

Neuren Pharmaceuticals Limited
Annual Report 2016

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pharmaceuticals

Neuren Pharmaceuticals is a biopharmaceutical company developing new therapies for brain injury, neurodevelopmental and neurodegenerative disorders. Incorporated in New Zealand and based in Melbourne, Australia, Neuren is listed on the ASX under the code NEU.

The Board of Directors is pleased to present the Annual Report of Neuren Pharmaceuticals Limited for the year ended 31 December 2016, authorised on 28 April 2017.

For, and on behalf of, the Board

**Dr Richard Treagus** Chairman **Dr Trevor Scott**Director

# Chairman's Letter



# **Dear Shareholders,**

In March 2017 we announced the results of a profoundly important clinical study for the families affected by Rett syndrome. The results of the study in girls aged 5 to 15, which built on the clinical data generated from our first Rett syndrome study, were deeply encouraging and have greatly increased the confidence of Neuren and the Rett syndrome clinical experts, with whom we are working to develop this therapy. Taken together, the data from our trials have provided a strong basis to move forward with the remaining steps in trofinetide's development.

Working in close collaboration with rettsyndrome.org, the clinical experts and the many Rett families, we conducted the study across 12 clinical sites in the US. The very nature of these studies places an additional set of demands upon families, so it is noteworthy that the motivation and rate of subject enrolment remained high at all times throughout the study. This enabled us to recruit an additional 20 girls into the study, which served to further strengthen the final data set. The fact that only one subject discontinued from the study illustrates that compliance throughout the study was very high. This speed of enrolment and level of compliance are very important as we plan a larger Phase 3 study.

The objective of the Phase 2 pediatric study was to assess drug safety as well as a range of different efficacy measures in younger patients, at a dose 2-3 times higher than previously administered. Following detailed analysis of the data, the Rett syndrome clinical experts were unanimous in their view that safety and tolerability of trofinetide is not presenting as a limitation or concern and that the efficacy results are strongly supportive of trofinetide having a clinically meaningful effect on many of the core signs and symptoms of Rett syndrome. With these latest results in hand, including the valuable insights we have gained regarding a clear relationship between exposure to drug and efficacy, as well as the suitability of efficacy measures across both pediatric and adult patients, we are moving as quickly as possible to confirm with the FDA our development plans for an anticipated start of Phase 3 in 2018.

Three efficacy measures in the study demonstrated a statistically significant benefit of trofinetide over placebo. We are confident that two of those, the Rett Syndrome Behaviour Questionnaire (RSBQ) and the Clinician Global Impression of Improvement (CGI-I), provide appropriate and well validated measures for a pivotal Phase 3 study and we look forward to discussing the Phase 3 trial design with the FDA Division of Neurology Products in coming months. The Motor Behavior Assessment (MBA) was shown in the pediatric study to be a less sensitive tool in this younger patient group compared with adults. It is important to understand that there is no gold-standard efficacy measure for Phase 3 clinical trials in Rett syndrome. Our previously communicated intention to use the MBA resulted from Neuren's proposal and was not a directive from the FDA.

In order to support the future plans for Rett syndrome and other indications, the Neuren Board is currently giving careful attention to a range of possible funding and partnering options, guided by two principles – speed to market for the families affected by these conditions and value for our shareholders. I look forward to updating shareholders as we reach conclusions on those options.

**Dr Richard Treagus Chairman** 

Rett syndrome is a seriously debilitating and life-threatening neurological disorder, for which there are no approved medicines. In March 2017, Neuren reported that trofinetide had achieved statistically significant and clinically meaningful improvement in its Phase 2 clinical trial in girls with Rett syndrome aged 5 to 15.

### **Strategy and commercialisation**

Neuren's strategy is to demonstrate the broad therapeutic utility of its patented drug candidates in neurodevelopmental disorders, neurodegenerative diseases and brain injury, and to progress selected applications towards commercialisation in world markets. The selected applications have five important attributes: solid scientific rationale, significant unmet medical need, compelling market opportunity, strong support from advocacy groups and the potential for favourable regulatory treatment with a clear path to approval.

Neuren is in Phase 2 clinical development of trofinetide to treat Rett syndrome, Fragile X syndrome and traumatic brain injury (TBI). Currently, there are no drugs approved for any of these conditions and there are few drugs in late-stage clinical development. Some drugs that are approved for other indications are sometimes used to treat selected symptoms, but none are more than modestly effective and none are disease-modifying. Trofinetide provides Neuren an opportunity potentially to achieve the first approved therapy for one or more of these important indications.

As these are serious medical conditions with unmet need, drugs being developed to treat them may qualify for favourable regulatory pathways intended to expedite the development and approval of therapeutically important drugs. The US Food and Drug Administration (FDA) has granted to Neuren:

- Orphan drug designation for trofinetide in each of Rett syndrome and Fragile X Syndrome
- Fast Track designation for trofinetide in each of Rett Syndrome, Fragile X Syndrome and moderate to severe TBI

Orphan Drug designation is a special status that the FDA may grant to a drug to treat a rare disease or condition. Amongst other incentives, Orphan Drug designation qualifies the sponsor of the drug for 7 years of marketing exclusivity, potentially plus 6 months if approved for pediatric use, as well as waiver of the prescription drug user fee for a marketing application.

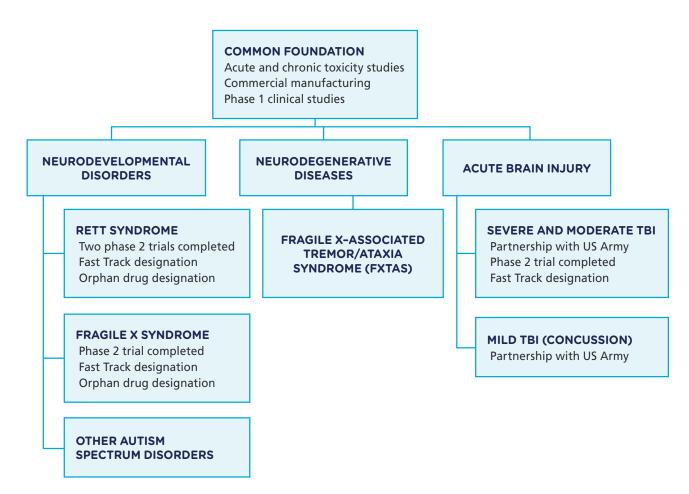
A drug may be designated as a Fast Track product if it is intended for the treatment of a serious or life-threatening disease or condition, and it demonstrates the potential to address unmet medical needs for such a disease or condition. Fast Track designation is intended to facilitate development and expedite review of drugs to treat serious and life-threatening conditions so that an approved product can reach the market expeditiously.

The European Medicines Agency has also granted Orphan Designation for trofinetide in both Rett syndrome and Fragile X syndrome. Orphan Designation in the European Union qualifies the sponsor of the drug for 10 years of marketing exclusivity following marketing authorisation, potentially plus 2 years if authorised for pediatric use.

The marketing exclusivity periods are extremely valuable for the commercialisation of Orphan Drugs. They provide additional protection, along with patents, against generic competitors and potentially can continue to provide protection after patent expiry.

Neuren owns issued composition of matter patents for trofinetide in the United States and Europe, which expire in 2022, with the potential to extend to 2027. Neuren also owns issued patents in the United States concerning the use of trofinetide to treat Rett syndrome and in Australia concerning the use of trofinetide to treat autism spectrum disorders (including Rett syndrome). Each of these patents expires in 2032. Other method of treatment patent applications for trofinetide in autism spectrum disorders are under examination in the United States, Europe and other territories.

# Neuren's development programs for trofinetide



continued

### **Trofinetide for Rett syndrome**

Rett syndrome is a seriously debilitating and lifethreatening neurological disorder, for which there are no approved medicines. In March 2017, Neuren reported that trofinetide had achieved statistically significant and clinically meaningful improvement in its Phase 2 clinical trial in girls with Rett syndrome aged 5 to 15.

This trial in a younger population built on the results of Neuren's previous Phase 2 trial in older subjects aged 16 to 45 with Rett syndrome, which had shown consistent trends of clinical benefit.

The trial was conducted at 12 sites in the United States. The leading Rett syndrome physicians in the US were study investigators and participated in the review of the top-line results. Walter Kaufmann, MD, Ravenel Boykin Curry Chair of Genetic Therapeutics and Director of the Center for Translational Research at the Greenwood Genetic Center. commented:

"The outcome of this trial is very encouraging. Safety, the primary goal, was achieved. As important and with broad implications, there was a clear clinical improvement covering several common symptoms in Rett syndrome, which are known to impair the quality of life of girls affected by the disorder. The variety of improved symptoms suggests that trofinetide is a drug that targets mechanisms underlying the disorder rather than a symptomatic medication. Similar to the previous adult trial, the results are particularly significant because of the relatively short duration of the trial. The impact of the study goes beyond the suggested efficacy of trofinetide, since it shows the potential of neurobiologically-based drugs for the treatment of Rett syndrome and other neurodevelopmental disorders."

Alan Percy, MD, Professor of Neurology and Director of Clinical Neuroscience at the Civitan International Research Center & Sparks Clinics, The University of Alabama at Birmingham, commented:

"The clear results from this trial of trofinetide in children support and strengthen the promising results that were obtained in the Neuren trial in older individuals with Rett syndrome. I now look forward to the pivotal trial."

### Valuable support from Rettsyndrome.org

Rettsyndrome.org (International Rett Syndrome Foundation, or IRSF) has provided advice to Neuren on clinical trial strategy, introductions to leading clinical investigators, a start-up grant to Baylor College of Medicine for Neuren's first Phase 2 trial, and a grant of US\$1m towards the cost of Neuren's second Phase 2 trial in pediatric subjects. The support from Rettsyndrome.org has been instrumental in Neuren's discussions with the FDA and in communications with families, patients and investigators. This is reflected in the fast enrolment of 82 subjects in seven months for the pediatric trial.

Steve Kaminsky, PhD, Chief Science Officer of Rettsyndrome.org commented on the recent trial results:

"These pediatric study results are very exciting. The data suggest that trofinetide is having a positive change on a number of challenges of Rett syndrome. We at Rettsyndrome.org are very proud to have supported this game-changing study, believing that the best is yet to come."

## **More about Rett syndrome**

Rett syndrome occurs almost exclusively in females following apparently normal development for the first six months of life. Typically, between 6 to 18 months of age, patients experience a period of rapid regression with loss of purposeful hand use and spoken communication. They experience neurobehavioural, cognitive and intellectual disability and a variety of motor problems, including increased muscle tone (spasticity) and abnormal movements. Affected individuals also show signs of autonomic dysfunction, reflected in cardiovascular, respiratory and gastrointestinal abnormalities. Many patients have recurrent seizures.

Rett syndrome is most often caused by mutations on the X chromosome on a gene called MECP2. There are more than 200 different mutations found on the MECP2 gene that interfere with its ability to generate a normal gene product. Rett syndrome strikes all racial and ethnic groups and occurs worldwide in approximately 1 in every 10,000 to 15,000 live female births.

Most Rett syndrome patients require life-long medical care and 24 hour supportive care. In addition to direct costs for medical and related services, costs for institutional and special education services as well as the financial and emotional impact on families are very large.

### Top-line results from the trial

The trial was a double-blind, randomised, placebo controlled study that tested three doses of trofinetide compared with placebo in 82 girls with Rett syndrome aged 5 to 15. The highest dose of trofinetide (200mg/kg twice daily) achieved statistically significant clinical benefit compared with placebo for each of three syndrome-specific efficacy measures:

- The Rett syndrome Behaviour Questionnaire (RSBQ), a rating scale in which the subject's caregiver rates the frequency of symptoms.
- The Clinical Global Impression of Improvement (CGI-I), in which the clinician rates how much the subject's overall illness has improved or worsened, relative to baseline.
- The Rett Syndrome Domain Specific Concerns (RTT-DSC), in which the clinician assesses on a visual analog scale the severity of concerns identified for each subject on an individual basis.

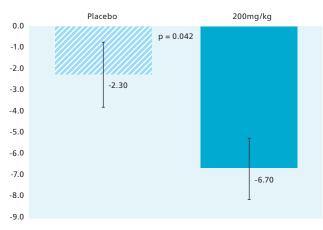
Clinical improvements of 15% to 16% from baseline were observed, which was considered by the leading Rett syndrome physicians to be clinically meaningful, particularly in a short duration trial. The improvement increased through to the time that treatment ceased after 6 weeks. This suggests that further benefit may be achieved with longer treatment duration in a Phase 3 trial and with long term treatment.

The results provide strong evidence of biological activity of the high dose across multiple symptom areas, indicating the potential for disease modification rather than simply addressing isolated symptoms. In addition, trofinetide was well tolerated and had a good safety profile in these younger subjects, with no dose-limiting effects observed.

