prescribed commodity under the Commodities Export Marketing Authority (CEMA) Act 1984 with exports being directly controlled by CEMA. With the liberalisation of the commodities trade in 2002 and amendment of the Act CEMA's role is now essentially reduced to licensing copra exporters. Standards for copra exports are covered by the Copra (Inspection & Grading) Regulations 1985 and Copra Exports Regulations 1985 and there are standards set for copra handling and storage including a quality specification with some basic testing parameters but this does not specify standards for copra meal. Licensing of copra exporters involves a very limited assessment of the premises with a follow up annual fee charged but no regular site inspection. Basically CEMA does not carry out any monitoring, inspection or testing of copra meal processing or exports.

PKE is listed under the CEMA Act as a prescribed commodity; however, no specific quality or licensing standards are set. However, CEMA have an interim arrangement signed with GPPOL in relation to licensing. CEMA does not carry out any monitoring, inspection or testing of PKE processing or exports. SIAQS provides phytosanitary certification to support both copra and PKE exports; however, they do not carry out any monitoring, inspection or testing of either PKE or copra meal processing for export.

In relation to testing of copra meal and PKE for quality and safety parameters the only testing that is currently conducted is that commissioned by the buyer in the country of import. Upon receipt of the cleared container at their premises a sample is taken and sent for analysis at accredited laboratories for basic quality parameters (protein, fat, moisture, ash, dry matter and crude fibre) and aflatoxins (G1, G2, B1, B2).

³ New Zealand import figures show that in 2009 PKE imports from Solomon Islands were 2391 tonnes which represented 0.3% of the total imports of 825,677 tonnes.

3.2 Entry Requirements for Australia and New Zealand

Import conditions for copra and PKE into Australia are on the AQIS ICON database under stock feed of plant origin and for New Zealand are covered by Biosecurity New Zealand (Plants) Standard BNZ-PAFP-IMPRT for importation of processed animal feeds of plant origin. The requirements for entry into New Zealand can be summarised as:

- No import permit is required.
- Prior to export the meal is to be subject to fumigation using phosphine.
- Imports are to be accompanied by documentation for which there are two options; exports from Solomon Islands currently operate under Option 1.
- A phytosanitary certificate which attests to specified time and temperatures parameters, freedom from contamination with material of animal origin (e.g. cross contamination from meat or fish meals during processing).
- A manufacturer's certificate providing details of the company and place of manufacture.
- A fumigation certificate attesting to phosphine fumigation under set time/concentration parameters.
- Upon arrival the containers are inspected inside and out and the meal subject to visual examination for contaminants such as seeds, soil or infestation with insects.
- Should any contaminant be found that is deemed to be of quarantine concern (such as viable seeds, presence of insects, and presence of animal material) then a series of measures for further identification, testing and/or treatment such as fumigation are defined.

The requirements for entry into Australia can be summarised as:

- An importer must make an application for an import permit which includes submission of information relating to their manufacturing process and export pathway. The application is subject to a desk top audit and may be followed by a physical onsite inspection visit. The import permit is granted specific to a processing premise site. The permit is required to be renewed every 2 years.
- Imports are to be accompanied by a manufacturer's declaration in relation to specified time and temperature parameters, and in relation to there being no contamination with material of animal origin (e.g. cross contamination with meat meal or fish meal during processing).
- Imports are to be accompanied by an official phytosanitary certificate attesting to origin and inspection of the container for Giant African Snail (GAS).
- Upon arrival the containers are inspected inside and out and a sample of the meal taken for visual examination for contaminants such as seeds, soil or infestation with insects.
- Should any contaminant be found that is deemed to be of quarantine concern (such as viable seeds, presence of insects, and suspicion of presence of animal material) then a series of measures for further identification, testing and/or treatment such as fumigation are defined.

The requirements are relatively straight forward, essentially if the documentation is compliant and the meal (and the container in which it is imported) is visually free of contamination particularly of insects, seeds, and animal material then entry will be granted. Neither country requires any form of pre-export diagnostic testing for any quality or safety parameters such as aflatoxin levels, nor is any testing for these parameters conducted upon arrival as part of the biosecurity clearance process.

There are some differences between the two countries' requirements. Pre-export fumigation is mandatory for New Zealand, but not for Australia; however, AQIS does actually encourage exporters to pre-export fumigate. The main difference is the requirement by Australia for an import permit based upon assessment of the process and possible associated site inspection.

