

POST OCCUPANCY EVALUATION

KIMI ORA SCHOOL NAENAE, UPPER HUTT



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1 EXECUTIVE SUMMARY

1.1 SCOPE OF POST OCCUPANCY EVALUATION

The Ministry of Education (MoE) commissioned Opus International Consultants Ltd to undertake a Post Occupancy Evaluation (POE) of the buildings and immediate exterior at Kimi Ora School, Naenae Wellington. The purpose of the review in accordance with the commissioning brief was to:

- Evaluate the effectiveness of the design and procurement process.
- Evaluate the end product of the completed school facility in terms of its compliance with the MoE guidelines.
- Evaluate the performance of the completed school as a suitable learning environment.

The aim of the evaluation survey is to identify the positive and negative aspects of the new school project and give recommendations that will increase the effectiveness of future school development projects. These aspects have been identified through an interview with key school staff, observations made by the survey team, and ad-hoc discussions with staff and users during the survey of the school. The key recommendations identified have been categorised into two sections, general and school specific.

This report and evaluation has been prepared based upon the MoE standards, the building code and relevant NZ standards in place at the time of the design and construction of the school. Comparing the school's design and specification to these sources provides comparative observations which will help inform the continued evolution of the MoE's guidelines.

1.2 BACKGROUND

Kimi Ora is a purpose built school for students with physical disabilities and associated learning difficulties aged between five and 21 years. It is located in Naenae, Lower Hutt between Naenae College and the Naenae Intermediate School. Kimi Ora offers therapies in the areas such as speech and language, occupational therapy and physiotherapy.

The school was designed by Bell Kelly Beaumont Team Architects and was constructed by Maycroft Construction & Management during 2010, officially opening at the start of 2011. The buildings consist of five classroom spaces within one single storey building. Grounds include staff car parking and a drop off zone, an external courtyard and gardening area, an orchard area and a performance space.

Kimi Ora has been awarded a 5 star Green Star NZ Education Design and Build Certified Rating, which represents New Zealand Excellence among Green Star NZ assessed sustainable designs. The school's design has subsequently won awards from the Master Builders Association and the New Zealand Institute of Architects.

1.3 CONCLUSION

A combination of well specified internal linings, effective placement of impact protection, wide unobstructed circulation routes and flexible learning spaces has meant Kimi Ora has stood up well to use in its first few years of occupation.

Staff were very appreciative of the aesthetic appeal of the school and grounds, as well as of their flexibility as learning spaces, reporting that they felt for the most part the needs of their students and the varying requirements of the classes and therapies undertaken at the school were met effectively. Most areas of the school were reported to be very accessible to students, with wide and level paths and entrances and an easily understood circulation route through the premises.

Anecdotally, staff appreciated that the designers strived to implement sustainable features, but feel that the ongoing operational, maintenance and compliance requirements for the building and systems has been more onerous and costly than anticipated. Examples of note include the solar hot water heating system, the heat pumps, the pool and pool floor, the cedar cladding at height, the sprinkler systems and the automatic entry door. Other minor aspects that the staff felt could be improved were around control of the main entrance for students and visitors, especially during power outages, and the space for storage and in learning areas to cater for the additional requirements of high dependency students.

The findings of the survey, interview and of general staff discussion revealed that the school is robust, fit for purpose and standing up well to its demanding users. The site and buildings at Kimi Ora have generally been thoughtfully designed to comply with the MoE and NZ Building Code requirements while, as reported by staff, meeting the needs of the users by providing effective and resilient facilities for students with high dependency needs.

1.4 KEY OUTCOMES

A number of specific design elements were identified at Kimi Ora that show good practice. These include:

- Window winders and controls have been installed to be accessible for staff, but at heights that prevent tampering by students. This design works particularly well in the high-dependency school environment and has been appreciated by the school staff.
- External services and plant, such as the heat pumps, have been installed within secure protective and lockable cages. Access for service technicians is easy, and the cages also prevent damage to the units while offering protection from tampering.
- The internal linings to walls and floors have been well specified. There is effective placement of impact resistant material, particularly in circulation routes where occupants walk or go by wheelchair or walking frame. The linings are resilient enough to withstand the high-dependency school environment.
- Fixtures and fittings in bathrooms and wet areas are well specified. The fixtures are of high quality, and allow easy access for cleaning. Effective floor drainage of splashed water from basins water has been installed. Good practice has been implemented in terms of drip details and sealing of joints between fixtures and adjacent linings have been provided.
- The various spaces within Kimi Ora were felt to be visually appealing by all users, with good levels of lighting throughout the building assisting the facility's appeal. This was achieved by a combination of both artificial lighting and natural daylighting.

1.5 GENERAL RECOMMENDATIONS

A number of general recommendations have been identified as a result of the survey and interview at Kimi Ora that can inform the continued development of the MoE's guidelines. These include:

- A simplified user manual for the operation of essential building systems, such as HVAC (Heating, Ventilation and Air Conditioning), lights, doors, mechanical systems, as a requirement of handover would assist staff in understanding how to use and maintain them from the outset. The as-built and manuals package received at handover of the school is perceived by staff as too complex to make use of. A simplified user manual would also assist in ensuring knowledge of the operation of the building is retained within the current school staff when personnel changes occur.
- Users at Kimi Ora School suggest that the storage needs of high dependency schools and students is greater than that of other schools. Currently mobility equipment is stored in circulation areas at Kimi Ora due to a lack of suitable alternative storage. Increasing the provision for storage may declutter entrances and circulation routes in schools catering to these students.
- Where specifying powered control systems for entrances and windows, consider requirements for "fail safes" that allow the building to be secured and weathertight in a power outage.
- Review the safety audit process undertaken at detailed design for fencing & gates with regard to purpose, positioning & dimensions. This is particularly relevant when designing for high dependency students. While fencing at Kimi Ora was of good quality, the fence type between the student and vehicle areas at the northwest has been found to be easily climbable. This makes ensuring students remain within the grounds a greater challenge for staff.