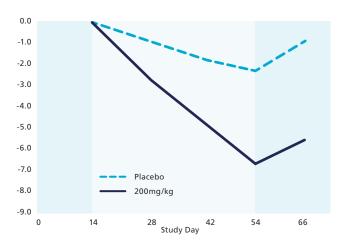
The efficacy results are illustrated in the following charts, in which a downward movement represents an improvement from day 14 baseline:

### **RSBQ**:

Day 54 Change (LSmeans) from Treatment Baseline



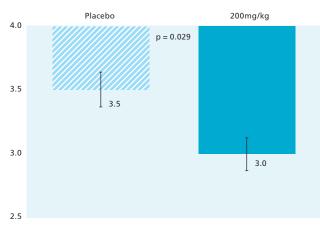
Change (LSmeans) from Treatment Baseline



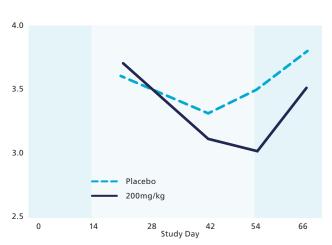
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### CGI-I

Day 54 Change (LSmeans) Compared to Treatment Baseline



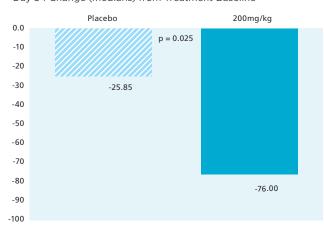
CGI-I (LSmeans) Compared to Treatment Baseline



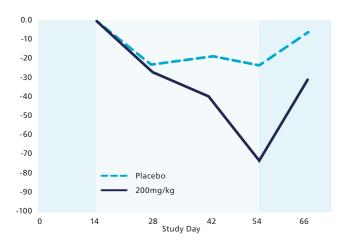
22% of subjects in the 200mg/kg dose group received a CGI-I score of 2 ("much improved") compared with 4% of subjects in the placebo group.

### **RTT-DSC**

Day 54 Change (medians) from Treatment Baseline



Change (medians) from Treatment Baseline



The group analysis of RTT-DSC was carried out using the Exact Median Test rather than the Least-squares Means that were calculated for the other efficacy measures. This was because the Statistical Analysis Plan prespecified that if the data for a measure did not meet statistical assumptions of a general linear model, then a non-parametric analysis method would be used. Standard error limits are not applicable in the Exact Median Test and consequently are not presented on the bar chart.

Two other measures were prioritised in the prespecified efficacy analyses:

- The Motor Behavior Assessment (MBA), a rating scale in which the clinician rates the subject's current level of function.
- The Caregiver Top 3 Concerns (Top 3), in which the subject's caregiver assesses on a visual analog scale the severity of concerns identified for each subject on an individual basis.

These two measures both showed improvement from baseline in the 200mg/kg group that was larger than placebo, but the differences were not statistically significant or clinically meaningful.

# Analyses of exposure to drug and efficacy outcomes (pharmacokinetics and pharmacodynamics)

The two lower dose groups of 50mg/kg BID and 100mg/kg BID did not demonstrate evidence of efficacy compared with placebo. This may be due to the small sample sizes in those groups, which were 15 and 16 respectively, compared with 27 for 200mg/kg and 24 for placebo. However, the dose groups were likely impacted by the observation that a dose per kg did not result in the same exposure to drug for each subject. As was observed in Neuren's previous trial in older subjects as well as in the Phase 2 trial in Fragile X syndrome, lighter subjects experienced lower levels of drug in their blood compared with heavier subjects receiving the same dose per kg. In this younger and lighter population, the effect was that the nearly threefold increase in the highest dose (200mg/kg) compared with the previous trial (70mg/kg) resulted in a smaller increase in the exposure to drug.

In a Phase 3 trial, Neuren intends to use a dosing regimen that will aim to achieve similar drug exposure in subjects regardless of their weight. This may involve adjusting the dose for different weight bands.

Comparison of the efficacy results with drug exposure across all subjects showed that the extent of efficacy measured by each of the RSBQ, CGI-I and RTT-DSC correlated with exposure to drug. The extent of the correlation also increased as the duration of treatment increased. This positive pharmacokinetic-pharmacodynamic relationship provides independent evidence of a direct biological effect.

### **Efficacy measures for a Phase 3 trial**

There have been no previous Phase 3 trials in Rett syndrome and therefore there is no "gold standard" efficacy measure. Neuren previously had a series of discussions with the FDA Division of Neurology Products concerning a proposal by Neuren to use a sub-set of items from the MBA as a primary efficacy measure in a Phase 3 trial. Whilst agreement was reached, the discussions recognised the potential limitations of the MBA instrument, which was designed and has mainly been used as a measure for long-term observational studies rather than to measure change in short-term clinical trials.

The results from the pediatric trial have shown that in the younger population the MBA is not sufficiently sensitive to change in a short clinical trial. In contrast, the RSBQ did demonstrate good sensitivity to change in the younger population. In addition, the RSBQ is a well-validated instrument that has been used in other Rett syndrome clinical trials, has been correlated with quality of life outcomes and has been characterised and validated in peer-reviewed publications.

Dr Kaufmann has commented on the RSBQ: "The recent improvements in the care of individuals with Rett syndrome has made evident that affected girls and women display a variety of neurobehavioural problems, and that these symptoms affect their quality of life. At present, the Rett Syndrome Behaviour Questionnaire (RSBQ), is the only available instrument for evaluating the wide range of abnormal behaviours in Rett syndrome. An open label trial of IGF-1 demonstrated mild improvements in anxiety and mood, as measured by the RSBQ and another behaviour rating scale, supporting use of the RSBQ for detecting improvements in clinical trials."

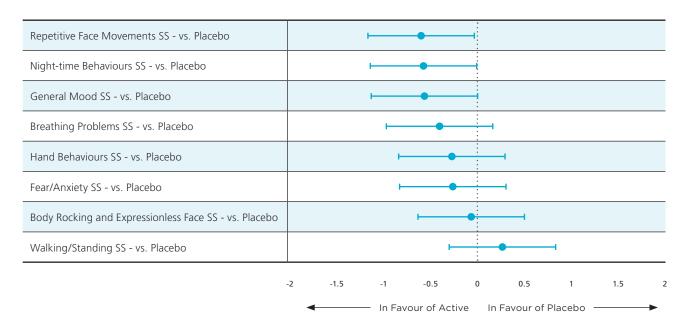
Based on the pediatric trial results and discussions with the Rett syndrome physicians, Neuren intends to use the RSBQ as a primary efficacy measure in a Phase 3 trial, supported by the CGI-I as a key secondary efficacy measure. Caregiver-completed instruments (such as the Aberrant Behaviour Checklist) have previously been used as primary efficacy measures in Phase 3 trials for neurological disorders and CGI-I has been widely used as an efficacy measure in central nervous system trials, including neurodevelopmental disorders.

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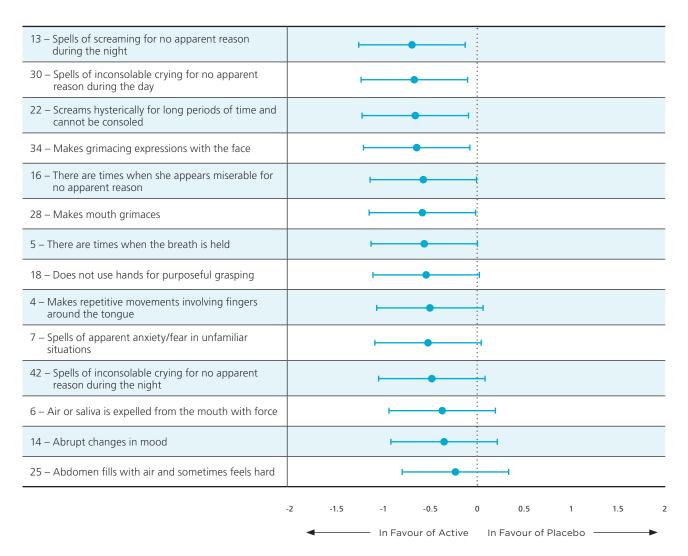
### More about the RSBQ

The RSBQ is designed to measure the frequency of 45 neurobehavioural items, reflecting the severity of the syndrome. The items are rated from 0 to 2, with a score of zero indicating the item is not true for an individual; 1 meaning the item is somewhat or sometimes true in the individual; and 2 meaning that the item is often or very true in the individual. The items are organised into eight subscales: General Mood, Breathing Problems, Hand Behaviours, Repetitive Face Movements, Body Rocking and Expressionless Face, Night-time Behaviours, Fear/Anxiety, and Walking/Standing. In the pediatric trial the highest dose of trofinetide showed a positive effect on many of the items and across these subscales, as illustrated in the following charts of the Cohen's D effect size for each subscale and each item:

### **RSBQ Subscales**



# RSBQ items with largest effect size in favour of active



## Next steps for trofinetide in Rett syndrome

Using the important information acquired from two Phase 2 trials, Neuren is currently designing a Phase 3 trial to support potential approval of an NDA in the US for treatment of Rett syndrome. The trial design will be discussed with the FDA at a meeting in the coming months.

Prior to commencing the Phase 3 trial in 2018, Neuren is completing significant investments in manufacturing processes and chronic toxicity studies that are required before the longer dosing in a Phase 3 trial and before a New Drug Application. These include the optimisation and scale up of the drug substance synthesis and development of the commercial finished product presentation. The first of two required chronic dosing toxicity studies has recently been completed and the second study is planned to conclude in the first half of 2018. These investments will benefit all potential clinical uses of trofinetide.

continued

### **Trofinetide for Fragile X syndrome**

Fragile X syndrome is the most common inherited cause of intellectual disability and the most common known cause of autism. Fragile X syndrome is due to a single gene defect on the X chromosome that impacts the FMRP protein, which is responsible for regulating the synapses of nerve cells. Approximately one in 4,000 males and one in 6,000 females are estimated to have the full gene mutation. Generally, males are more severely affected than females, with approximately 50% of the females having features of Fragile X syndrome. Clinically, Fragile X syndrome is characterised by intellectual disability, hyperactivity and attentional problems, autistic symptoms, anxiety, emotional lability and epilepsy. The epilepsy seen in Fragile X syndrome is most commonly present in childhood, but then gradually improves towards adulthood. Physical features such as prominent ears and jaw, and hyper-extensibility of joints are frequently present but are not diagnostic. Currently, there are no medicines approved for the treatment of Fragile X syndrome.

Neuren previously conducted a randomised, double-blind, placebo-controlled Phase 2 clinical trial in 70 males aged 12 to 45 years with confirmed Fragile X syndrome. The trial was conducted at 16 sites in the United States and was overseen by leading clinical experts in Fragile X syndrome. Two dose levels of trofinetide were tested and compared with placebo. Trofinetide was very well tolerated and the high dose (70 mg/kg twice daily) demonstrated a consistent pattern of clinical improvement, observed in both clinician and caregiver assessments. After a relatively short treatment period of 28 days, improvements were seen across core symptoms of Fragile X syndrome, including higher sensory tolerance, reduced anxiety, better self-regulation and more social engagement.

Based on the trial results, feedback from clinical experts in Fragile X syndrome, and guidance received from the FDA at a meeting with the Division of Psychiatry Products in May 2016, Neuren is presently designing the next clinical trial, to commence in 2018. This next study will likely enrol younger children with Fragile X syndrome and examine higher doses with longer treatment duration. The study will also refine the outcome measures that may be used in a Phase 3 trial.

The Fragile X Alliance (FRAXA) and the National Fragile X Foundation representing the Fragile X syndrome community have provided important support to Neuren's trofinetide program.

# Trofinetide for Fragile X-associated tremor/ ataxia syndrome (FXTAS)

Neuren is preparing to initiate pre-clinical development of trofinetide for FXTAS in 2017. There is currently no approved therapy for FXTAS, which is a neurodegenerative disorder, typically affecting males above 50 years of age. Females are affected less so and their symptoms also tend to be less severe. Neuren expects a development program for FXTAS to meet the criteria for Orphan Drug designation.

Individuals with FXTAS are carriers of a "premutation" of the *FMR1* (Fragile X Mental Retardation 1) gene, located on the X chromosome. "Full mutation" of the *FMR1* gene causes Fragile X syndrome, which is a different, but related, disorder.

Approximately 1 in 800 males and 1 in 250 females in the general US population are premutation carriers of the *FMR1* allele. Of these, 40% of males over 50 and 8% of females over 40 will go on to develop FXTAS.

The most disabling symptoms are reported as ataxia (impaired control over body movements), cognitive dysfunction (ranging from memory loss to dementia), psychiatric disorders (such as depression, anxiety, agitation, and disinhibition), behavioural disorders (due to impaired executive function), falls and intention tremor. The neuropsychiatric symptoms seen in FXTAS often follow the establishment of motor symptoms.

### **Trofinetide for Brain injury**

Traumatic brain injury (TBI) is a leading cause of death and disability in industrialised societies particularly among young people and military personnel. Each year, approximately 1.7 million people sustain a TBI in the US alone. Of these, 25% are classified as moderate to severe while the remaining 75% are classified as mild TBI or concussion. TBI is a contributing factor in one-third of all injury-related deaths.

Moderate to severe TBI frequently leaves patients with profound physical, emotional and cognitive disabilities, often requiring life-long institutional or other supportive care. Concussion can result in long-term or permanent impairments and disabilities. There are approximately 52,000 deaths and 80,000-90,000 cases of severe long-term disability each year. In severe TBI, the mortality rates are as high as 33%.

The annual cost of acute care and rehabilitation in the US for new TBI cases is estimated to be as high as \$10 billion. In addition, survivors of severe head injury often face 5-10 years of intensive rehabilitative treatment and lifelong disability. Lifetime treatment costs can reach \$4 million per patient. A study by the National Foundation for the Brain estimates the annual societal cost in the US for TBI at \$48.3 billion. There are no approved drug therapies available and few are in development.

Neuren's partnership with the US Army has made it feasible to target both moderate to severe TBI and concussion with trofinetide. The collaborative relationship with the US Army Medical Research & Materiel Command (USAMRMC) and the Walter Reed Army Institute of Research (WRAIR) began in 2004. WRAIR conducted ground-breaking work to define the pharmacology and mechanisms of action of trofinetide, elucidating its effects on neuroinflammation and microglial activation as well as its effects in models of TBI and non-convulsive seizures. The USAMRMC also has provided regulatory support, technical advice and grants of approximately US\$29 million in support of the development of trofinetide for TBI.