The requirements are based on concern with biosecurity risks from exotic pests, viable seeds and contamination with animal material as a possible animal health risk (Transmissible Spongiform Encephalopathy, TSE) and that these types of containerised plant product meals represent a potential pathway for entry. These risks and the import conditions imposed by Australia and New Zealand appear reasonable and justifiable.

3.3 Issues and Recommended Actions

Discussions with the exporter and buyer have identified three issues in relation to meeting quarantine entry requirements into both New Zealand and Australia, and in regard to meeting industry quality standards for aflatoxins.

The first issue raised was that in each of the three latest consignments (totalling 34 containers) of PKE exported to New Zealand a number of containers failed to meet the required quarantine standards and this necessitated additional inspection activities by New Zealand quarantine, and container washing and/or fumigation. This resulted in significant costs being incurred by the buyer who expressed concern regarding the continued viability of PKE exports to New Zealand unless the reasons for these repeated failures are resolved.

Investigation of interception data for the consignments and discussion with New Zealand quarantine showed that the failures all involved problems that were probably preventable through better container hygiene and effective sealing of the containers prior to pre-export fumigation. The reasons for the failures identified are not unique to Solomon Islands and are according to New Zealand, along with water damage, the most common issues they detect in containerised imports of these meals.

The exterior of 7 containers were contaminated with soil necessitating washing in New Zealand. Solomon Islands is recognised by New Zealand as a high risk country for containerised trade due to the presence of a number of invasive ant species and the GAS which are exotic to New Zealand and any visible soil contamination results in full container washing. This contamination is indicative of a breakdown in the process of pre-export washing that is conducted at the Honiara port for all containers exported to New Zealand under the Sea Container Hygiene Scheme (SCHS) operated by Ports Authority in association with Swire Shipping and audited by New Zealand quarantine.

Infestation of the PKE meal or interior of the container with insects was also found to have occurred necessitating fumigation of 31 containers. It is considered likely that the tape used to seal the container prior to pre-export fumigation had not been applied correctly or that the container seals had been compromised. Discussions with the exporter have shown that obtaining adequate access to the full containers awaiting shipping at the port in order to conduct the fumigation within the required pre-export period is an issue. This would seem to indicate the need for better management of the container movements prior to export. That no records are available to provide procedural evidence of correct pre-export fumigation is indicative of a broader general weakness in fumigation standards in Solomon Islands. This will be discussed in the separate report to the SIMAWG on the impact of GAS on trade.

It was also noted by the buyer that quality issues had been detected by his customer which indicated that the sealing of containers had not been adequate with water damage to the meal and that the interior of 1 container had been contaminated with oil or some other chemical necessitating condemnation of the contents by the buyer. Discussions with the exporter have shown that the PKE containers are not subject to any consistent form of inspection at GPPOL prior to loading. It is

understood that the containers utilised have been unloaded at GPPOL and may have previously contained materials such as fertilisers or other agrichemicals.

In terms of resolution of the container hygiene issue discussions with the shipping agent (Tradco Shipping Agents) showed that the 7 containers concerned were not subject to correct washing due to a handling error at the port. It is understood that the procedural reasons for this handling have now been resolved. Also examination of the compliance reports for the SCHS showed that at the time of the PKE consignments only 2.4% of containers imported into New Zealand from Honiara (including empty containers) were found to be contaminated which is below the 5% action threshold set by under the scheme. This is indicative that the SCHS is currently operating well at Honiara port so no specific recommendation for further action is made here. The operation of the SCHS is discussed in more detail in the separate report being provided to the SIMAWG on the impact of the GAS on trade.

To avoid recurrence of the fumigation failures and interior contamination problems it is necessary to ensure containers are checked consistently prior to loading and pre-export fumigation conducted correctly. To achieve this it is **recommended** that PHAMA technical staff be tasked to assist SIAQS, the exporter and GPPOL with establishing:

- A simple checklist based process of container cleaning and inspection prior to loading to ensure container interiors are free of contamination and have effective doors seals.
- A simple checklist based process for pre-export fumigation including basic description of expected tasks and standards.

These documents will provide a quality assurance tool and a record trail to support export certification, help protect the exporter against any future issues, demonstrate compliance with good practices, and support pre-export fumigation outcomes.