1.6 KIMI ORA SCHOOL – SPECIFIC COMMENTS

Further comments specific to the findings of the survey at Kimi Ora School include:

- School staff feel that they were not adequately instructed on ongoing compliance and maintenance requirements for building systems within the school. Within this, staff need to understand who their most relevant contact person is for each system within the building. This will help to ensure warranty requirements are understood and met.
- Consider replacement of the fence and gate at the north-west corner of the grounds with one that is taller and prevents students from being able to climb over and leave the grounds unsupervised. Staff identified this gate as a concern from an H&S perspective as the gate is climbable, and there is minimal oversight to it from adjacent areas.
- Relocate the exit/release button at the main entrance so that it is accessible to staff and visitors, but not as easily accessible to students. According to staff there have been a number of instances where students have left of their own accord due to the ease of opening the main entry doors.
- Install impact protection to doors and walls on the circulation route where they have been missed in the design. Staff noted a few areas where the impact-resistant lining and fittings (doors, missing kick-plates, etc.) had not been carried through in circulation routes, and these were evident by the signs of damage on these.
- Install a means of closing the main entry door and high level ventilation louvres in the event of a power outage. The current systems rely on electricity, and the windows and the main entry are unable to be operated at all during loss of power. The main door is more critical due to the building not being secure after hours, and the installation of a UPS (Universal Power Supply) to provide backup power to the door for a few hours could resolve this issue. Manual winders to high-level windows would be more resilient control system.



Figure 1 - Specially designed external performance and play area, and attached secured bike storage

2 SURVEY METHODOLOGY

The evaluation methodology is based on the UK Building Research Establishment (BRE) early stage POE methodology combined with specific MoE design requirements covering the procurement process from inception to completion, as well as relevant New Zealand and territorial requirements, standards and best practice. The three main assessment criteria used for the investigation are Process, Product and Performance.

PROCESS

This aspect of the POE seeks to identify how well the project performed using both a generic construction industry assessment framework and the MoE design requirements. The information will be collated from contract documentation provided by the MoE and interviews with MoE project representatives.

PRODUCT

This aspect of the evaluation seeks to understand the extent to which the facilities meet the core elements of the MoE design requirements.

PERFORMANCE

The final element of the evaluation seeks to determine the contribution that the facilities make towards the MoE goal of excellent educational outcomes. Three key elements of this assessment are functionality and fitness for purpose.

The information gathered under the above assessment criteria is collected by way of an interview with key school staff using a structured template of questions, one-to-one discussion with users of the school, and observations made during a survey of the buildings and grounds. The data is then collated under four headings in order to examine how specific building features perform and compare to the MoE design criteria for: -

- Accessibility
- Health & Safety
- Modern Learning Environments
- Sustainability



3 BACKGROUND OF THE SCHOOL

Kimi Ora is a purpose made school for students with physical disabilities and associated learning difficulties aged between five and 21 years. The school is located at 100 Walters Street, Naenae, Lower Hutt, between Naenae Intermediate School and Naenae College. The school was designed by Bell Kelly Beaumont Team Architects and was constructed by Maycroft Construction & Management during 2010, officially opening at the start of 2011.

Kimi Ora is Maori for "seeking well-being in health" or "to be made whole". The School was awarded a 5 star Green Star NZ Education Design and Build certified rating, which represents "New Zealand Excellence" in sustainability. The school has subsequently won awards from the Master Builders Association and the New Zealand Institute of Architects.

Taking enrolments from the wider Wellington Region, Kimi Ora has a roll of approximately 36 students. The school offers therapies such as speech and language, occupational therapy and physiotherapy in classes of 7-8 or on an individual basis. Students at Kimi Ora spend time with students at the neighbouring College and Intermediate schools as well as at other vocational services in the area.

The school consists of five classroom spaces within one single storey building. The design features a central outdoor courtyard area encircled by the main circulation route and learning spaces. The classrooms are each equipped with a tracking hoist system, and the school also features a hydrotherapy complex, wheelchair accessible playgrounds, a sensory room, large therapy and meeting rooms, a sensory garden and small orchard.