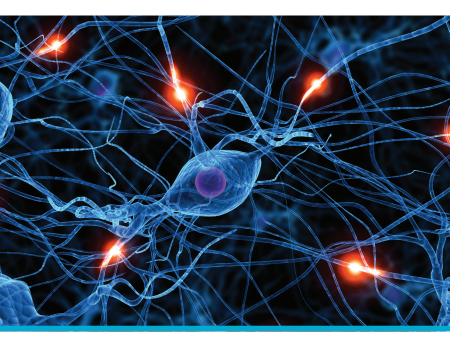
In April 2016, Neuren announced top-line results from the *INTREPID*-2566 trial - a Phase 2 randomised, doubleblind study of the intravenous formulation of trofinetide in subjects with moderate to severe brain injury, supported by funding from the US Army. 260 male and female subjects were enrolled at 21 Level I and II trauma centers in the US. Study medication was administered intravenously within 8 hours of injury.

A favourable safety profile was confirmed. A statistically significant (p=0.008) and clinically relevant benefit of active over placebo was seen in patients with severe TBI who completed the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS). RBANS is a series of tests completed by the patient for assessing cognitive impairment, which has been validated for use in TBI and extensively used to diagnose and track dementia.

No difference between active and placebo was seen in patients, as assessed by the primary efficacy measures that have used in past TBI trials: GOS-E (a measure of global function) and MPAI-4 (a measure of daily living activities). In patients with severe TBI there was a positive relationship between drug exposure and outcome assessed by each of RBANS, GOS-E and MPAI-4.

Neuren and the US Army are discussing the feasibility of a second trial in severe TBI, or moderate to severe TBI, optimised by including RBANS as a primary efficacy endpoint, a more targeted definition of the trial population, randomisation stratified by injury severity and substantially higher doses and longer treatment, which is enabled by the safety profile.

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# The science behind Neuren's products

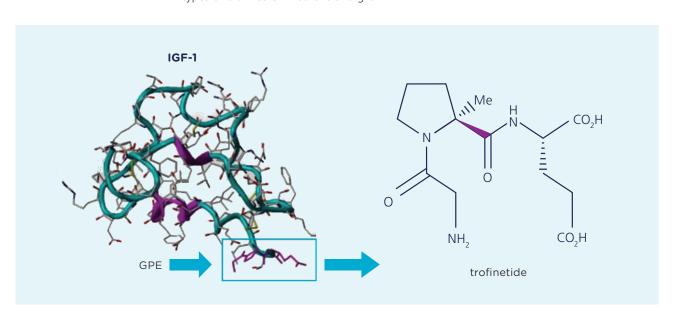
Trofinetide is the World Health Organisation's recommended name for Neuren's lead clinical-stage drug candidate (also known as NNZ-2566). It is an analog of a molecule derived from IGF-1 that occurs naturally in the brain. IGF-1 is a growth factor stimulated by growth hormone. In the central nervous system, IGF-1 is produced by both of the major types of brain cells – neurons and glia.

IGF-1 in the brain is critical both for normal development and to maintain or restore the biological balance required for normal functioning.

In the brain, IGF-1 gets rapidly broken down by an enzyme into two separate molecules, glypromate or "GPE" and Des(1-3)IGF-1. Both are biologically active neuropeptides with a wide range of effects. GPE, which comprises the last three peptides of IGF-1, primarily affects glial cells (astrocytes and microglia) while Des(1-3)IGF-1 mostly affects neurons.

Trofinetide is Neuren's chemically modified form of GPE that can mimic GPE's natural function in the brain. A small modification results in the drug having an increased half-life in the circulation, better stability for easier storage and shipping, and suitability for use as an oral medication, whereas GPE itself and IGF-1 can only be administered by injection.

During development, the brain and the cells that make it up change rapidly and in complex ways. IGF-1 and GPE play a significant role in regulating these changes. In the mature brain, IGF-1 and GPE both play an important role in responding to disease, stress and injury. Whereas most drugs typically exert a specific effect on a specific target, trofinetide exerts diverse effects which can help to control or normalise abnormal biological processes in the brain.



Although different conditions – brain injury, neurodevelopmental disorders and neurodegenerative diseases – can result in very different symptoms and outcomes, many share common, underlying pathological features. These include inflammation, over-activation of microglia, dysfunction of synapses (the connections between neurons through which information is transmitted) and reduced levels of IGF-1. In other words, diseases and conditions that manifest differently are considered to arise from similar pathology at the cellular and molecular level.

### 1. Inflammation

Inflammation in the brain – often referred to as neuroinflammation – is perhaps the most common pathological feature of CNS disorders. Much of it is the result of excess production of molecules called inflammatory cytokines. These are prominent in brain injuries, neurodevelopmental disorders such as Rett and Fragile X syndromes as well as autism, neurodegenerative diseases like Alzheimer's and Parkinson's and even so-called "normal" aging.

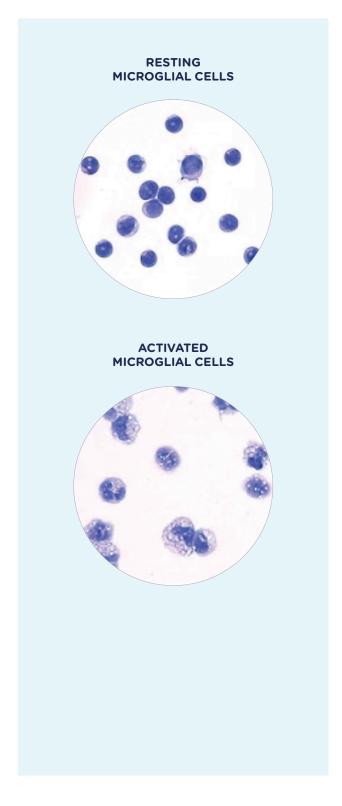
Neuroinflammation places significant stress on brain cells. Stress can disrupt normal cellular processes such as information signalling, increase energy requirements beyond the ability of the cells to meet their metabolic needs, disturb electrical functions which can lead to seizures and other abnormalities and even result in premature cell death.

In animal models ranging from brain injury and stroke to Fragile X syndrome to age-associated cognitive impairment, trofinetide has shown an ability to significantly reduce the levels of inflammatory cytokines. This has resulted in improvement in a wide range of symptoms including post-traumatic seizures, anxiety, memory impairment and hyperactivity.

# 2. Over-activation of microglia

Microglia are the resident immune cells in the brain. Once thought to serve primarily a sentinel function – responding to infection and damaged cells by surrounding and removing them – it is now known that they play a central role in maintaining synapses during development and in mature brains by pruning dendrites, the many small extensions of neurons that form synapses. Microglia are also a key source of IGF-1. Due to this wide-ranging maintenance function, they have appropriately been referred to as the "constant gardeners" of the brain.

Microglia are not only activated in response to infection and injury. They also are activated by inflammation that accompanies acute brain injury and chronic conditions. In this activated state, they not only lose their ability to effectively perform their normal function in synaptic maintenance but also produce more inflammatory cytokines which can further compound the damage to neurons and other brain cells.



continued

# Rett Syndrome Fragile X Syndrome Rett Syndrome Fragile X Syndrome With introduction of Trofinitide

Trofinetide has been shown to normalise microglial biology and function in both acute and chronic conditions. Restoring normal microglial activity has resulted in improved synaptic structure as well as correction of imbalance in synaptic signalling and cell-to-cell communication. This has led to reversal of symptoms such as impaired memory, anxiety, hyperactivity and compromised social behaviour.

# 3. Dysfunction of synapses

Neurons communicate with each other by chemical and electrical signals transmitted via synapses. Normal synaptic function is essential for healthy brain function and underlies memory, cognition, behaviour and other brain activities. Normal synaptic function requires that the dendrites (part of the neurons) which form synapses are appropriately formed as well as that excitatory and inhibitory signals are kept in balance.

When dendritic structure and synaptic signalling are abnormal, virtually all brain activities can be negatively impacted. Synaptic dysfunction has been identified as a core feature of many conditions including acute brain injury, neurodevelopmental disorders and neurodegenerative diseases.

For example, in Rett syndrome dendrites are sparse and immature while in Fragile X syndrome, dendritic branching is excessive although the dendrites are also immature. Trofinetide increases the length and branching of dendrites in a model of Rett syndrome while increasing pruning of excess branching in Fragile X syndrome. In the Fragile X animal model, aberrant synaptic signalling was normalised within 15 minutes of the first dose.

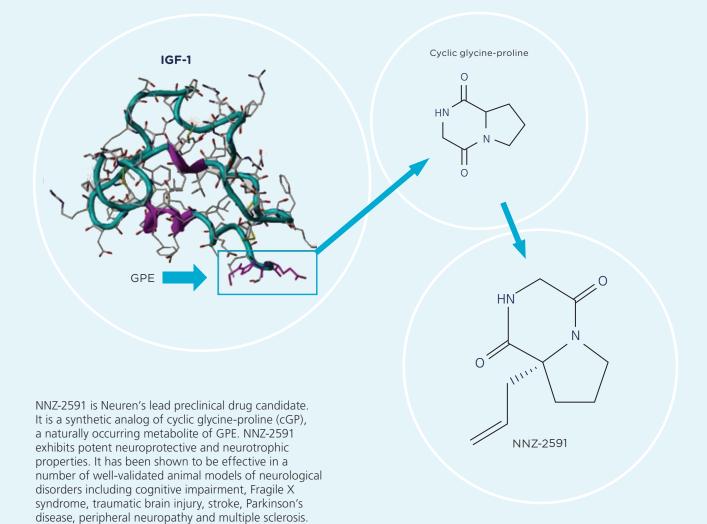
### 4. Reduced levels of IGF-1

IGF-1 levels in the brain have been reported to be depressed in a number of conditions, particularly in Rett and Fragile X syndromes and brain injury. In these conditions, the critical role of IGF-1 and GPE in maintaining and repairing brain cells and synapses is impaired.

In the Fragile X model, in which the IGF-1 level is depressed, trofinetide increased the amount of IGF-1 to normal levels. This was accompanied by normalised synaptic signalling and complete reversal of cognitive and behavioural abnormalities.

In a model of Rett syndrome, increasing IGF-1 levels has been reported to correct deficits in dendritic spines and, in isolated cells from human Rett syndrome patients, both IGF-1 and GPE are able to partially reverse the deficits in cellular function.

Summarising, trofinetide helps to correct four of the hallmark pathological features of many central nervous system disorders: inflammation, over-activation of microglia, dysfunction of synapses and reduced levels of IGF-1. By simultaneously targeting multiple processes, trofinetide works to restore the natural balance of brain function



In addition to preclinical evidence of strong therapeutic potential in a range of applications and a promising safety profile, NNZ-2591 has a number of attributes that make it an attractive candidate for further development.

These include excellent oral bioavailability, likely suitability for development of a solid oral dosage form and potential for improved stability compared to other

peptide-like compounds.

continued

Many central nervous system (CNS) disorders exhibit common cellular and molecular pathology that manifest as a wide range of signs and symptoms. In particular, the role of microglia in active maintenance and support of synapses and the effects of inflammation are increasingly being recognised as central to many CNS conditions. Target indications potentially addressable by trofinetide and NNZ-2591 are summarised in the table below.

Multiple CNS disorders with common causes						
	Neuro- inflammation	Microglial Activation	Neuronal Signaling	Apoptosis	Impaired Neurogenesis	Oxidative Stress
Rett	•	•	•	•	•	•
Fragile X	•	•	•		•	•
FXTAS	•	•	•	•	•	•
Idiopathic Autism	•	•	•		•	•
Traumatic Brain Injury	•	•	•	•	•	•
Depression	•	•	•	•	•	•
Post Traumatic Stress Disorder	•	•	•			•
Cognitive Impairment	•	•	•	•	•	•
Parkinson's Disease	•	•	•	•	•	•
Multiple Scierosis	•	•	•	•	•	•
Alzheimer's Disease	•	•	•	•	•	•
Stroke	•	•	•	•	•	•
Anxiety	•	•	•		•	•
Schizophrenia	•	•	•	•	•	•

Finance
Summary of consolidated financial results for the year to 31 December 2016

	2016 \$'m	2015 \$'m
Grant income	1.3	1.7
Interest income	0.2	0.3
Foreign exchange gain	-	1.1
Total revenue	1.5	3.1
Research & Development	(12.4)	(14.1)
Corporate & Administration	(1.8)	(1.9)
Foreign exchange loss	(0.2)	-
Share based payments amortisation	(0.9)	(1.2)
Loss before tax	(13.8)	(14.1)
R&D Tax Incentive	1.8	0.7
Loss after tax	(12.0)	(13.4)
Operating cash outflow	(12.4)	(12.7)
New share capital	0.9	7.5
Effect of exchange rates on cash balances	(0.1)	1.0
Cash at 31 December	5.1	16.6

The consolidated loss after tax for the year ended 31 December 2016 was \$12 million. The loss decreased by \$1.4 million, mainly due to the following:

- A decrease of \$1.7 million in research and development costs, resulting from the completion of the Fragile X syndrome clinical trial in December 2015, the completion of the Traumatic Brain Injury clinical trials in April 2016, and lower expenditure on manufacturing scale-up, partly offset by the commencement of the Rett syndrome clinical trial in 2016;
- Income tax benefit from the R&D Tax incentive of \$1.8 million, compared with \$0.7 million in 2015;
- A decrease of \$0.3 million in the non-cash share based payments amortisation as instruments reached the end of the required vesting periods of service;
- Foreign exchange losses of \$0.2 million included in Operating Expenditure, compared with gains of \$1.1 million in 2015 which were included in Operating Revenue; and
- A decrease of \$0.4 million in grant revenue, which comprised funding of \$1.3 million in 2016 from Rettsyndrome.org towards the cost of the Rett syndrome clinical trial and funding of \$1.7 million from the US Department of Defense in 2015 towards the cost of the Traumatic Brain Injury clinical trials.