The question of adequate access to conduct pre-export fumigation of the loaded containers when stored at the port and the potential for water blasting damage to fumigation taping of container vents are issues that will need discussion between the exporter, shipping agent, Ports Authority and SIAQS. It is **recommended** that a meeting between these parties be held to discuss the issue and that PHAMA technical staff facilitates the meeting.

The second issue raised was compliance with the industry standards for aflatoxin in copra meal both in New Zealand and Australia and whether pre-export testing may be of assistance. No issues were raised by either the exporter or buyer in regard to testing of other quality parameters such as composition (protein, fibre, fat, ash, moisture). At this stage Solomon Islands copra meal has not been identified as having any particular issue with aflatoxins; however, given the concerns in the market regarding aflatoxin levels conducting pre-export testing could be of value in ensuring process quality is maintained and as a protection against any issue with detection of noncompliant aflatoxin levels upon import.

Neither New Zealand nor Australia has a regulated national standard for aflatoxin levels. However, voluntary industry standards have been set by agreement between dairy and feed manufacturing industry bodies and pushed by large commercial players such as the leading dairy product company Fonterra. In 2008 following issues with aflatoxin detected levels in milk a Code of Practice⁴ for the use of copra meal in dairy cattle feed was established in New Zealand which set guidelines for importation, handling, sampling, testing methods and detection limits. In both countries the level set for maximum

⁴ Code of Practice for the Importation, Distribution, and Handling of Copra Cake (including meal and pellets) to the Dairy Cattle Industry, 2008. New Zealand Feed Manufacturers Association and Dairy Companies Association of New Zealand

total aflatoxin in copra meal is 20 ppb for manufacturing of stock feed rations. In New Zealand copra meal intended to be used for feeding to dairy cattle must be tested upon arrival and shown to be less than 5 ppb aflatoxin B1 prior to on selling and a 15% maximum level is set for copra meal as a constituent in any feed ration for dairy cattle. Discussions with Fonterra milk quality staff showed that they have lobbied for a legislated national standard on aflatoxins and would prefer the banning of copra meal entirely as a stock feed for dairy cattle, particularly as not all feed millers are members of the feed manufacturers association which has agreed to the current Code of Practice. However, the New Zealand Ministry of Agriculture and Forestry (NZMAF) are apparently reluctant to pursue this over concerns on the ramifications for testing and enforcement of a national aflatoxin level for other feeds such as hay and silage and prefer to leave the issue to industry.

Industry standards in both New Zealand and Australia have mandated testing methods. Rapid tests registered for use with copra meal⁵ are allowable but are discouraged due to concerns over sensitivity and repeatability of results. Preference is given to testing in a nationally accredited laboratory using a recognised testing method. Normally for aflatoxins this will involve Enzyme Linked Immunosorbent Assay (ELISA) or analysis by High Performance Liquid Chromatography (HPLC). The current copra meal imports into Australia are tested by the buyer at the accredited Symbio Alliance laboratory in Brisbane using HPLC testing. The testing history record for these imports is very limited with only 3 sample results available all of which show compliant aflatoxin levels.

There are several options for pre-export testing for aflatoxins in Solomon Islands. However, for the results to be considered credible by importers and buyers a recognised high quality test would be required equivalent to that already conducted upon arrival in Australia, e.g. HPLC or ELISA. The testing equipment to support these methods is very expensive to purchase (AUD30,000–70,000) and requires a well-controlled laboratory environment, and high level of technical skill and proficiency to operate consistently. Testing by these methods is also costly to maintain and is dependent upon high volumes (e.g. more than 500 samples per year) to be cost effective as the reagents and blank testing standards required for calibration are expensive. For these reasons establishing this type of testing capacity in Solomon Islands is not currently a viable or practical option.

Simple rapid test kits are also available for aflatoxin testing and can be purchased cheaply from Asia, Australia or the USA (AUD2–20 per test). These are widely used in the grain and nut industries for process control and field testing for aflatoxins. They are considered to have a reasonable degree of sensitivity for detecting aflatoxin and can be either qualitative or quantitative with kits available with different detection limits of between 1–50 ppb. Although simple to use the quantitative kits still require a degree of technical skill to conduct extraction of the sample and proficiency in order to ensure repeatable results. To maintain proficiency operators should also conduct regular tests. These kits are definitely an option for exporters to use as a means of improving the monitoring of the quality of their meal processing outputs and to provide them with some assurance pre-export on aflatoxin levels. However, buyers or importers in Australia or New Zealand would not consider this type of testing as adequate to meet industry standards and would still conduct the same testing they do now upon import using HPLC or ELISA methods.