Figure 2

4 EVALUATION

4.1 ACCESSIBILITY

Positives:

- The school describes the vehicle route onto site as flowing effectively due to the one way loop system with separate entry and exit. The separate entry and exits are in line with MoE guidelines. The looping vehicle route has been effective for buses and taxis too. MoE guidelines require a separated route for buses, however this would not work as well for Kimi Ora, where many students have limited mobility. See Figure 2.
- Car parks for staff, visitors and delivery vehicles are in line with the requirements of the Greater Wellington Regional Council. See Figure 2. Visitor's car parks are clearly labelled.
- The drop off zone works well for student arrival and departure. The drop off zone is covered and close to the main building entrance. See Figure 3. Staff, students and parents appreciate the cover provided and the locality to the main entrance given the difficulties the students have with mobility.
- Signage to the school is effective, visible from the road and identification of the main entry of the school for visitors is simple. Signage and approach to the school for visitors is in-line with MoE requirements. See the report cover page for the school's signage as viewed on approach to the school.
- The accessible route through the site and buildings is continuous. All areas of the buildings are accessible via the internal circulation route, which loops around the central courtyard. Users report that the simple circulation route is effective for wayfinding. See the central courtyard and surrounding building in Figure 4.
- Staff report that the circulation route is generally effective for accessibility. Services do not protrude into circulation areas, and the minimum 1.8m circulation route width is met or exceeded throughout. These aspects are in line with the requirements for circulation routes within the NZ Building Code.
- The outdoor areas are easily accessible, with wide, flat paths and approaches to entrances. The orchard, garden area and courtyard are used both during breaks and class time. Staff found the outdoor areas of the school very practical and useful. See Figure 32.
- Window control are simple and easy for staff to operate. Window controls are a combination of automatic/powered for openings at height, with manual controls for lower level windows. See the louvres and automatic winders in Figure 5.
- Electric window controls are at heights accessible to staff and not students. The staff appreciate this because it reduces the risk of damage.



Figure 3



Figure 4



Figure 5



Figure 6



Figure 7

- All toilets throughout the school accommodate high dependency users. Staff report that access to the toilets and the facilities within are of a good standard. The bathrooms meet NZBC requirements for accessibility. See Figure 6.
- The High Dependency Spaces each have a power outlet located appropriately for a hoist. Emergency call/panic buttons are installed. There is an additional power outlet adjacent to the WC, both RCD protected. These aspects are in line with the MoE Guidelines. See Figure 7 and Figure 8.

Negatives:

- Windows control for the high level louvres are electrical with no manual override. When a power failure occurs the windows are unable to be closed. See Figure 5.
- Staff report that individuals can be difficult to locate in the school at times due to the looping nature of the circulation route. Users often “miss each other while hunting around the building”. Staff report that the lack of a P.A. system contributes to this.
- The wooden bridge over the landscaping in the carpark was designed to provide a shorter route from staff car parking to the main building entrance. Staff considered this bridge unsafe and the school subsequently closed access to it. Staff report that the bridge would frequently ice over and its surface offers limited grip underfoot, which is of particular concern when bringing resources into the school during inclement weather. See Figure 9.
- The main building entrance is controlled via a button that is at a height accessible to both staff and students. Staff believe this is an oversight in design as they have difficulty preventing some students from leaving the building unsupervised. This poses a risk to student safety. The main entry is pictured in Figure 10.
- Staff report that the control system for the underfloor heating system is complex and difficult to understand. Staff believe the localised dial controls have very little effect on the temperature within the learning spaces.
- Staff reported that the handover information provided at the opening of the school is too complex and detailed. There is too much technical information to sift through for staff to understand and address many aspects of maintenance. Staff suggested that a simpler end user guide would have assisted them to understand and meet maintenance requirements.
- The fire exit door from the gym/multipurpose space exits onto the car park and main vehicle route. This makes it difficult to ensure student safety in the event of a fire alarm.
- The staff consider there are insufficient security measures to enable them to monitor people going in and coming out of the buildings. They also reported a lack of oversight to building entrances from staff areas, and that that they cannot see when a visitor enters or a student tries to exit building from the main entry or empty learning spaces. See Figure 11 of the main entry and lobby. Staff advised they would have appreciated having separated visitors’ and students’ entrance, as these would assist

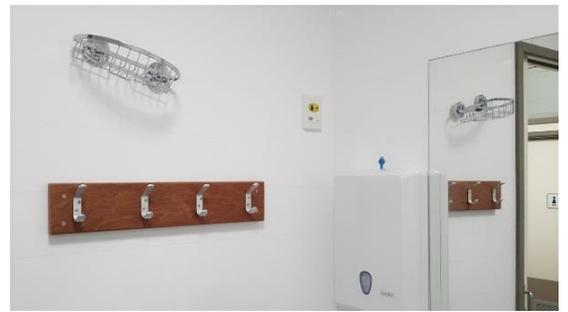


Figure 8



Figure 9



Figure 10



Figure 11



Figure 12

with monitoring visitors to site and prevent students from following visitors out.

- The pedestrian route to the school is not separated from the main vehicle route. Pedestrians must cross the vehicle route twice to get to the school entrance. See Figure 12 and Figure 13. There is also a pedestrian pathway linking Kimi Ora’s site to the neighbouring college, to which there is no alternative route to access other than crossing the car park.
- Kimi Ora has no Public Address (P.A.) system, meaning staff must manually track down people. This can be difficult due to the circular layout of the site.
- There is no path from the learning space and timber deck on the south- west of the buildings to the adjacent orchard and grounds. There is no ramp from the deck down to ground level, and the concrete paths were not continued right around to the south-west to connect all areas of the school.
- The school is not used by any external or out of hour’s users. Anecdotally the main reasons preventing the school from lending the facilities to external users are pool safety, security of pool systems while staff are not present, and the inability to separately secure the Gym/Multipurpose space from rest of school.
- Staff reported that they would appreciate having a single contractor contact point to discuss repair and maintenance issues as they arise. There have been problems with underfloor heating and door access buttons. They have been unsure who to contact about getting these fixed. Staff reported that as a consequence defects were still being resolved at the time of survey in November 2015.
- Staff have found that the heating system level controls are not ideal as they are difficult to understand, and require adjustment by a technician when seasonal changes in climate occur. Staff believe more basic control systems would have been more appropriate as “the school needs to be able to fix things easily and quickly”.