Cash reserves at 31 December 2016 were \$5.1 million (2015: \$16.6 million). Operating cash outflow decreased from \$12.7 million to \$12.4 million, mainly due to the lower payments to R&D suppliers, partly offset by lower cash receipts from grants. Financing provided cash of \$0.9 million in 2016 from the exercise of share options, compared with \$7.5 million in 2015 from share placement proceeds of \$6.3 million and options exercise proceeds of \$1.2 million.

# **Leadership Team**

# **Board**









Dr Richard Treagus Executive Chairman BScMed, MBChB, MPharmMed, MBA

Dr Treagus joined the Neuren Board as Executive Chairman in January 2013. He is a physician, with more than 20 years' experience in all aspects of the international biopharmaceutical industry. He has held senior executive roles with pharmaceutical organisations in South Africa and Australia and has successfully established numerous pharmaceutical business partnerships in the US, Europe and Asia. Dr Treagus served as Chief Executive of the ASX-listed company Acrux Limited from 2006 to 2012.

Under his leadership Acrux gained FDA approval for three drug products and concluded a product licensing transaction with Eli Lilly worth US\$335m plus royalties. In 2010 Dr Treagus was awarded the Ernst and Young Entrepreneur-ofthe-Year (Southern Region) in the Listed Company Category and in subsequent years has served on the judging panel. Dr Treagus is Chairman of Biotech Capital Limited which is listed on the ASX.

# Larry Glass Executive Director and Chief Science Officer BA (Biology)

Mr Glass joined Neuren in 2004 and has been an **Executive Director since** May 2012. He has more than 30 years' experience in the life sciences industry, including clinical trials, basic and applied research, epidemiologic studies, diagnostics and pharmaceutical product development. Before he joined Neuren, he worked as an independent consultant for a number of biotech companies in the US and internationally providing management, strategic and business development services. Prior to that, he was CEO of a contract research organisation ("CRO") that provided preclinical research and clinical trials support for major pharmaceutical and biotechnology companies and the US government. For a number of years, the CRO operated as a subsidiary of a NYSE-listed company and was subsequently sold to a European biopharmaceutical enterprise which was then acquired by Johnson & Johnson. Mr Glass is a biologist with additional graduate training in epidemiology and biostatistics.

# Bruce Hancox Non-Executive Director

Mr Hancox joined the Neuren Board in March 2012. Mr Hancox has had a long and distinguished career in business in New Zealand and Australia. He was for many years involved with Brierley Investments Limited as General Manager, Group Chief Executive and Chairman. He also served as a director of many Brierley subsidiaries in New Zealand, Australia and the United States. Since 2006 he has pursued various private investment interests and has been a director of, and consultant to, a number of companies. He has acted as an advisor on a number of takeover situations. He is a non-executive director of the ASX-listed companies Medical Australia Limited and Biotech Capital Limited.

# Dr Trevor Scott Non-Executive Director MNZM, LLD (Hon), BCom, FCA, FNZIM, DF Inst DDr

Dr Scott joined the Neuren Board in March 2002. He is the founder of T.D. Scott and Co., an accountancy and consulting firm, which he formed in 1988. He is an experienced advisor to companies across a variety of industries. Dr Scott serves on numerous corporate boards and is chairman of several. He chairs Neuren's Audit Committee and Remuneration Committee as an independent director.

# Management









# **Dr Clive Blower**Vice President, Product Development and Technical Affairs

BSc (Hons), PhD

Clive joined Neuren in August 2014 from Acrux, bringing over twenty years of global drug development experience. Clive was at Acrux for seven years as Director of Product Development and Technical Affairs and then Chief Operating Officer. During this period he led the CMC (Chemistry, Manufacturing and Controls) development of the company's lead product through Phase 3 clinical trials, FDA approval and commercial launch. Clive formerly served in senior management positions at Hospira Inc. (previously Faulding Pharmaceuticals, then Mayne Pharma), including leading the Injectable Drug Development Group. He earned a Doctorate in Chemistry from Monash University in 1992 and has experience in all stages of drug development, from concept to commercialisation, having contributed to the development and launch of more than 25 pharmaceutical products.

# **Dr Nancy Jones**Vice President, Clinical Development

Nancy joined Neuren in January 2013. Prior to joining Neuren, she held a senior position at Autism Speaks, the largest science and advocacy organisation in the US focused on autism spectrum and related disorders. Nancy was at Autism Speaks for 6 years, directing the overall operations of the Autism Treatment Network, a network of hospitals and medical centers dedicated to improving access to comprehensive, coordinated medical care for individuals with ASD. She also oversaw the Autism Clinical Trials Network, a network developed to promote and expedite clinical trials in ASD, and played a lead role in an initiative to enhance the development of syndromespecific outcome measures for treatment trials in ASD. Nancy received her Ph.D. in Applied Linguistics from the University of California, Los Angeles where she focused on the neurobiology of language and developmental disorders.

# Jon Pilcher Chief Financial Officer and Company Secretary BSc (Hons), ACA

Jon joined Neuren in August 2013 from Acrux (ASX: ACR) where, as CFO & Company Secretary, he was a member of the leadership team for eleven years. That period included Acrux's IPO and listing on the ASX, the development and FDA approval of three novel pharmaceutical products and a transforming licensing deal with Eli Lilly in 2010. Jon is a Chartered Accountant and holds a degree in Biotechnology from the University of Reading in the UK. He formerly spent seven years in a series of senior financial positions in the R&D and corporate functions of international pharmaceutical groups Medeva and Celltech (now part of UCB). Jon is a non-executive director of Biotech Capital Limited (ASX: BTC).

# James Shaw Vice President, Clinical Operations BSc (Hons), MBA

James joined Neuren in August 2013 and brings twenty years of development and commercialisation experience in the pharmaceutical industry. having worked for both large Pharma and Clinical Research Organisations. Before joining Neuren, he was CEO of a Clinical Research and Site Management Organisation providing full service clinical trial support in Australia and New Zealand. Prior to that he spent 7 years with Quintiles in Sydney and Singapore working across Business Development and Operational leadership roles. James brings a global focus to drug development, having led product teams from Phase II through to FDA submission and commercialisation during six years with AstraZeneca at their global headquarters in the UK.

# **Corporate Governance**

Neuren's board of directors ("Board") aims to ensure that the Company and its subsidiaries (the "Group") operates with a corporate governance framework and practices that promote an appropriate governance culture throughout the organisation and that are relevant, practical and cost-effective for the current size and stage of development of the business.

A description of the framework and practices is set out below, laid out under the structure of the ASX Listing Rules and the Corporate Governance Principles (the "Principles") and Recommendations (the "Recommendations") 3<sup>rd</sup> Edition issued by the ASX Corporate Governance Council in March 2014.

# Principle 1. Lay solid foundations for management and oversight

The Board is responsible for the overall corporate governance of the Group. The Board acts on behalf of and is accountable to the shareholders. The Board seeks to identify the expectations of shareholders as well as other regulatory and ethical expectations and obligations. The Board is responsible for identifying areas of significant business risk and ensuring mechanisms are in place to manage those risks adequately. In addition, the Board sets the overall strategic goals and objectives, and monitors achievement of goals.

The Board appoints the principal executive officer, currently the Executive Chairman. The Board has delegated the responsibility for the operation and administration of the Group to the Executive Chairman and senior management. The Board ensures that the management team is appropriately qualified to discharge its responsibilities.

The Board ensures management's objectives and activities are aligned with the expectations and risks identified by the Board through a number of mechanisms including the following:

- establishment of the overall strategic direction and leadership of the Group;
- approving and monitoring the implementation by management of the Group's strategic plan to achieve those objectives;
- reviewing performance against its stated objectives, by receiving regular management reports on business situation, opportunities and risks;
- monitoring and review of the Group's controls and systems including those concerned with regulatory matters to ensure statutory compliance and the highest ethical standards; and
- review and adoption of budgets and forecasts and monitoring the results against stated targets.

The Board sets the corporate strategy and financial targets with the aim of creating long-term value for shareholders.

In accordance with Recommendation 1.2, the Board undertakes appropriate checks before appointing a new director, or putting forward to shareholders a candidate for election and provides shareholders with all material information in its possession relevant to a decision on whether or not to elect or re-elect a director.

The Group has a written agreement with each director and senior executive, setting out the terms of their appointment, in accordance with Recommendation 1.3. The Company Secretary is accountable directly to the Board on all matters to do with the proper functioning of the Board, in accordance with Recommendation 1.4.

At this stage of the Group's development, considering the very small size of the workforce and the specialist nature of most positions, the Board has chosen not to establish a formal diversity policy or formal objectives for gender diversity, as recommended in Recommendation 1.5. The Group does not discriminate on the basis of age, ethnicity or gender and when a position becomes vacant the Group seeks to employ the best candidate available for the position. Currently the four directors are male. One of the four senior executives (defined as those who report to an executive director) is female. The Group currently has 10 employees and consultants, from a number of different cultural backgrounds, of which 4 are women.

The performance of the Board, its committees and individual directors is periodically evaluated in accordance with Recommendation 1.6. Each director completes a quantitative evaluation questionnaire and is able to provide qualitative comments. The Company Secretary collates the responses and reports back to the board for discussion. A performance evaluation was not undertaken during 2016, being deferred until after the key milestone of the Rett syndrome pediatric Phase 2 trial results in the first quarter of 2017.

In accordance with Recommendation 1.7, the Board periodically evaluates the performance of the Executive Chairman and the Executive Chairman periodically evaluates the performance of senior executives. The evaluation of the Executive Chairman is part of the board performance evaluation process. For the evaluation of senior executives, an Individual discussion is held after each senior executive complete a qualitative questionnaire, covering past individual and team achievements and challenges, as well as forward-looking outcomes and areas of personal focus. Performance evaluations were not undertaken during 2016, being deferred until after the key milestone of the Rett syndrome pediatric Phase 2 trial results in the first quarter of 2017.

# **Principle 2. Structure the Board to add value**

The Board has not considered it necessary or value-adding to establish a separate Nomination Committee (Recommendation 2.1). The selection, appointment and retirement of directors is considered by the full Board, within the framework of the skills matrix described below. The Board may also engage an external consultant where appropriate to identify and assess suitable candidates who meet the Board's specifications. The composition of the board is discussed regularly and each director may propose changes for discussion.

In accordance with Recommendation 2.2, the Company has a skills matrix setting out the mix of skills that the Board is looking to achieve in its membership. The matrix is summarised in the table below.

Skill	Requirements Overview
Professional Director Skills	
Risk & Compliance	Identify key risks to the organisation related to each key area of operations. Ability to monitor risk and compliance and knowledge of legal and regulatory requirements.
Financial & Audit	Experience in accounting and finance to analyse statements, assess financial viability, contribute to financial planning, oversee budgets, oversee funding arrangements.
Strategy	Ability to identify and critically assess strategic opportunities and threats to the organisation. Develop strategies in context to our policies and business objectives.
Policy Development	Ability to identify key issues for the organisation and develop appropriate policy parameters within which the organisation should operate.
Executive Management	Experience in evaluating performance of senior management, and oversee strategic human capital planning.
Previous Board Experience	The board's directors should have director experience and have completed formal training in governance and risk.
Industry Specific Skills	
Pharmaceutical product development	Experience in and/or understanding of the issues in clinical development, interactions with international regulators and/or CMC development.
International pharmaceutical commercialisation	Experience in and/or understanding of the issues in entering international pharmaceutical markets, including pricing, distribution and exclusivity.
Pharmaceutical partnering	Experience in and/or understanding of the issues in partnering transactions and/or relevant contacts in international pharma companies.
Risk capital management	Experience in raising funding from equity markets and/or relevant contacts in relevant funds and/or investment banks.
Intellectual property	Understanding of the importance and value of market exclusivity and the various ways of protecting it across different jurisdictions, including patents and data exclusivity.
Interpersonal Skills	
Leadership	Make decisions and take necessary actions in the best interest of the organisation, and represent the organisation favourably. Analyse issues and contribute at board level to solutions. Recognise the role of the board versus the role of management.
Ethics and Integrity	Understand role as director and continue to self educate on legal responsibility, ability to maintain board confidentiality, declare any conflicts.
Contribution	Ability to constructively contribute to board discussions and communicate effectively with management and other directors.
Crisis Management	Ability to constructively manage crises, provide leadership around solutions and contribute to communications strategy with stakeholders.

# **Corporate Governance**

continued

The Board currently has four members, as set out in the table below, and is highly engaged in the oversight and direction of the business. Details of the relevant skills, experience and expertise of each Board member are set out on page 27 of this report.

	Appointment	Role	Independent	Committees
Richard Treagus	2013	Executive Chairman	No <sup>1</sup>	
Larry Glass	Board - 2012 Management - 2004	Executive director Chief Science Officer	No <sup>1</sup>	
Bruce Hancox	2012	Non-executive director	No <sup>1</sup>	Member of Audit Committee and Remuneration Committee
Trevor Scott	2002	Non-executive director	Yes	Chair of Audit Committee and Remuneration Committee

<sup>&</sup>lt;sup>1</sup> Richard Treagus and Larry Glass are not considered independent due to their executive roles. Bruce Hancox is not considered independent because he provides advisory services to a substantial shareholder in Neuren.

