



## Kia ora

Welcome to the first issue of *NBL News*, where you can keep up-to-date with progress on the construction of the National Biocontainment Laboratory.

The Ministry for Primary Industries is building a new, high-level biocontainment laboratory for veterinary diagnostics in Upper Hutt, which will also house a suite for human health diagnostics. Situated at the National Centre for Biosecurity and Infectious Disease (NCBID) in Wallaceville, the \$87 million investment will ensure that strategically important diagnostic methods can be safely and rapidly used into the future. This work is critical to the identification and management of exotic disease, allowing our staff to respond quickly and effectively.



*Artist's impression of the new facilities at Wallaceville*

Extensive design work was completed in late 2014. Construction is at an early stage with the site being prepared, and the facility is expected to be operational in early 2019.

High-level biocontainment laboratories are uncommon. They are highly complex and required to meet a range of international standards for the safe handling of high-risk infectious organisms. One of the challenges for the project has been to access the necessary expertise to ensure design and construction meet these rigorous requirements. A strong team with world leading expertise in design and construction of these types of facilities has been assembled to support the project. International biocontainment experts will be on site until the facility is fully commissioned, keeping a close eye on construction details and maintaining the highest levels of quality assurance.

The National Biocontainment Laboratory will position New Zealand well for the future. It will provide vital information so that suspect and confirmed cases of diseases such as avian influenza, anthrax and brucella can be managed quickly and safely. Laboratory staff will conduct ongoing surveillance for high-risk diseases to provide assurance to our trading partners that New Zealand remains free of diseases that could stop our animal products being accepted offshore. The new laboratory will be a key part of our post-border biosecurity, allowing us to manage biosecurity risk, ensuring New Zealand's animal products remain highly sought after by international consumers and protecting the health of New Zealanders.

## Laboratory Construction Begins

Construction of the National Biocontainment Laboratory officially started on Thursday, 22nd October when the Minister for Primary Industries, Nathan Guy, turned the first sod on the site where the new facility will be built. The ceremony marked the beginning of the main build and was well attended by primary industry and community stakeholders, MPI staff, the design team, and representatives from the Fletcher Construction Company, the contractor selected to build the new lab.



*The Minister for Primary Industries turns the first sod. From left: Lyn Provost (Controller and Auditor-General), Martyn Dunne (Director-General, MPI), Hon Nathan Guy, Andrew Coleman (Chief Operations Officer, MPI), Bill Herbert (local Kaumātua)*

During his speech the Minister highlighted the importance of the laboratory to New Zealand's economy, enabling the Ministry for Primary Industries to continue the work that's done responding to animal disease outbreaks and providing international trade assurances about our animal disease status.

Over the past few months there has been a lot of work to prepare the site for construction, such as relocating services (water, electricity, drains and communication lines) and demolishing two outdated laboratory buildings to clear the site for construction. Initial construction work on site includes drilling for the hold-down piles, a key part of the building's earthquake protection system. Drilling the 1.8 metre wide, 14 metre deep holes is expected to take around a month and will be followed by further bulk excavation in preparation for the foundations.



*MPI, Design and Construction teams at the sod-turning ceremony*

## Introduction to the NBL Project Team

High-level biocontainment laboratories are complex, specialised facilities. MPI has assembled a team of experienced design, engineering, and construction professionals to deliver the National Biocontainment Laboratory.

### Ministry for Primary Industries

The MPI team brings together specialist scientific, project management, construction, and engineering expertise. The MPI team has a key focus on ensuring that the final laboratory work environment allows the scientific staff to do their work effectively, while maintaining the highest level of safety and containment. They provide overall direction to the project and keep a close eye on the project schedule and budget. A wide range of MPI staff have been involved throughout the design process, together with international biosafety experts to ensure the design is fit-for-purpose.



*MPI Project Manager Mike Hannaway, Project Director Dr. Joseph O'Keefe, and FCC Project Manager Chris Edwards visit a lab currently under construction*

### Laboratory Design

Merrick & Company, an internationally recognised engineering and design firm has designed the facility, and were involved from the very early stages of the project (gathering user requirements). Experts from Merrick & Co. also have responsibility for commissioning the laboratory. Merrick has designed and commissioned many similar biocontainment facilities worldwide. Led by Paul Langevin, PEng., the Merrick team has been supported by leading local designers including Dunning Thornton Consultants Ltd. (structural engineering), CCM Architects (external envelope), and Beca (services engineering). Merrick commissioning specialist Gilles Tremblay has relocated from Canada for the remaining phases of the project to oversee construction and commissioning of the facility.

### Construction

In July 2015, after an extensive procurement process, MPI engaged the Fletcher Construction Company (FCC) to build the new facility. The construction team is led by construction project manager Chris Edwards. Members of the FCC team have visited high-level containment laboratories in Australia, Europe and North America in preparation for the work. The FCC team has worked closely with Merrick & Co. and MPI to refine the design and test it for buildability.

The NBL Project Team Leaders:

- Dr. Joseph O'Keefe, Project Director (MPI)
- Mike Hannaway, Project Manager (MPI)
- Nathan Woods, Engineer (MPI)
- Sophie Ivory, Coordinator (MPI)
- Paul Langevin, Director of Laboratory Design (Merrick & Co.)
- Gilles Tremblay, Director of Commissioning Services (Merrick & Co.)
- Chris Edwards, Project Manager (FCC)
- Daryll Dalzell, Quality Assurance Manager (FCC)
- Tim Clark, Site Manager (FCC)



## CLOSE UP on User Requirements

User requirements can be defined as the owner's key business needs for the operational facility and what it produces. Determining the user requirements was a strong focus at the start of the National Biocontainment Laboratory Project, as it provides a key instruction to the designers about what is needed and how it should perform. It also ensures we are only building what is needed (labs of this type are expensive) and provides the ability to measure the benefits at the end of the project.

To understand this in depth, we involved a wide range of stakeholders, including laboratory staff, operations managers, facilities management staff, external stakeholders such as animal industry bodies and other Government departments such as the Ministry of Health and Treasury. We visited other labs overseas, including labs that had just been completed so we could learn from others' experiences. We used a variety of formats such as workshops, Investment Logic Mapping and questionnaires to gather information. We analysed laboratory workload associated with major exotic disease outbreaks either overseas or from models developed in New Zealand. We also examined the risk profiles of the organisms we would be dealing with to determine the right mix of containment measures the lab would need to operate safely.

The results of all this work was a good understanding of what we needed the completed facility to achieve. Key user needs that developed from this included:

- an ability to meet the needs of a biosecurity emergency such as a foot and mouth disease outbreak,
- a high level of earthquake protection,
- meeting internationally accepted standards for containment and safety,
- being able to deal with samples suspected to contain very high-risk pathogens,
- having capacity to use modern, proven diagnostic methods and adapt as new testing methods become available,

The final design includes a number of innovative solutions to address these challenges, which will be covered in future issues of this newsletter.