Figure 13



Figure 14



Figure 15



Figure 16

4.2 HEALTH AND SAFETY

Positives:

- Cameras have been installed, as have external lights to the building perimeter, exterior doorways, walkways and drop-off zones. The lights ensure the building is well illuminated and at night. See Figure 17 showing a dome-type security camera and exterior bulkhead light to the perimeter of the school.
- Staff report that oversight to areas that students usually access within the school grounds is generally good. The exceptions to this were the main playground area (southeast corner of the grounds) and the main entry.
- Fencing is generally well located to ensure student safety and security around the site, with the exception of the gate to the northeast corner of the grounds. The fencing is primarily metal pool fencing, which is difficult to climb and long lasting. No trip hazards or immediate risks to student safety were identified within the school grounds and buildings during the survey.
- There are emergency buttons in every bathroom. Staff report that the students are not able to understand and use these, but they are effective for staff. Figure 8
- The building is well equipped to warn occupants of an emergency event. The building has a zoned fire detection system – see Figure 18. An alarm sounds to notify occupants of an emergency. Sections of the building are able to be closed off in a fire event to control spread of fire. There were some initial faults with the automated fire curtain system early into occupation, but these appear to have been resolved during the defects period.
- There is a lockdown system in place for the school, which allows staff to quickly respond to any security event and keep occupants safe.
- Services are well secured behind secure panels, within ceiling voids or in locked cupboards. This ensures the services are not exposed to potential damage do not impede circulation routes. See Figure 43.
- A low pressure hot water underfloor heating system is in place throughout the school. This system is appreciated by staff as it poses a lower risk to student safety than alternative heating systems. Figure 20 shows the heat pump serving the underfloor heating.
- Power outlets throughout the school have Residual Current Device (RCD) protection installed as required by MoE guidelines.
- Toilets are effectively ventilated through a mechanical system. Discharge from the clothes dryer is adequately flued. Both spaces are ventilated. See Figure 19.
- External building services are behind lockable service cages/enclosures which are suitably located to avoid impeding circulation around the site, as required in the MoE Guidelines. See Figure 24.



Figure 17



Figure 18



Figure 19



Figure 20

Negatives:

- Early into the occupation of the school the wooden access bridge over the landscaping in the carpark was deemed unsafe. Cold mornings would see a build-up of ice on the bridge, and the lack of slotted surface or sufficient tactile tread meant underfoot grip was insufficient. The school maintenance staff applied a grit paint over the surface, but this was ineffective so the school resolved to block the bridge off. See Figure 9 and Figure 21.
- Staff reported that some students struggle to exit the building through the fire doors during emergency drills. Many of the doors are difficult for the students to operate alone due to their physical impairments.
- The fire exit doors from reception, areas of the main circulation route and the multi-purpose space open out directly onto vehicle routes in the event of a fire or emergency. This poses a potential risk to student safety. See Figure 22 of the vehicle areas directly adjacent the main building entrance.
- Staff reported that in a power outage the electric main entry doors open up automatically due to their programming, as they are on the fire escape route. If an outage occurs out-of-hours the building is unsecured. If an outage occurs in school hours there is nothing preventing students from exiting the building and school grounds unsupervised. MoE guidelines recommend time-controlled electronic locks for after-hours security, but do not specify how these systems should behave in a power outage. The fire protection requirements of the building code requires the door to behave in this manner
- Users have indicated that the fire sprinkler system has been problematic for the school. The system often fails compliance flow tests (required for building warrant of fitness) due to the water pressure not meeting requirements.
- The network server for the school is located within a non-air conditioned cupboard in the staff room. The door does have the recommended vent, but the cupboard has become a fire risk due to overheating. The cupboard doors have to be left open to provide enough ventilation to keep the equipment cool, which is against MoE guidelines for requirement for two layers of lockable security for ICT equipment, and results in the staff room getting overheated. The staff have placed a desk fan in the doorway to provide cooling, but a more permanent solution is required. See Figure 23.
- The heat pump installed on site lacks a floor/ground drain. As a result condensate pools around the units. This is unsightly, promotes algae growth and can become slippery. See Figure 24.
- The only exception to good quality fencing mentioned by staff was the gate and fence at the northwest of the site adjacent the multipurpose space and main vehicle entry/exit. The gate is too low which staff advised had been a repeated issue for students that like to climb and leave school grounds. See Figure 25.