The directors believe that the current structure, small size and membership profile of the Board provides the maximum value to the business at this stage of its development, notwithstanding that they do not follow Recommendations 2.4 and 2.5. The Board currently does not have a majority of independent directors (Recommendation 2.4), the chair is not independent (Recommendation 2.5) and the chair and principal executive officer roles are not separate (Recommendation 2.5). The Board will continue to assess whether this is the optimum membership and structure for the business as it grows and develops.

In accordance with Recommendation 2.6, the Company has a program for inducting new directors and provides appropriate professional development opportunities for directors to develop and maintain the skills and knowledge needed to perform their role as directors effectively.

# Principle 3. Promote ethical and responsible decision-making

The Board has established a Code of Conduct, which requires that Board members and executives:

- will act honestly, in good faith and in the best interests of the whole Company
- owe a fiduciary duty to the Company as a whole
- have a duty to use due care and diligence in fulfilling the functions of office and exercising the powers attached to that office
- will undertake diligent analysis of all proposals placed before the Board
- will act with a level of skill expected from Directors and key executives of a publicly listed Company
- will use the powers of office for a proper purpose, in the best interests of the Company as a whole
- will demonstrate commercial reasonableness in decisionmaking
- will not make improper use of information acquired as Directors and key executives
- will not disclose non-public information except where disclosure is authorised or legally mandated
- will keep confidential information received in the course of the exercise of their duties and such information remains the property of the Company from which it was obtained and it is improper to disclose it, or allow it to be disclosed, unless that disclosure has been authorised by the person from whom the information is provided, or required by law
- will not take improper advantage of the position of Director or use the position for personal gain or to compete with the Company
- will not take advantage of Company property or use such property for personal gain or to compete with the Company
- will protect and ensure the efficient use of the Company's assets for legitimate business purposes
- will not allow personal interests, or the interest of any associated person, to conflict with the interests of the Company
- have an obligation to be independent in judgement and actions and Directors will take all reasonable steps to be satisfied as to the soundness of all decisions of the Board
- will make reasonable enquiries to ensure that the Company is operating efficiently, effectively and legally, towards achieving its goals
- will not engage in conduct likely to bring discredit upon the Company
- will encourage fair dealing by all employees with the Company's customers, suppliers, competitors and other employees

- will encourage the reporting of unlawful/unethical behaviour and actively promote ethical behaviour and protection for those who report violations in good faith
- will give their specific expertise generously to the Company
- have an obligation, at all times, to comply with the spirit, as well as the letter of the law and with the principles of this Code of Conduct

# Principle 4. Safeguard integrity in financial reporting

The Board has established an Audit Committee, which currently consists of the two non-executive directors, Trevor Scott and Bruce Hancox. The independent director Trevor Scott chairs the Committee. The Audit Committee consists of only non-executive directors and is chaired by an independent director as suggested in Recommendation 4.1, but it does not have at least 3 members or a majority of independent members. The Committee met three times during 2016, attended by all members.

The Committee operates under a charter approved by the Board, a summary of which is available on the Neuren website. It is responsible for undertaking a broad review of, ensuring compliance with, and making recommendations in respect of, the Group's internal financial controls and legal compliance obligations. It is also responsible for:

- review of audit assessment of the adequacy and effectiveness of internal controls over the Company's accounting and financial reporting systems, including controls over computerised systems;
- review of the audit plans and recommendations of the external auditors;
- evaluating the extent to which the planned scope of the audit can be relied upon to detect weaknesses in internal control, fraud and other illegal acts;
- review of the results of audits, any changes in accounting practices or policies and subsequent effects on the financial statements and make recommendations to management where necessary and appropriate;
- review of the performance and fees of the external auditor:
- audit of legal compliance including trade practices, corporations law, occupational health and safety and environmental statutory compliance, and compliance with the Listing Rules of the ASX;
- supervision of special investigations when requested by the Board;

In undertaking these tasks the Audit Committee meets separately with management and external auditors where required.

# **Corporate Governance**

### continued

Notwithstanding that the New Zealand Companies Act 1993 does not require it, in accordance with Recommendation 4.2, the Board also seeks assurances in writing from the Executive Chairman and the Chief Financial Officer that the annual financial statements present a true and fair view, in all material respects, of the Group's financial condition and operational results and are in accordance with NZ GAAP and that this is founded on a sound system of risk management and internal control that is operating effectively in all material respects with regard to financial reporting risks. The Board received those assurances on 30 March 2017.

Since Neuren is incorporated in New Zealand and applies New Zealand financial reporting standards, its auditor is located in New Zealand. The Board has considered it impractical and an unnecessary expense for the auditor to travel to Australia to attend the annual general meeting, as suggested in Recommendation 4.3. However, at a special meeting of shareholders in November 2016, the Company's constitution was amended to enable the Board to convene virtual shareholder meetings, with participation by electronic means.

## Principle 5. Make timely and balanced disclosure

Neuren is required to comply with the continuous disclosure requirements as set out in the ASX Listing Rules, disclosing to the ASX any information that a reasonable person would expect to have a material effect on the price or value of Neuren's securities, unless certain exemptions from the obligation to disclose apply.

In accordance with Recommendation 5.1, the Board has approved policies and procedures to ensure that it complies with its disclosure obligations and that disclosure is timely, factual, clear and objective. The Board has designated the company secretary as the person primarily responsible for implementing and monitoring those policies and procedures. A summary of the policies and procedures is available on the Neuren website. All information disclosed to the ASX is placed on the Neuren website after it has been published by the ASX.

# **Principle 6. Respect the rights of shareholders**

The Board strives to communicate effectively with shareholders, give them ready access to balanced and understandable information about the business and make it easy for them to participate in shareholder meetings.

In accordance with Recommendation 6.1, comprehensive information about the Company and its governance is provided via the website www.neurenpharma.com. This includes information about the Board and senior executives, as well as corporate governance policies. All announcements, presentations, financial information and meetings materials disclosed to the ASX are placed on the website, so that current and historical information can be accessed readily.

The Company's investor relations program facilitates effective two-way communication with investors (Recommendation 6.2). The Executive Chairman and the Chief Financial Officer interact with institutional investors, private investors, analysts and media on an ad hoc basis, conducting meetings in person or by teleconference and responding personally to enquiries.

The Board seeks practical and cost-effective ways to promote informed participation at shareholder meetings (Recommendation 6.3). This includes providing access to clear and comprehensive meeting materials and electronic proxy voting. At a special meeting of shareholders in November 2016, the Company's constitution was amended to enable the Board to convene virtual shareholder meetings, with participation by electronic means.

In accordance with Recommendation 6.4, shareholders are provided with and encouraged to use electronic methods to communicate with the Company and with the share registry.

# Principle 7. Recognise and manage risk

The Board has established policies for the oversight and management of material business risks, a summary of which is available on the Neuren website. In accordance with Recommendation 7.1, risk is overseen by the Audit Committee, the membership of which is described under Principle 4 above.

In accordance with Recommendation 7.2, the Audit Committee reviews the Group's risk management framework at least annually to satisfy itself that it continues to be sound. A review was conducted in 2016.

The size and complexity of the Group's business is not sufficient to warrant an internal audit function (Recommendation 7.3). The risk management policy is designed to involve the entire organisation in risk management and to ensure that the effectiveness of the risk management and internal control processes are continually improved.

The Group does not have a material exposure to economic, environmental or social sustainability risks (Recommendation 7.4).

# **Principle 8. Remunerate fairly and responsibly**

Neuren believes having highly skilled and motivated people will allow the organisation to best pursue its mission and achieve its goals for the benefit of shareholders and stakeholders more broadly. The ability to attract and retain the best people is critical to the Company's future success. The Board believes remuneration policies are a key part of ensuring this success.

The Board has established a Remuneration Committee, which currently consists of the two non-executive directors, Trevor Scott and Bruce Hancox. The independent director Trevor Scott chairs the Committee. The Remuneration Committee is chaired by an independent director as suggested in Recommendation 8.1, but it does not have at least 3 members or a majority of independent members. The Committee met three times during 2016, with all members attending.

The Committee operates under a charter approved by the Board, a summary of which is available on the Neuren website. It is responsible for undertaking a broad review of, ensuring compliance with, and making recommendations in respect of, the Group's remuneration policies. It is also responsible for:

- setting and reviewing compensation policies and practices of the Company;
- setting and reviewing all elements of remuneration of the directors and members of the executive team; and
- setting and reviewing long term incentive plans for employees and/or directors.

In undertaking these tasks the Remuneration Committee meets separately with management where required.

The Group's remuneration policies and practices are summarised below, in accordance with Recommendation 8.2.

The Remuneration Committee assesses the appropriateness of the nature and amount of remuneration of executive directors and senior executives on a regular basis by reference to relevant employment market conditions, with the overall objective of ensuring maximum shareholder benefit from the retention of a high quality executive team. To assist in achieving these objectives, the nature and amount of executive remuneration is linked to the Company's performance. Remuneration consists of fixed cash remuneration including superannuation contributions required by law and equity-based remuneration. Fixed cash remuneration takes into account labour market conditions, as well as the scale and nature of the Group's business. Equity-based remuneration is provided by participation in a share option plan, a loan funded share plan and equity performance rights. These are designed to ensure that key executives are aligned with shareholders through an interest in the long-term growth and value of the Company. Senior executive service agreements generally include a requirement for 3 months' notice of termination by the executive or the Group. There are no other termination payments. Termination for misconduct does not require notice or payment.

Remuneration of non-executive directors comprises fixed cash fees only. The fees are determined by the Board within the aggregate limit for directors' fees approved by shareholders. Non-executive directors receive no retirement benefits

Participants in equity based remuneration schemes are not permitted to enter into transactions which limit the economic risk of participating in the scheme (Recommendation 8.3).

# **Directors' Report**

## **Principal Activities**

Neuren Pharmaceuticals Limited (Neuren or the Company, and its subsidiaries, or the Group) is a publicly listed biopharmaceutical company developing drugs for neurological disorders.

### **Performance Overview**

During 2016 Neuren made important progress on the development of its lead drug trofinetide candidate.

Neuren commenced a Phase 2 clinical trial of trofinetide in subjects aged 5 to 15 with Rett syndrome in April 2016 and completed the trial in January 2017. Top-line results from the trial were announced on 22 March 2017. The trial was a double-blind, randomised, placebo controlled study that tested three doses of trofinetide compared with placebo in 82 subjects. The highest dose of trofinetide achieved statistically significant clinical benefit compared with placebo for each of three syndrome-specific efficacy measures; the Rett Syndrome Behaviour Questionnaire (p=0.042), the Clinical Global Impression of Improvement (p=0.029) and the Rett Syndrome Domain Specific Concerns (p=0.025). These measures included assessments of both clinicians and caregivers. Clinical improvements of 15% to 16% from baseline were observed, which was considered by leading Rett syndrome physicians to be clinically meaningful, particularly in a short duration trial. The improvement increased through to the time that treatment ceased. This suggests that further benefit may be achieved with longer treatment duration. The results provided strong evidence of biological activity of the high dose across multiple symptom areas, indicating the potential for disease modification rather than simply addressing isolated symptoms. In addition, trofinetide was well tolerated and had a good safety profile in these younger subjects, with no dose-limiting effects observed.

In April 2016, Neuren announced top-line results from its Phase 2 clinical trial of trofinetide in moderate to severe traumatic brain injury (TBI). The trial (known as "INTREPID") was conducted in collaboration with the U.S. Army Medical Research and Materiel Command. The safety results, which was the primary endpoint of the trial, identified no treatment-related or dose-dependent trends in adverse events or laboratory results. Statistically significant (p=0.008) and clinically relevant benefit of active over placebo was demonstrated in patients with severe TBI who completed the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS), which is a validated series of tests completed by the patient for assessing cognitive impairment that is commonly used in the diagnosis and tracking of dementia. RBANS has also been validated for use in moderate-to-severe TBI. The trial did not demonstrate a difference between drug and placebo in 3 core efficacy measures, which were the Extended Glasgow Outcome Scale (GOS-E), the Mayo-Portland Adaptability Inventory (MPAI-4) and mortality.

Neuren and its clinical expert advisors met with the US Food and Drug Administration (FDA) Division of Psychiatric Products in order to discuss plans for the development of trofinetide in Fragile X syndrome. During the meeting it was recognised that the broad mechanisms of action of trofinetide make it appropriate to use a novel approach to the assessment of Fragile X patients. It was agreed that Neuren would work with the FDA to refine and validate a Fragile X Syndrome Rating Scale. The FDA also requested that, before commencing clinical trials in paediatric patients, Neuren provide data from the non-clinical toxicity studies that were in progress.

The detailed financial statements are presented on pages 30 to 49. All amounts in the Financial Statements are shown in Australian dollars unless otherwise stated.

The Group's loss after tax attributable to equity holders of the Company for the year ended 31 December 2016 was \$12,014,000 (2015: \$13,397,000). The loss decreased by \$1.4 million, mainly due to the following:

- A decrease of \$1.7 million in research and development costs, resulting from;
  - the completion of Fragile X syndrome clinical trial in December 2015;
  - the completion of Traumatic Brain Injury clinical trials in April 2016;
  - lower expenditure on manufacturing scale-up; offset by:
  - commencement of the Rett syndrome clinical trial in 2016:
- Income tax benefit from the R&D Tax incentive of \$1.8 million, compared with \$0.7 million in 2015;
- A decrease of \$0.3 million in the non-cash share based payments expense as instruments reached the end of required vesting periods of service;
- Foreign exchange losses of \$0.2 million included in Operating Expenditure, compared with gains of \$1.1 million in 2015 which were included in Operating Revenue; and
- A decrease of \$0.4 million in grant revenue, which comprised funding of \$1.3 million in 2016 from Rettsyndrome.org towards the cost of the Rett syndrome clinical trial and funding of \$1.7 million from the US Department of Defense in 2015 towards the cost of the Traumatic Brain Injury clinical trials.