The sending of samples overseas to laboratories is another option. Quotes for aflatoxin testing were obtained from one accredited laboratory in New Zealand (NZD191 for aflatoxin B1, B2, G1 and G2); however, testing in Brisbane is the most likely choice due to ready flight availability. It is worth noting that samples to Australia will still require an import permit (they should be able to be imported under

⁵ www.gipsa.usda.gov/GIPSA/webapp?area=home&subject=lr&topic=hb-af1.

the exporters commercial permit, however, this would need clarification with AQIS) or will need to be sent to an AQIS approved laboratory for testing under transitional quarantine arrangements. Symbio Alliance Laboratory in Brisbane is in the process of obtaining AQIS approval as a transitional facility and could be an option for testing in this way (a quote for aflatoxin testing of AUD\$130/sample was obtained not including courier/freight or potential AQIS related charges). It is not clear at this stage how long turnaround time between sending a sample and obtaining a result would be; however, it is assumed that it would be possible within 5 working days. Sending samples for testing in this way to Symbio Alliance is certainly a viable option for exporters should they wish to verify their quality and safety parameters prior to export or to benchmark their process quality control.

The role of testing should only be to verify that process control has been effective, otherwise it simply represents an ambulance at the bottom of the cliff. Elevated aflatoxins occur in copra meals due to issues with moisture and mould either as a result of poor quality copra being milled, inadequate processing to reduce moisture or poor handling or storage conditions post processing. Good control of the production inputs and process will effectively limit the presence of aflatoxins. At present it appears little or no quality control is conducted for the copra meal produced for export.

To avoid any issues with aflatoxin levels with Solomon Islands copra exports what is actually required is the development of a very basic quality assurance process for the copra that is purchased (rapid drying of copra once husked, no purchases of wet or mouldy copra meat) and for the process of its milling, bagging, storage and transport. As a minimum the continued testing by the importer upon arrival in Australia will provide verification of the outcomes of this quality assurance process and to establish a testing history record. With time this would provide a basis of information to defend Solomon Islands copra exporters should any claims of high aflatoxin levels be made by feed millers. Exporters may also wish to utilise rapid test kits to monitor process outcomes or to send samples away to Symbio Alliance to independently verify the outcomes of the quality assurance process. This, however, is not considered essential at this stage and will be a commercial decision.

It is **recommended** that:

- The exporter in association with the importer establishes a simple checklist based quality assurance programme describing basic standards and process steps (the New Zealand Code of Practice on copra cake in animal feed can provide a basis for this).
- That the exporter utilise rapid test kits and/or send samples to Symbio Alliance laboratory in Brisbane for verification of quality parameters. However, this is a commercial decision.

PHAMA technical staff could be tasked to provide assistance with establishment of the quality assurance documentation, if so this should be done in association with CEMA and SIAQS.

The third issue raised is in relation to the required import permit for exports to Australia. Currently two businesses hold valid import AQIS import permits: GPPOL and STP. These are due to expire on 17 June 2011. AQIS have made it clear to the exporter and buyer that an onsite inspection of the copra meal export facility and process will be required prior to permit renewal. Without this permit exports to Australia are not possible. The estimated cost of the site visit is AUD 9000. Both the exporter and buyer have indicated that given the small export volumes and relatively low value of the commodity that the cost of the site visit is prohibitive. The exporter has also expressed concern over the need and basis for the visit as AQIS has previously never required an inspection visit. Attempts have been made to share the cost of the visit across 2–3 businesses; however, the other businesses have chosen not to be involved as they currently do not wish to engage in exports.

Discussions with AQIS have shown that they are currently reviewing the biosecurity risk in relation to importation of bulk meals and how effective their current procedures are in dealing with these risks. They have determined that the majority of noncompliant shipments of these meals are received from countries where premises have to date only been subject to desk top audits as part of their import permit application process and not subject to onsite inspection. As a result AQIS now have a policy that any new permit or renewal must include a site inspection. This policy has already been applied to other Pacific countries who are larger exporters of copra meal such as Kiribati. Examination of AQIS policy documents has shown that they have previously recommended implementation of onsite visits for all permit renewals for feed meal imports but have obviously not implemented this policy consistently.