Figure 21



Figure 22



Figure 23



Figure 24



Figure 25

4.3 MODERN LEARNING ENVIRONMENTS

Positives:

- Staff report that there is an abundance of general power outlets (GPOs) throughout, and that telecommunications outlets are located to facilitate the activities these spaces are used for. Power and telecommunication outlets in learning spaces are at heights and locations appropriate for accessible use by both students and staff. See Figure 26.
- The survey revealed that the power supply is generally appropriate for the specialist equipment in place throughout the school, such as hoists. Since opening there have been no reported issues with power outages caused by equipment or overloading within the school.
- Teaching spaces accommodate multi-media facilities and access to wireless technology. There are electronic whiteboards to each learning space.
- There is both hard wired and wireless network connectivity available on site. Outlets are located effectively and well used. The hard-wired connections are mainly used by for staff PC's.
- Each learning space has kitchenette, as does the multipurpose room. Staff reported that the kitchenettes were particularly useful within the learning spaces. See Figure 27
- Lockable roller doors are in place to close off kitchenette and computer desks within the learning spaces to protect equipment. See Figure 27.
- The school has hydro-pool for physical therapy. According to staff the pool facilities work well for the users, aside from the room temperature (noted overleaf). See Figure 28 .
- Resilient rubber surfacing is present in the playground area, which makes the playground area safer for students. See Figure 29.
- The provision of kitchenettes in each learning space meets the need for drinking fountains and according to staff is more appropriate than standard external drinking fountains given the ability levels of the students. Drinking fountains are required by MoE guidelines, however the provision of kitchenettes to the learning spaces is an effective re-interpretation of that MoE requirement for the specific use case of Kimi Ora.
- A room designated as a therapy room has been re-allocated as a learning space. Staff report that the space is adequate for this use, demonstrating the flexibility of the learning spaces provided.
- The locality of Kimi Ora to the adjacent College and Intermediate school enables the school to try to integrate students socially in addition to sharing facilities. The school staff place great importance on the social aspect of their students' education. Kimi Ora shares use of the adjacent college's playing fields, as it does not have its own playing fields or paved courts. Kimi Ora shares a connection and relationship with the Naenae college special needs unit.



Figure 26



Figure 27



Figure 28



Figure 29

- Staff perceive the lighting throughout the school as effective, stating the school is a “Lovely, light, bright environment”. Of particular favour among the staff was the main circulation route, which was well lit internally, with supplementary natural lighting throughout from the glazed walls to the central courtyard. See Figure 30.
- The low pressure hot water (LPHW) underfloor heating system provides a comfortable environment without exposure to drafts or radiant heat sources. The system is in line with heating requirements. Staff reported the buildings are very comfortable from a temperature perspective in the winter.
- Ventilation throughout the school is generally provided by natural means, but with electronic controls to window openings. Based upon observations of window opening areas, it appears adequate fresh air is provided to meet NZ Building Code compliance. Toilet areas are naturally ventilated where possible (i.e. when located adjacent to an external wall).
- The staff meeting room is also the Principal’s office, which staff find to be an effective use of space as opposed to a separate Principal’s office. Due to the high-dependency nature of the students, the staff have lots of meetings with parents and have found the room to be useful. See the room in Figure 31.

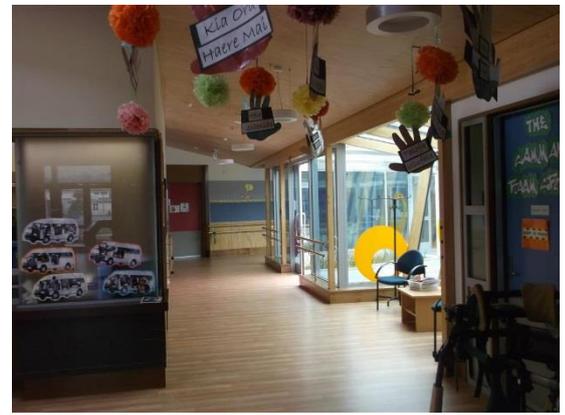


Figure 30



Figure 31

Negatives:

- Staff reported they struggle with a lack of storage space for equipment in the school. A new shed is planned to be installed to provide equipment storage. As more students are in classrooms now, there is a lack of storage for students and staff in learning spaces. Space for standing frames, wheelchairs, etc. See Figure 35
- Staff have reported that the lack of shade to central courtyard and external areas of school is an issue. There are some shade sails installed on the east side of the school grounds in the playground/garden area, but staff see these as insufficient due to their size and the height at which they’ve been installed. There is no shading or shelter to outdoor seating areas either. According to staff, students would not necessarily remember to wear a hat outside, and a lack of mobility or limited awareness can mean they are less capable of managing their own exposure to the sun. See Figure 32, Figure 33 and Figure 34. The school is looking to purchase additional shade sails to mitigate this, and advise that the region is very warm so shading is a necessity.
- Teachers report that the hot desk room behind reception (which is intended as the teacher workspace) has insufficient noise suppression. The lack of enclosure between the circulation areas the reception and teacher work space, as well as how loud many students at the school are, means that this becomes a very noisy and disrupted space. See Figure 11. The school is considering enclosing this area and implementing sound proofing. See Figure 11.
- The staff have found that the learning spaces are generally too small. The varying requirements of the students means floor space is at a premium – e.g. some students require space to lie on the



Figure 32



Figure 33

floor. Staff stated that *“nowhere in school is there too much space. Everywhere we need more space.”*