The net loss per share for 2016 was \$0.007 (2015: \$0.008) based on a weighted average number of shares outstanding of 1,783,503,420 (2015: 1,680,362,334). There were no share options outstanding at 31 December 2016.

Cash reserves at 31 December 2016 were \$5.1 million (2015: \$16.6 million). Operating cash outflow decreased from \$12.7 million to \$12.4 million, mainly due to the lower payments to R&D suppliers, partly offset by lower cash receipts from grants. Financing provided cash of \$0.9 million in 2016 from the exercise of share options compared with \$7.5 million in 2015 from share placement proceeds of \$6.3 million and options exercise proceeds of \$1.2 million.

On 6 December 2016, shareholders gave approval for the Company to allot up to 100 million additional shares to interests of Mr Lang Walker during the period to 30 June 2017, at a subscription price equal to the volume weighted average price at which the Company's ordinary shares are traded on the Australian Securities Exchange in the ten trading days prior to each allotment. The board therefore has the ability to make such allotments if it is necessary and in the best interests of all shareholders. At the date of this report, no allotments have been made.

No dividends were paid in the year, or in the prior year and the Directors recommend none for the year.

### **Directors**

# Dr Richard Treagus, BScMed, MBChB, MPharmMed, MBA (Executive Chairman)

Dr Treagus joined the Neuren Board as Executive Chairman in January 2013. He is a physician, with more than 20 years' experience in all aspects of the international biopharmaceutical industry. He has held senior executive roles with pharmaceutical organisations in South Africa and Australia and has successfully established numerous pharmaceutical business partnerships in the US, Europe and Asia. Dr Treagus served as Chief Executive of the ASX-listed company Acrux Limited from 2006 to 2012. Under his leadership Acrux gained FDA approval for three drug products, concluded a product licensing transaction with Eli Lilly worth US\$335m plus royalties and became profitable. In 2010 Dr Treagus was awarded the Ernst and Young Entrepreneur-of-the-Year (Southern Region) in the Listed Company Category and in subsequent years has served on the judging panel. Dr Treagus is Chairman of Biotech Capital Limited, which is listed on the ASX.

# Mr Larry Glass (Executive Director and Chief Science Officer)

Mr Glass joined Neuren in 2004 and has been an Executive Director since May 2012. He has more than 30 years' experience in the life sciences industry, including clinical trials, basic and applied research, epidemiologic studies, diagnostics and pharmaceutical product development. Before he joined Neuren, he worked as an independent consultant for a number of biotech companies in the US and internationally providing management, strategic and business development services. Prior to that, he was CEO of a contract research organisation ("CRO") that provided preclinical research and clinical trials support for major pharmaceutical and biotechnology companies and the US government. For a number of years, the CRO operated as a subsidiary of a NYSE-listed company and was subsequently sold to a European biopharmaceutical enterprise which was then acquired by Johnson & Johnson. Mr Glass is a biologist with additional graduate training in epidemiology and biostatistics.

### Mr Bruce Hancox, BCom (Non-Executive Director)

Mr Hancox joined the Neuren Board in March 2012. Mr Hancox has had a long and distinguished career in business in New Zealand and Australia. He was for many years involved with Brierley Investments Limited as General Manager, Group Chief Executive and Chairman. He also served as a director of many Brierley subsidiaries in New Zealand, Australia and the United States. Since 2006 he has pursued various private investment interests and has been a director of, and consultant to, a number of companies. He has acted as an advisor on a number of takeover situations. He is a non-executive director of the ASX-listed companies Medical Australia Limited and Biotech Capital Limited.

# Dr Trevor Scott, MNZM, LLD (Hon), BCom, FCA, FNZIM, DF Inst D (Non-Executive Director)

Dr Scott joined the Neuren Board in March 2002. He is the founder of T.D. Scott and Co., an accountancy and consulting firm, which he formed in 1988. He is an experienced advisor to companies across a variety of industries. Dr Scott serves on numerous corporate boards and is chairman of several.

## **Interests Register**

The Company is required to maintain an interests register in which particulars of certain transactions and matters involving Directors must be recorded. Details of the entries in this register for each of the Directors during and since the end of 2016 are as follows:

# **Dr Richard Treagus**

On 13 and 16 May 2016, Dr Treagus purchased 500,000 shares at \$0.07 per share. On 31 August 2016, 9,615,385 shares were issued to Dr Treagus following the exercise of Equity Performance Rights.

# **Information used by Directors**

During the year the Board received no notices from Directors of the Company requesting to use Company information received in their capacity as Directors, which would not otherwise have been available to them.

# **Indemnification and Insurance of Directors and Officers**

Neuren has arranged Directors and Officers Liability Insurance which provides that Directors and Officers generally will incur no monetary loss as a result of actions undertaken by them as Directors and Officers. The insurance does not cover liabilities arising from criminal activities or deliberate or reckless acts or omissions.

# **Directors' Report**

continued

### **Remuneration of Directors**

Remuneration of the Directors is shown in the table below, including fees and the value of benefits, as well as the estimated fair value of share based payments amortised during the year or written back on the lapse of unvested share options.

Remuneration of Directors	Remuneration 2016 \$'000	Share based payments 2016 \$'000	Remuneration 2015 \$'000	Share based payments 2015 \$'000
Dr Richard Treagus	341	144	360	475
Mr Larry Glass	420	-	479	-
Mr Bruce Hancox	33	-	50	-
Dr Trevor Scott	40	-	60	-

### **Executive Remuneration**

The number of employees, not being directors of the Company, who received remuneration and benefits above NZ \$100,000, shown in bands denominated in Australian dollars, was as follows:

Excluding shared based payments	2016 \$'000	2015 \$'000
\$90,000 - \$99,999	-	1
\$100,000 - \$109,999	_	1
\$140,000 - \$149,999	_	1
\$150,000 - \$159,999	2	_
\$240,000 - \$249,999	1	1
\$250,000 - \$259,999	1	_
\$270,000 - \$279,999	1	2

Including shared based payments	2016 \$'000	2015 \$'000
\$90,000 - \$99,999	_	1
\$100,000 - \$109,999	-	1
\$140,000 - \$149,999	_	1
\$150,000 - \$159,999	2	_
\$380,000 - \$389,999	1	_
\$390,000 - \$399,999	_	1
\$530,000 - \$539,999	1	_
\$560,000 - \$569,999	_	1
\$570,000 - \$579,999	1	1

### **Donations**

The Company made donations of \$331 during the year (2015: nil).

## **Auditors**

PricewaterhouseCoopers are the auditors of the Company. Audit fees in relation to the annual and interim financial statements were \$49,954 (2015: \$52,310). PricewaterhouseCoopers did not receive any fees in relation to other financial advice and services (2015: Nil).

For and on behalf of the Board of Directors who authorised the issue of these financial statements on

30 March 2017.

**Dr Richard Treagus** Chairman

**Dr Trevor Scott Director** 

# **Financial Report**

for the year ended 31 December 2016



# **Consolidated Statement of Comprehensive Income**

for the year ended 31 December 2016

	Notes	Dec 2016 \$'000	Dec 2015 \$'000
Interest income		188	335
		188	335
Other income			
Grants		1,306	1,673
Foreign exchange gain		-	1,098
		1,306	2,771
Total income		1,494	3,106
Research and development costs		(12,441)	(14,132)
Corporate and administrative costs		(1,842)	(1,888)
Foreign exchange loss		(185)	_
Share based payment expense		(884)	(1,232)
Loss before income tax		(13,858)	(14,146)
Income tax benefit	5	1,844	749
Loss after income tax		(12,014)	(13,397)
Other comprehensive expense, net of tax			
Disposal of Minority Interest		-	(221)
Exchange differences on translation of foreign operations		(6)	(60)
Total comprehensive loss for the period		(12,020)	(13,678)
Loss after tax attributable to Equity holders of the company:		(12,014)	(13,397)
Total comprehensive loss attributable to Equity holders of the company:		(12,020)	(13,678)
Basic and diluted loss per share	6	\$0.007	\$0.008

# **Consolidated Statement of Financial Position**

as at 31 December 2016

	Notes	As at Dec 2016 \$'000	As at Dec 2015 \$'000
ASSETS			
Current Assets:			
Cash and cash equivalents	7	5,051	16,642
Current tax receivable	5	981	-
Trade and other receivables	8	21	34
Total current assets		6,053	16,676
Non-current assets:			
Property, plant and equipment		12	11
Intangible assets	9	145	217
Total non-current assets		157	228
TOTAL ASSETS		6,210	16,904
LIABILITIES AND EQUITY			
Current liabilities:			
Trade and other payables	10	2,027	2,502
Total current liabilities		2,027	2,502
Non-current liabilities:			
Total liabilities		2,027	2,502
		2,027	
EQUITY	44	442.020	444.040
Share capital	11	112,829	111,912
Other reserves		(10,292)	(7,764)
Accumulated deficit		(98,354)	(89,746)
Total equity attributable to equity holders		4,183	14,402
TOTAL LIABILITIES AND EQUITY		6,210	16,904

# **Consolidated Statement of Changes in Equity**

for the year ended 31 December 2016

Consolidated	Share Capital \$'000	Share Option Reserve \$'000	Currency Translation Reserve \$'000	Accumulated Deficit \$'000	Total Attributable to Equity Holders \$'000	Minority Interest \$'000	Total Equity \$'000
Equity as at 1 January 2015	104,363	9,677	(10,593)	(84,148)	19,299	(221)	19,078
Shares issued on option exercise	1,211				1,211		1,211
Shares issued in private placement	6,350				6,350		6,350
Share issue costs expensed	(12)				(12)		(12)
Share based payments		1,232			1,232		1,232
Exercised options		(8,020)		8,020	_		-
Loss after income tax for the period				(13,397)	(13,397)		(13,397)
Comprehensive loss for the period			(60)	(221)	(281)	221	(60)
Equity as at 31 December 2015	111,912	2,889	(10,653)	(80.746)	14.402		14,402
Shares issued on option exercise	929	2,009	(10,053)	(89,746)	14,402 929	_	929
Share issue costs expensed	(12)				(12)		(12)
Share based payments	(12)	884			884		884
Exercised options		(3,406)		3,406	_		_
Loss after income tax for the		(3, 100)		3,100			
period				(12,014)	(12,014)		(12,014)
Other comprehensive expenses			(6)	_	(6)	_	(6)
Equity as at 31 December 2016	112,829	367	(10,659)	(98,354)	4,183	_	4,183

# **Consolidated Statement of Cash Flows**

for the year ended 31 December 2016

	2016 \$'000	2015 \$'000
Cash flows from operating activities:		
Receipts from grants	1,306	2,642
Interest received	206	363
GST refunded	134	92
Payments for employees and directors	(1,938)	(1,993)
Payments to other suppliers	(12,949)	(14,584)
R&D Tax Refund	863	749
Net cash used in operating activities	(12,378)	(12,731)
Cash flows from investing activities:		
Purchase of property, plant and equipment	(10)	(3)
Provided from sale of property, plant, equipment	_	4
Net cash used in investing activities	(10)	1
Cash flows from financing activities:		
Proceeds from the issue of shares	_	6,350
Proceeds from the exercise of options	929	1,211
Payment of share issue expenses	(12)	(12)
Net cash provided from financing activities	917	7,549
Net decrease in cash	(11,471)	(5,181)
Effect of exchange rate changes on cash balances	(120)	999
Cash at the beginning of the year	16,642	20,824
Cash at the end of the year	5,051	16,642
Reconciliation with loss after income tax:		
Loss after income tax	(12,014)	(13,397)
Non-cash items requiring adjustment:		
Depreciation of property, plant and equipment	8	17
Amortisation of intangible assets	72	73
Share based payment expense	884	1,232
Foreign exchange loss/(gain)	115	(1,059)
Changes in working capital:		
Trade and other receivables	(968)	929
Trade and other payables	(475)	(526)
Net cash used in operating activities	(12,378)	(12,731)

# **Notes to the Consolidated Financial Statements**

for the year ended 31 December 2016

### 1. Nature of business

Neuren Pharmaceuticals Limited (Neuren or the Company, and its subsidiaries, or the Group) is a publicly listed biopharmaceutical company developing drugs for neurological disorders. The drugs target treatment of chronic neurodevelopmental and neurodegenerative disorders, as well as acute traumatic brain injury.

The Company is a limited liability company incorporated in New Zealand. The address of its registered office in New Zealand is at the offices of Lowndes Jordan, Level 15 PWC Tower, 188 Quay Street, Auckland 1141. Neuren ordinary shares are listed on the Australian Securities Exchange (ASX code: NEU).

These consolidated financial statements have been approved for issue by the Board of Directors on 30 March 2017.