It was discussed with AQIS whether they would be willing to consider waiving this visit requirement for Solomon Islands or to consider a third party audit by staff from PHAMA, SIAQS or CEMA. They have stated that they are unwilling to waive the requirement or to allow third party audits for the initial onsite visit. However, if the premises were found to be compliant and sufficient capacity could be demonstrated locally to conduct a third party audit (e.g. by SIAQS), then they would be willing to consider alternative arrangements for future permit renewals.

Given the short time frame before the current import permit expiration it is **recommended** that PHAMA fund the onsite inspection visit by AQIS in Solomon Islands and that this visit be used to inspect any copra meal and PKE processor who may wish to consider exporting to Australia. In the case of PKE this will enable Solomon Islands to maintain market access to Australia as a backup should a decline in pricing or other factor result in a need to change from supplying the New Zealand market.

However, it is important to note that the outcomes of the onsite inspection visit are not guaranteed and it is not clear at this stage if Solomon Island meal exporters' processes will comply with AQIS standards. A failure to comply would likely result in the need for follow up remedial actions and possibly additional visits to verify changes made. Any significant noncompliance would also likely result in permit renewal being suspended and exports stopped. In this regard should PHAMA agree to fund the required AQIS inspection visit it is **recommended** that pre-visit inspections of any proposed exporters process/premise be carried out by PHAMA technical staff (in association with SIAQS and CEMA) with reference to AQIS standards and that based on findings of those inspections enter into a dialogue with AQIS on any identified issues and actions that could be taken prior to the AQIS visit to increase the likelihood of a positive outcome. In anticipation of this, tasking copies of the site inspection standards have been obtained from AQIS; these comprise a group of policy type documents rather than a defined set of inspection criteria and check lists. However, at this stage no inspection of the meal processes has been conducted pending direction by the SIMAWG. Should the SIMAWG approve this task then PHAMA short term technical staff will need to liaise with AQIS and exporters in regard to the inspection process and expectations.

In terms of longer term building of local audit capacity or other arrangements to support future permit related inspection visits it is worth noting that AQIS are now taking over the external audit role for Solomon Islands participation in the Sea Container Hygiene Scheme. These audits occur annually and may present opportunities for visiting AQIS staff to conduct import permit renewal or verification activities at minimal additional cost. Depending upon compliance history this would also present an opportunity to increase trust and assurance for Solomon Islands meal exports and possibly lead to reducing the frequency of inspections required for permit renewal. This would require further

discussion with AQIS depending upon the outcome of the initial onsite inspection visit. It is also worth noting that under the Solomon Islands Rural Development Programme (RDP) work has been initiated to try and improve capacity in SIAQS to conduct audit and verification activities. This work has established a strong link with NZMAF for training and technical assistance on developing standards and procedures for quarantine activities. It is specifically intended that the role of SIAQS in monitoring or auditing the SCHS be explored as a means of improving compliance of the scheme and potentially reducing its costs (this will be discussed in more detail in the separate report to the SIMAWG on the impact of GAS). This work will hopefully strengthen the credibility of SIAQS with AQIS and could lead to SIAQS having a recognised role in auditing premises as part of future permit renewals. Again this will need further future discussion with AQIS depending on the outcomes of the initial onsite inspection visit. It is **recommended** that PHAMA and SIAQS consult with RDP on the intended training plan to be delivered by NZMAF to ensure coordination of objectives in regard to longer term building of audit capacity in SIAQS to support permit renewal for copra meal exports.

Summary of Recommendations

4.1 Cocoa Quality Testing

In regard to the set objectives for investigating cocoa quality standards and testing the following recommendations are made.