- There is no cooling system at the school. Staff reported that during summer the indoor temperatures get too warm, and that students’ comfort has significant impact on their concentration and cooperation. The only means of cooling is via natural ventilation, which is ineffective when the air from outside is warm. The reception area for example, has no access or connection to outside, and gets overheated (up to 28°C) with no ability to increase cooling. Staff use desk fans throughout the school, but advise that these are often insufficient.
- The hydrotherapy (pool) room has issues with overheating according to staff. The door must be closed at all times due to the chemicals used, to maintain the water temperature and to minimise energy consumption. The room has skylights with auto open/shut, but these are on auto system that closes when it rains. Staff see this system shutting when it rains as unnecessary as the users are wet anyway, and overheating is the bigger issue. See Figure 28.
- Now that the school caretaker has left, staff are concerned that the building operational information is very difficult for them to locate and understand. The information left at the school consists of technical manuals and as-built construction documentation, which as non-building professionals they have difficulty navigating though and interpreting. Staff appreciated having part time maintenance personnel on site initially, as it took the pressure off them in terms of building maintenance, operation and compliance, and allowed them to devote themselves to teaching.
- Staff report that there are not enough toilets in the school, however they caveat that with the comment that there are *“never enough toilets in a special needs school”*.
- Staff advised that the shared principal/meeting room space is too small for the number of staff. When outside agencies come to the school to use the facilities, there is no meeting space capable of receiving them (e.g. 15 people will come due to the number of people involved with these students). Staff feel that a larger meeting space could have facilitated staff and external user’s needs better.
- There is a shortage of space within the school for storage of student equipment. Students come to school with lots of equipment due to their needs. A small storage cupboard was provided in the entry lobby which staff thought was a good idea, but is not large enough to fit most of the equipment (both in size and number). Learning spaces also do not provide places to store this equipment. This has resulted in equipment such as walking frame and wheel chairs overflowing into the reception area and circulation routes throughout the school. See Figure 11. The MoE requirements do not specifically consider the additional storage needs of high dependency users.



Figure 34



Figure 35



Figure 36



Figure 37

4.4 SUSTAINABILITY

Positives:

- Internal linings within the school have stood up well to impacts and general wear. Minor maintenance has been required, but this has been as per expectation (caused by scrapes from wheelchairs and general use). Hard-wearing impact resistant materials (such as plywood) have been used for skirting boards and linings. See Figure 38 of the linings in the circulation routes.
- Kimi Ora’s hot water is provided by a centralised hot water system assisted by high efficiency evacuated tube solar panels. This provides an alternative energy source for water heating and minimises energy waste. The school is provided with 1000 litres of hot water storage. See Figure 31 of the roof mounted solar tube panels.
- The heat pump for the underfloor heating (water heating) has been functioning well, following some initial problems. See Figure 24. The heat pump required replacement early into occupation as it was frequently icing over and failing. The pool is maintained by staff, with compliance testing undertaken by an external contractor.
- Handrails throughout the school effectively protect walls and linings and assist with student mobility. They have stood up well to frequent use and were still sturdily fixed at the time of the survey. Their design, including height and the (notable in this application) provision of bump rails meets NZBC requirements. See Figure 38 and Figure 40.
- Staff feel that the protection from wind around the site is very effective. There are no particular places on the grounds that staff could identify where wind exposure was an issue. Landscaping and plants were perceived as a “very nice aesthetic part of the school” and also provide some protection from wind.
- There have been very few issues with storm water runoff or drainage on site since occupation according to staff. Staff reported one (now resolved) issue with poor drainage and sodden ground around the exterior of the resource room, however there has been no major pooling/puddling areas on the school grounds.
- Services have appropriate access for maintenance. For example, heat pumps for the pool are located entirely externally by design for ease of maintenance.
- The school’s water supply has adequate isolation valve systems that enable maintenance and alterations. Water fixtures still provide adequate pressure while minimising water use through the use of low-flow fittings where practical. The water supply also has backflow prevention devices fitted at all sources of contamination. See Figure 42.
- The hot and cold water system is zoned and controlled to provide energy efficiency. The classrooms and other occupied areas are all separate zones. The heat pump system is inherently efficient for generating low temperature hot water, as energy is retained through repeated cycles of heat exchange (between already heated



Figure 38



Figure 39



Figure 40



Figure 41



Figure 42

water within the system and cooler 'fresh' water coming in). There is a panel in the laundry area which shows the temperature of the system.

- Lighting system is zoned and controlled to achieve an energy efficient environment. Fluorescent light tubes are predominantly used throughout the school.
- Observations of the survey team indicate that the installation of power supply has been completed to a very high standard, and that generally the installation of the building services systems comply with the requirements of the Ministry of Education.
- Mechanical, electrical and plumbing services have been designed and installed with main focus on energy and water efficiency. After hours heating can be measured. Power consumption by heat pump can be measured.
- A rainwater harvesting system is used at Kimi Ora to collect rainwater from building roofs. The water is used for gardens and vegetable patches, and also serves the toilets and garden taps with non-potable water. A smaller rainwater collection system was installed to the maintenance shed roof (See Figure 41), complete with an external 'first flush' system (a low tech solution to remove microbiological contamination from the rainwater collected off the small roof that is central in the picture) to be visible to students.
- Fixtures, fittings and linings in wet areas and bathrooms were generally well specified, allowing for ease of cleaning and are robust.
- The buildings and site effectively provide opportunities for use as a learning resource. There are several glazed panels throughout the school that expose the ceilings, walls and service features to users, such as waste and water connections and the underfloor heating control panels. The rainwater collection system for the garden is out in the open and accessible to students and is sited alongside the gardens at the rear of the school. All these features provide opportunities to learn about sustainability, energy efficiency and buildings themselves. See Figure 43.
- The building roofs are of simple form, avoiding complex junctions and internal gutters where possible. The roof material is primarily profiled metal, which is widely available and understood, and easy to maintain. These aspects are in line with the NZ Building Code, and are best practice for minimising maintenance requirement and weathertightness issues. As yet there have been no issues with building leaks according to staff. See Figure 45 showing the simple roof forms and details.