### Inherent Uncertainties

- There are inherent uncertainties associated with assessing the carrying value of the acquired intellectual property. The ultimate realisation of the carrying values of intellectual property is dependent on the Group successfully developing its products, on licensing the products, or divesting the intellectual property so that it generates future economic benefits to the Group.
- The Group's research and development activities involve inherent risks. These risks include, among others: dependence on, and the Group's ability to retain key personnel; the Group's ability to protect its intellectual property and prevent other companies from using the technology; the Group's business is based on novel and unproven technology; the Group's ability to sufficiently complete the clinical trials process; and technological developments by the Group's competitors may render its products obsolete.
- The Company has a business plan which will require expenditure in excess of revenue until sales revenue streams are established and therefore expects to continue to incur additional net losses until then. In the future, the Company may need to raise further financing through other public or private equity financings, collaborations or other arrangements with corporate sources, or other sources of financing to fund operations. There can be no assurance that such additional financing, if available, can be obtained on terms reasonable to the Company. Refer Note 17.

## 2. Summary of significant accounting policies

These general-purpose financial statements are for the year ended 31 December 2016 and have been prepared in accordance with and comply with generally accepted accounting practice in New Zealand, International Financial Reporting Standards, New Zealand equivalents to International Financial Reporting Standards (NZ IFRS) and other applicable Financial Reporting Standards as appropriate for profit-oriented entities.

### (a) Basis of preparation

# **Entities Reporting**

The consolidated financial statements incorporate the assets and liabilities of all subsidiaries of the Group as at 31 December 2016 and the results of all subsidiaries for the year then ended. Neuren Pharmaceuticals Limited and its subsidiaries, which are designated as profit-oriented entities for financial reporting purposes, together are referred to in these financial statements as the Group.

The financial statements of the 'Parent' are for the Company as a separate legal entity.

### Statutory Base

Neuren is registered under the New Zealand Companies Act 1993 and is an issuer in terms of the New Zealand Securities Act 1978. Neuren is also registered as a foreign company under the Australian Corporations Act 2001.

The consolidated financial statements of the Group have been prepared in accordance with Generally Accepted Accounting Practices in New Zealand (NZ GAAP) and the requirements of the Financial Markets Conducts Act 2013.

# Historical cost convention

These financial statements have been prepared under the historical cost convention as modified by certain policies below.

# Critical accounting estimates

The preparation of financial statements requires the use of certain critical accounting estimates. It also requires the Company and Group to exercise its judgement in the process of applying the Company and Group's accounting policies such as in relation to the expensing versus capitalising of research and development costs as detailed in Note 2(f) and in relation to impairment, if any, of intangible assets set out in Note 9. Actual results may differ from those estimates.

continued

## 2. Summary of significant accounting policies (continued)

#### Changes in accounting policies

There were no changes in accounting policies in the year ended 31 December 2016.

#### New standards first applied in the period

There were no new standards adopted by the group for the first time for the financial year beginning on or after 1 January 2016 which had a material impact on the group:

## Standards, interpretations and amendments to published standards that are not yet effective

Certain new standards, amendments and interpretations to existing standards have been published that are mandatory for later periods and which the Group has not adopted early. The key items applicable to the Group are:

NZ IFRS 9 'Financial Instruments' (effective from 1 January 2018) addresses classification and measurement of financial assets and liabilities and is available for early adoption immediately. NZ IFRS 9 replaces the multiple classification and measurement models in IAS 39 'Financial Instruments: Recognition and Measurement' with a single model that has only two classification categories: amortised cost and fair value. The consolidated entity is not expecting any material impact of NZ IFRS 9 'Financial Instruments' on its financial statements.

NZ IFRS 16 'Leases' (effective from 1 January 2019) addresses recognition of almost all leases on the balance sheet, as the distinction between operating and finance leases is removed. The consolidated entity is only expecting a small impact of NZ IFRS 16 'Leases' on its financial statements.

There are no other standards, amendments or interpretations to existing standards which have been issued, but are not yet effective, which are expected to impact the Company or Group.

### (b) Principles of Consolidation

### Subsidiaries

Subsidiaries are all entities (including structured entities) over which the group has control. The group controls an entity when the group is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity.

Subsidiaries are fully consolidated from the date on which control is transferred to the group. They are deconsolidated from the date that control ceases.

Inter-company transactions, balances and unrealised gains on transactions between group companies are eliminated. Unrealised losses are also eliminated. When necessary, amounts reported by subsidiaries have been adjusted to conform with the group's accounting policies.

#### (c) Segment Reporting

Operating segments are reported in a manner consistent with the internal reporting provided to the chief operating decision-maker, who is responsible for allocating resources and assessing performance of the operating segments.

#### (d) Foreign Currency Translation

#### (i) Functional and Presentation Currency

The functional and presentation currency of the Company and Group is Australian Dollars.

#### (ii) Transactions and Balances

Foreign currency transactions are translated into the functional currency using the exchange rates prevailing at the dates of the transactions. Foreign exchange gains and losses resulting from the settlement of such transactions and from the translation at year-end exchange rates of monetary assets and liabilities denominated in foreign currencies are recognised in the Statement of Comprehensive Income, except when deferred in equity as qualifying cash flow hedges and qualifying net investment hedges.

#### (iii) Foreign Operations

The results and financial position of foreign entities (none of which has the currency of a hyperinflationary economy) that have a functional currency different from the presentation currency are translated into the presentation currency as follows:

- assets and liabilities for each statement of financial position presented are translated at the closing rate at the date of that statement of financial position;
- income and expenses for each Statement of Comprehensive Income are translated at average exchange rates; and
- all resulting exchange differences are recognised as a separate component of equity.

Exchange differences arising from the translation of any net investment in foreign entities, and of borrowings and other currency instruments designated as hedges of such investments, are taken to shareholders' equity.

Goodwill and fair value adjustments arising on the acquisition of a foreign operation are treated as assets and liabilities of the foreign operation and translated at the closing rate.

continued

## 2. Summary of significant accounting policies (continued)

#### (e) Revenue recognition

#### Grants

Grants received are recognised in the Statement of Comprehensive Income over the periods in which the related costs for which the grants are intended to compensate are recognised expenses and when the requirements under the grant agreement have been met. Any grants received for which the requirements under the grant agreement have not been completed are carried as liabilities until all the conditions have been fulfilled.

#### Interest income

Interest income is recognised on a time-proportion basis using the effective interest method.

#### (f) Research and development

Research costs include direct and directly attributable overhead expenses for drug discovery, research and pre-clinical and clinical trials. Research costs are expensed as incurred.

When a project reaches the stage where it is reasonably certain that future expenditure can be recovered through the process or products produced, development expenditure is recognised as a development asset using the following criteria:

- a product or process is clearly defined and the costs attributable to the product or process can be identified separately and measured reliably;
- the technical feasibility of the product or process can be demonstrated;
- the existence of a market for the product or process can be demonstrated and the Group intends to produce and market the product or process;
- adequate resources exist, or their availability can be reasonably demonstrated to complete the project and market the product or process.

In such cases the asset is amortised from the commencement of commercial production of the product to which it relates on a straight-line basis over the years of expected benefit. Research and development costs are otherwise expensed as incurred

#### (g) Income tax

The income tax expense for the period is the tax payable on the period's taxable income or loss using tax rates enacted at the balance sheet date and adjusted by changes in deferred tax assets and liabilities attributable to temporary differences between the tax bases of assets and liabilities and their carrying amounts in the financial statements, and to unused tax losses.

Deferred tax assets and liabilities are recognised for temporary differences at the tax rates expected to apply when the assets are recovered or liabilities are settled, based on those tax rates which are enacted or substantively enacted at the balance sheet date. The relevant tax rates are applied to the cumulative amounts of deductible and taxable temporary differences to measure the deferred tax asset or liability. An exception is made for certain temporary differences arising from the initial recognition of an asset or a liability. No deferred tax asset or liability is recognised in relation to these temporary differences if they arose in a transaction, other than a business combination, that at the time of the transaction did not affect either accounting profit or taxable profit or loss.

Deferred tax assets are recognised for deductible temporary differences and unused tax losses only if it is probable that future taxable amounts will be available to utilise those temporary differences and losses.

Current and deferred tax balances attributable to amounts recognised directly in equity are also recognised directly in equity.

#### (h) Leases

Leases in which a significant portion of the risks and rewards of ownership are retained by the lessor are classified as operating leases. Payments made under operating leases (net of any incentives received from the lessor) are charged to the comprehensive income statement on a straight-line basis over the period of the lease.

#### (i) Impairment of non-financial assets

Assets that have an indefinite useful life are not subject to amortisation and are tested annually for impairment. Assets that are subject to amortisation are reviewed whenever events or changes in circumstances indicate that the carrying amount of the assets may not be recoverable. The carrying amount of a long-lived asset is considered impaired when the recoverable amount from such asset is less than its carrying value. In that event, a loss is recognised in the Statement of Comprehensive Income based on the amount by which the carrying amount exceeds the fair market value less costs to sell of the long-lived asset. Fair market value is determined using the anticipated cash flows discounted at a rate commensurate with the risk involved.

#### (j) Goods and services tax (GST)

The financial statements have been prepared so that all components are presented exclusive of GST. All items in the statement of financial position are presented net of GST, with the exception of receivables and payables, which include GST invoiced.

continued

## 2. Summary of significant accounting policies (continued)

#### (k) Intellectual property

Costs in relation to protection and maintenance of intellectual property are expensed as incurred unless the project has yet to be recognised as commenced, in which case the expense is deferred and recognised as contract work in progress until the revenues and costs associated with the project are recognised.

#### (I) Cash and cash equivalents

Cash and cash equivalents comprises cash and demand deposits held with established financial institutions and highly liquid investments, which have maturities of three months or less that are readily convertible to known amounts of cash and which are subject to an insignificant risk of changes in value.

#### (m) Accounts receivable

Trade receivables are recognised initially at fair value and subsequently measured at amortised cost, less provision for doubtful debts.

Collectability of trade receivables is reviewed on an ongoing basis. Debts which are known to be uncollectible are written off. A provision for doubtful receivables is established when there is objective evidence that the Group will not be able to collect all amounts due according to the original terms of receivables.

#### (n) Property, plant and equipment

Property, plant and equipment are stated at historical cost less depreciation. Historical cost includes expenditure that is directly attributable to the acquisition of the items.

Subsequent costs are included in the asset's carrying amount or recognised as a separate asset, as appropriate, only when it is probable that future economic benefits associated with the item will flow to the Company and the cost of the item can be measured reliably. All other repairs and maintenance are charged to the Statement of Comprehensive Income during the financial period in which they are incurred.

Depreciation is determined principally using the straightline method to allocate their cost, net of their residual values, over their estimated useful lives, as follows:

Scientific equipment 4 years
Computer equipment 2-10 years
Office furniture, fixtures & fittings 3-4 years
Leasehold Improvements Term of lease

#### (o) Intangible assets

#### Intellectual property

Acquired patents, trademarks and licences have finite useful lives and are carried at cost less accumulated amortisation and impairment losses. Amortisation is calculated using the straight line method to allocate the cost over the anticipated useful lives, which are aligned with the unexpired patent term or agreement over trademarks and licences.

#### Acquired software

Acquired software licences are capitalised on the basis of the costs incurred to acquire and bring to use the specific software. These costs are amortised over their estimated useful lives (two years).

#### (p) Employee benefits

#### Wages and salaries and annual leave

Liabilities for wages and salaries, bonuses and annual leave expected to be settled within 12 months of the reporting date are recognised in accrued liabilities in respect of employees' services up to the reporting date and are measured at the amounts expected to be paid when the liabilities are settled. Liabilities for non-accumulating personal leave are recognised when the leave is taken and measured at the rates paid or payable.

continued

## 2. Summary of significant accounting policies (continued)

#### Share-based payments

Neuren operates equity-settled share option and share plans. The fair value of the services received in exchange for the grant of the options or shares is recognised as an expense with a corresponding increase in other reserve equity over the vesting period. The total amount to be expensed over the vesting period is determined by reference to the fair value of the options or shares at grant date. At each balance sheet date, the Company revises its estimates of the number of options that are expected to vest and become exercisable. It recognises the impact of the revision of original estimates, if any, in the Statement of Comprehensive Income, and a corresponding adjustment to equity over the remaining vesting period.

When options are exercised, the proceeds received net of any directly attributable transaction costs are credited to share capital.

#### (a) Share issue costs

Costs associated with the issue of shares which are recognised in shareholders' equity are treated as a reduction of the amount collected per share.

#### (r) Financial instruments

Financial instruments recognised in the statement of financial position include cash and cash equivalents, trade and other receivables and payables and equipment finance. The Company believes that the amounts reported for financial instruments approximate fair value due to their short term nature.

Although it is exposed to interest rate and foreign currency risks, the Company does not utilise derivative financial instruments.

#### Financial assets: Loans and receivables

Loans and receivables are non-derivative financial assets with fixed or determinable payments that are not quoted in an active market. They are included in current assets, except for maturities greater than 12 months after the balance sheet date. These are classified as non-current assets. The Group's loans and receivables comprise 'trade and other receivables' and "cash and cash equivalents" in the statement of financial position. Loans and receivables are measured at amortised cost using the effective interest method less impairment.

#### (s) Earnings per share

Basic and diluted earnings per share are calculated by dividing the profit attributable to equity holders of the Company by the weighted average number of ordinary shares outstanding during the period.