1. That the information obtained on clarification of quarantine entry for cocoa samples to Australia be provided to CLIP, CEMA and SIAQS exporters including a description of the additional documentation package required
2. That PHAMA short term technical staff be tasked to develop a national quality standard for Solomon Islands cocoa in consultation with CEMA, exporters and CLIP with reference to market requirements and existing international standards available. Such a standard could be voluntarily adopted by industry or incorporated into amended national legislation including definition of the responsibilities and process relating to quality testing both for exporters and CEMA. This choice of industry standard or legislated standard will require further discussion between industry and CEMA
3. The progression of improvements in cocoa quality standards and testing will be a coordinated effort between CEMA, CLIP, industry stakeholders, PARDI and PHAMA. It is recommended that PHAMA's inputs be in the form of technical assistance to develop the quality standard (dependent upon market requirements as identified by CLIP and the proposed PARDI cocoa market research activity), development of appropriate laboratory documentation to support testing, funding support for appropriate training of laboratory staff on testing methods and providing technical assistance with laboratory accreditation if appropriate. The full extent of these inputs will not be clear until the findings of CLIP and PARDI's work on markets is available, this is expected by October 2011. There is a need to establish the quality standard and have adequate functional local testing capacity in place preferably before the end of 2011 but at least before the new cocoa harvest begins in April 2012.
4. Discussions with CLIP have shown that they have funding to support interim quality testing of samples as necessary. Also it is likely that testing at Symbio Alliance Laboratories in Brisbane will be sufficiently affordable for exporters to fund their own quality testing as required. As a result at this stage it is recommended that PHAMA does not take a role in funding interim cocoa quality testing but should be ready to provide technical assistance to resolve any market entry issues as necessary.
5. To assist with gathering information on identified quality issues (such as variations in moisture levels) it is recommended that CEMA notify all cocoa exporters of the requirement for the provision of "out turn report" test results for each export consignment under the Cocoa Regulations 1986. This will assist in gathering testing history records on moisture content and other quality aspects in order to analyses trends and assist with qualifying the scale of issues and their potential causes.

4.2 Copra Meal Quality Testing

In regard to the set objectives for investigating testing capacity requirements for copra meal exports the following recommendations are made.

1. To avoid recurrence of the fumigation failures and interior contamination problems identified for PKE exports to New Zealand it is recommended that procedures be developed to ensure containers are checked consistently and pre-export fumigation conducted correctly. It is

recommended that PHAMA technical staff be tasked to assist SIAQS, STP and GPPOL with development of:

- A simple checklist based process of container cleaning and inspection prior to loading to ensure container interiors are free of contamination, and have effective doors seals.
 - A simple checklist based process for pre-export fumigation including basic description of expected tasks and standards.
2. The questions of adequate access to conduct pre-export fumigation of the loaded PKE containers when stored at the port and the potential for water blasting damage to fumigation taping of container vents require discussion between the exporter, shipping agent and Ports Authority. It is recommended that a meeting between these parties be held and that PHAMA technical staff facilitates the meeting.
 3. It is recommended that in order to prevent issues with aflatoxin levels being detected in Solomon Islands copra meal, that:
 - STP in association with the Australian importer establishes a simple checklist based quality assurance programme for copra meal describing basic standards and process steps (the New Zealand Code of Practice on copra cake in animal feed can provide a basis for this).
 - STP utilise rapid test kits and/or send samples to Symbio Alliance laboratory in Brisbane for verification of quality parameters pre-export. However, this is a commercial decision and it is not recommended for PHAMA funding.

PHAMA technical staff could be tasked to provide assistance with establishment of the quality assurance documentation, if so this should be done in association with CEMA and SIAQS.

4. It is recommended that PHAMA fund the required onsite inspection visit by AQIS in Solomon Islands to renew STP's import permit for copra meal and that this visit be used to inspect any copra meal and PKE processor who may wish to consider exporting. PHAMA technical staff will need to liaise with AQIS and exporters on the objectives and expectations for the visit.
5. Should PHAMA fund the required AQIS inspection visit it is recommended that pre-visit inspections of any proposed exporters process/premise be carried out by PHAMA technical staff (in association with SIAQS and CEMA) with reference to AQIS standards and enter into a dialogue with AQIS on any identified issues and actions that could be taken to increase the likelihood of a positive outcome from the AQIS visit.
6. It is recommended that PHAMA and SIAQS consult with RDP on the intended training plan to be delivered by NZMAF to ensure coordination of objectives in regard to longer term building of audit capacity in SIAQS to facilitate reduction in the costs of permit renewal for copra meal exports through third party audit.

Limitations

URS Corporation Pty Ltd (URS) has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of AusAID and only those third parties who have been authorised in writing by URS to rely on the report. It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report. It is prepared in accordance with the scope of work and for the purpose outlined in the Contract dated 20 January 2011.

The methodology adopted and sources of information used by URS are outlined in this report. URS has made no independent verification of this information beyond the agreed scope of works and URS assumes no responsibility for any inaccuracies or omissions. No indications were found during our investigations that information contained in this report as provided to URS was false.

This report was prepared during May 2011 and is based on the conditions encountered and information reviewed at the time of preparation. URS disclaims responsibility for any changes that may have occurred after this time.

This report should be read in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties.



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