Figure 43



Figure 44



Figure 45



Figure 46

Negatives:

- The staff report that the specialised architectural lamps in the entrance are aesthetically pleasing, but the bulbs are very expensive to replace in comparison to similar more common light fittings. The bulbs originally fitted to these lights were extremely expensive, so the school found an alternative bulb they could substitute to bring the cost down. This alternative bulb is still expensive in comparison to that for standard lamps. Standardised fittings, or specification of lamp with lower replacement cost would be less onerous for the school to maintain. See Figure 47.
- Staff report that the process of resolving defects was disruptive, it was difficult to find the right people to deal with the issues that arose, and resolving issues took a long time (more than 1 year). Staff found it difficult to get contractors to return to resolve defects once they had left site. The school have not had any ongoing contact after first year with the designers, aside from when the architects were showing people around for design award consideration.
- The school have found that the maintenance requirement for parts of the external cladding is much higher than expected. The staining of exterior cedar is required frequently, and areas of the cedar cladding are inaccessible without expensive scaffolding. See Figure 48. It is worth noting that the architect's intent may have been for the cedar cladding to be left to weather to a silvery/grey as opposed to being stained.
- The main entry doors have required considerable maintenance and up keep. Staff report that the doors continually keep breaking and are very expensive to have repaired. See Figure 10.
- Staff report that the combined solar & heat-pump water heating system has been costly to maintain. Maintenance and servicing requirements for the heat pump have been noted by staff to be frequent and costly.
- The floor of the pool was replaced in 2014 due to advanced degradation, and at the time of survey the lining appeared to be failing again. The liquid-applied plaster type lining is chipping and flaking, and these particulates go through pump system and cause damage. The staff have reportedly had some difficulty in getting the firm responsible for the pool to respond to these issues in a timely manner. See Figure 49 showing the degrading pool floor.
- The original toilet flushing systems were powered, and didn't function during power outages. The school has since had manual override capability installed to the flushing systems.
- Double glazing in principal's office is defective. There is internal condensation between the glazed panels. This has not occurred with any other windows within the school.
- There are a few isolated oversights in of high traffic areas where impact protection and hard wearing linings have been missed. These are uncommon throughout the school, but these items will have a higher maintenance requirement. See Figure 50.



Figure 47



Figure 48



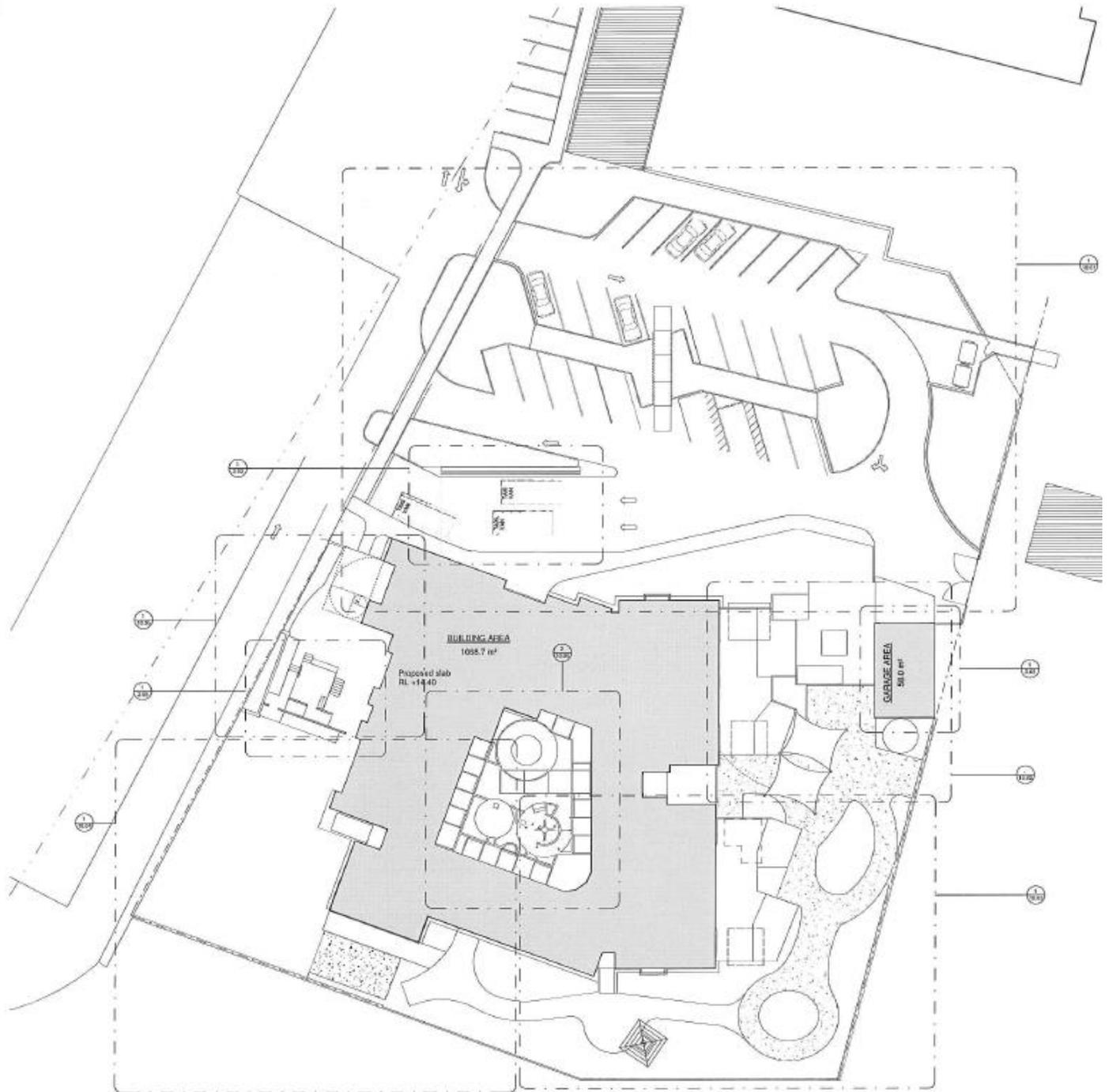
Figure 49



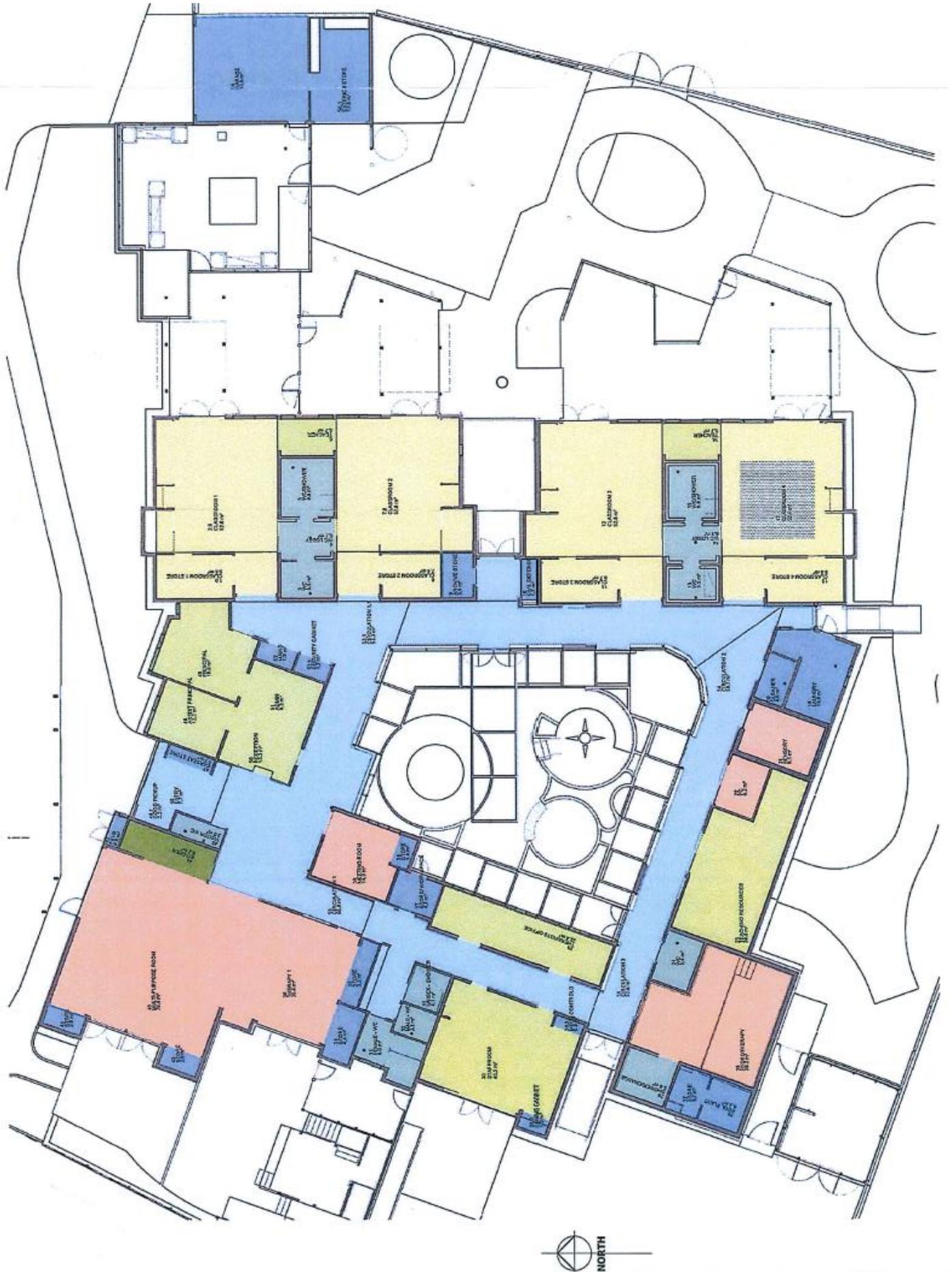
Figure 50

5 APPENDICIES

5.1 SITE PLAN



5.2 DESIGN FLOOR PLAN



5.3 CLIENT SUPPLIED INFORMATION

Information supplied by MOE – Kimi Ora School

- New School Assessment Report (Weathertightness) – Hampton Jones – February 2013
- Design drawings for Kimi Ora
- Area allocation documents
- MoE Funding documents
- School Contact List
- Completion letter and report



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