#### 3. Segment information

The Group operates as a single operating segment and internal management reporting systems present financial information as a single segment. The segment derives its revenue and incurs expenses through the development of pharmaceutical products. Grant income was entirely received from Rettsyndrome.org in 2016 and from the United States federal government in 2015.

continued

### 4. Expenses

	2016 \$'000	2015 \$'000
Loss before income tax includes the following expenses:		
Depreciation – property, plant and equipment		
Computer equipment	6	14
Fixtures and fittings	2	3
Total depreciation	8	17
Amortisation – intangible assets		
Intellectual property	71	72
Software	1	1_
Total amortisation	72	73
Remuneration of auditors (PwC)		
Audit and review of financial statements	50	52
Total remuneration of auditors	50	52
Employee benefits expense		
Salaries and wages – research & development	980	961
Salaries and wages – corporate & adminstrative	379	406
Share based payments	740	757
Total employee benefits expense	2,099	2,124
Directors' fees		
Directors' fees – research & development	420	479
Directors' fees – corporate & administrative	414	470
Directors' share based payment compensation	144	475
Total Directors' fees	978	1,424
Lease expense	94	165

continued

#### 5. Income tax

	Consolidated	
	2016 \$'000	2015 \$'000
Income tax benefit		
Current tax	(1,844)	(749)
Deferred tax	-	_
Income tax benefit	(1,844)	(749)
Numerical reconciliation of income tax benefit to prima facie tax receivable:		
Loss before income tax	(13,858)	(14,146)
Tax at applicable rates	(4,157)	(4,244)
Share option compensation not deductible	265	370
R&D tax incentive rate benefit	(327)	-
	(4,219)	(3,874)
(Over) Under provision in prior years	(855)	(819)
Deferred tax assets not recognised	3,230	3,944
Income tax benefit	(1,844)	(749)
Current tax		
Current tax receivable at the beginning of the year	-	_
Current tax benefit	1,844	749
Received during the year	(863)	(749)
Current tax receivable at the end of the year	981	_
Deferred tax asset (liability)		
Amounts recognised in profit or loss		
Provisions and accruals	23	21
Intangible assets	263	206
Exchange Differences	44	(321)
Tax losses	27,389	24,582
	27,718	24,488
Unrecognised deferred tax assets	(27,718)	(24,488)
Deferred tax asset (liability)	-	_
Movements		
Deferred tax asset (liability) at the beginning of the year	-	_
Credited (charged) to the income statement	3,230	3,944
Change in unrecognised deferred tax assets	(3,230)	(3,944)
Deferred tax asset (liability) at the end of the year	_	_

The unrecognised deferred tax assets at 31 December 2016 include \$18 million (2015: \$17.7 million) for New Zealand tax losses. The Company may not be able to generate future taxable profits in New Zealand to utilise those losses.

continued

#### 6. Loss per share

Basic loss per share is based upon the weighted average number of outstanding ordinary shares. For the years ended 31 December 2016 and 2015, the Company's potentially dilutive ordinary share equivalents (being the options over ordinary shares set out in Note 11) have an anti-dilutive effect on loss per share and, therefore, have not been included in determining the total weighted average number of ordinary shares outstanding for the purpose of calculating diluted loss per share.

	Consolidated	
	2016	2015
Loss after income tax attributable to equity holders – (\$'000)	(12,014)	(13,397)
Weighted average shares outstanding (basic) – (No.)	1,783,503,420	1,680,362,334
Weighted average shares outstanding (diluted) – (No.)	1,783,503,420	1,680,362,334
Basic and diluted loss per share	(\$0.007)	(\$0.008)

#### 7. Cash and cash Equivalents

	Consolidated	
	2016 \$'000	2015 \$'000
Cash	2,779	4,238
Demand and short-term deposits	2,272	12,404
	5,051	16,642

### 8. Trade and other receivables

	Consolidated	
	2016 \$'000	2015 \$'000
Trade receivables	15	10
Interest receivables	6	24
	21	34

continued

### 9. Intangible Assets

		Consolidated			
	Intellectual Property \$'000	Acquired Software \$'000	Total \$'000		
As at 1 January 2015		·			
Cost	1,074	10	1,084		
Accumulated amortisation	(787)	(7)	(794)		
Net Book Value	287	3	290		
Movements in the year ended 31 December 2015					
Opening net book value	287	3	290		
Amortisation	(72)	(1)	(73)		
Closing net book value	215	2	217		
As at 31 December 2015					
cost	1,074	10	1,084		
Accumulated amortisation	(859)	(8)	(867)		
Net book value	215	2	217		
Movements in the year ended 31 December 2016					
Opening net book value	215	2	217		
Amortisation	(71)	(1)	(72)		
Closing net book value	144	1	145		
As at 31 December 2016					
cost	1,074	10	1,084		
Accumulated amortisation	(930)	(9)	(939)		
Net book value	144	1	145		
Intellectual Property	NNZ-2566				
Opening net book value	215				
Amortisation	(71)				
Closing net book value	144				
Remaining amortisation period	2 years				

### 10. Trade and other payables

	Cc	Consolidated	
	2016 \$'000	2015 \$'000	
Trade payables	1,035	1,771	
Accruals	915	648	
Employee Benefits	77	83	
	2,027	2,502	

continued

#### 11. Share Capital

Consolidated	2016 Shares	2015 Shares	2016 \$'000	2015 \$'000
Issued Share Capital				
Ordinary shares on issue at beginning of year	1,767,003,738	1,625,241,426	111,912	104,363
Shares issued in Loan Funded Share Plan	_	20,000,000	_	_
Shares issued on exercise of Equity Performance Rights	12,925,277	_	_	_
Shares issued on exercise of share options	62,000,000	51,206,757	929	1,211
Shares issued in private placement	_	70,555,555	_	6,350
Share issue expenses – cash issue costs	_	_	(12)	(12)
	1,841,929,015	1,767,003,738	112,829	111,912

#### (a) Ordinary Shares

The ordinary shares have no par value and all ordinary shares are fully paid-up and rank equally as to dividends and liquidation, with one vote attached to each fully paid ordinary share.

#### (b) Share Options

Movements in the number of share options were as follows:

Consolidated	Options	Weighted Average Exercise Price (AUD\$)	Exercisable	Weighted Average Exercise Price (AUD\$)
Outstanding at 1 January 2015	115,706,757	\$0.019	115,706,757	\$0.019
Lapsed	(2,500,000)	\$0.019		
Exercised	(51,206,757)	\$0.024		
Outstanding at 31 December 2015	62,000,000	\$0.015	62,000,000	\$0.015
Exercised	(62,000,000)	\$0.015	_	
Outstanding at 31 December 2016	_	\$0.000	_	\$0.000

#### Share Option Plan

The Company has previously operated a Share Option Plan to assist in the retention and motivation of senior employees and certain consultants ("Participants"). Under the Share Option Plan, options may be offered to Participants by the Remuneration and Audit Committee. The maximum number of options to be issued and outstanding under the Share Option Plan is 15% of the issued ordinary shares of the Company at any time, with one third of these available to the directors with the approval of shareholders. No payment is required for the grant of options under the Share Option Plan. Each option is an option to subscribe in cash for one ordinary share, but does not carry any right to vote. Upon the exercise of an option by a Participant, each ordinary share issued will rank equally with other ordinary shares of the Company. Options granted under the Share Option Plan generally vest over three years' service by the Participant and lapse five years after grant date. At 31 December 2016 there are no options outstanding under the Share Option Plan (2015: 62,000,000).

No options were granted during 2016 or 2015.

The weighted average remaining contractual life of outstanding share options at 31 December 2016 is nil years (2015: 0.8 years). There are no outstanding share options.

continued

#### 11. Share Capital (continued)

#### (c) Loan funded shares

The Company has a Loan Funded Share Plan to support the achievement of the Company's business strategy by linking executive reward to improvements in the financial performance of the Company and aligning the interests of executives with shareholders. Under the Loan Funded Share Plan, loan funded shares may be offered to employees or consultant ("Participants") by the Remuneration and Audit Committee. The Company issues new ordinary shares, which are placed in a trust to hold the shares on behalf of the Participant. The trustee issues a limited-recourse, interestfree loan to the participant, which is equal to the number of shares multiplied by the issue price. A limited-recourse loan means that the repayment amount will be the lesser of the outstanding loan and the market value of the shares that are subject to the loan. The trustee continues to hold the shares on behalf of the Participant until all vesting conditions have been satisfied and the Participant chooses to settle the loan, at which point ownership of the shares is transferred from the trust to the Participant. Any dividends paid by the Company while the shares are held by the trust are applied as repayment of the loan at the after-tax value of the dividend. The directors may apply vesting conditions to be satisfied before the shares can be transferred to the

All shares issued prior to 31 December 2016 have been issued subject to the following vesting conditions:

- a. The Participant is continuously a director or employee of the Company for a period of three years commencing on the day on which the directors resolved to issue the Loan Funded Shares ("Issue Date") and finishing on the third anniversary of the issue date (or such other date on which the directors make a determination as to whether the vesting conditions have been met) (the "Vesting Period"); and
- b. 50% of the Loan Funded Shares shall each vest where the following performance conditions are met:
  - i. The Total Shareholder Return (TSR) on the Company's ASX-listed ordinary shares equals or exceeds 75% over the Vesting Period. The TSR is calculated using the average closing share price over the period of 30 consecutive trading days concluding on the Issue Date and the average closing share price over the period of 30 consecutive trading days concluding on the date on which the Vesting Period ends; and
  - ii. Within the Vesting Period, either:
    - The Company determines to progress a product candidate to a Phase 2b or Phase 3 clinical trial following a positive Phase 2 clinical trial outcome and a national regulatory authority approves the initiation of such trial, or
    - A material partnering or licensing transaction is concluded.

Before the shares can be issued, the New Zealand Companies Act requires the Company to disclose to shareholders the provision of financial assistance to the Participant in the form of the loan to purchase the shares.

The estimated fair value of the shares was determined using the Black-Scholes valuation model. The significant inputs into the model were the share price on the date of valuation, the estimated future volatility of the share price, a dividend yield of 0%, an expected life of 3 years, and an annual risk-free interest rate of 2.50%. The estimated future volatility of the share price was derived by analysing the historic volatility of the share price during a relevant period.

Details of the shares issued prior to the year ended 31 December 2016, the estimated fair value and variable inputs into the valuation model are shown in the following table:

Number of shares	40 million	30 million	20 million
Issue date	29 May 2013	28 May 2014	7 May 2015
Issue price per share	\$0.039	\$0.092	\$0.082
Share price on date of valuation	\$0.039	\$0.069	\$0.082
Fair value per share	\$0.03	\$0.04	\$0.05
Estimated future volatility	119%	101%	95%

At 31 December 2016, 40 million Loan Funded Shares had vested, but remained held by the trust and 50 million Loan Funded Shares were unvested.

#### (d) Equity Performance Rights

The Company previously issued equity performance rights ("EPR") to certain executives, calculated as a fixed amount divided by the average closing price of the listed ordinary shares of the Company over the five trading days immediately preceding the date of acceptance of an offer of employment ("measurement date"). Subject to continuous service by the recipient, each EPR vests three years from the date on which service commences ("vesting date"). When vested, the Company will issue at no cost one new ordinary share for each EPR exercised. The issued shares shall rank equally with the Company's other issued ordinary shares and the recipient shall be free to deal with the issued shares in accordance with the Company's Securities Trading Policy. The EPR will vest automatically upon any effective change in control of the Company, control being when a person and their associates become the holder of greater than 50% of the ordinary share voting rights. Any unvested EPR will expire if the recipient ceases to be an employee or director of the Company.

continued

#### 11. Share Capital (continued)

The estimated fair value of each EPR was determined using the Black-Scholes valuation model. The significant inputs into the model were the grant date share price, estimated future volatility of the share price, dividend yield of 0%, an expected life of 3 years, and an annual risk-free interest rate of 2.5%. The estimated future share price volatility was derived by analysing the historic volatility of the Company's shares over a relevant period.

Details of the EPR issued prior to the year ended 31 December 2016, the estimated fair value and variable inputs into the valuation model are shown in the following table:

Number of EPR	9,615,385	2,666,667	643,225	1,308,901
Issue date	29 May 2013	31 May 2014	31 May 2014	24 September 2014
Fair value per share	\$0.033	\$0.038	\$0.117	\$0.076
Measurement date	31 January 2013	14 May 2013	16 August 2013	15 May 2014
Vesting date	31 January 2016	18 August 2016	25 August 2016	25 August 2017
Estimated future volatility	121%	101%	101%	95%

At 31 December 2016, 1,308,901 EPR remained outstanding.

#### 12. Subsidiaries

#### (a) Investment in subsidiaries

The consolidated financial statements incorporate the assets, liabilities and results of the following subsidiaries in accordance with the accounting policy described in Note 2(b).

						to parent
Name of entity	Date of incorporation	Principle activities	Interest held	Domicile	2016 \$'000	2015 \$'000
AgVentures Limited	7-Oct-03	Dormant	100%	NZ	-	_
NeuroendocrinZ Limited	10-Jul-02	Dormant	100%	NZ	_	_
Neuren Pharmaceuticals Inc.	20-Aug-02	Development services	100%	USA	479	231
Hamilton Pharmaceuticals Inc.	Deregistered	Clinical research	100%	USA	-	-
Neuren Pharmaceuticals (Australia) Pty Ltd	9-Nov-06	Dormant	100%	Australia	-	-

All subsidiaries have a balance date of 31 December.

continued

#### 13. Commitments and contingencies

#### (a) Operating leases

The following aggregate future non-cancellable minimum lease payments for premises have been committed to by the Company, but not recognised in the financial statements.

	Consolidated	
	2016 \$'000	2015 \$'000
Non-cancellable operating lease commitments		_
Not later than one year	12	74
Later than one year and not later than five years	-	12
	12	86

#### (b) Legal claims

The Company had no significant legal matter contingencies as at 31 December 2016 or at 31 December 2015.

#### (c) Capital commitments

The Company is not committed to the purchase of any property, plant or equipment as at 31 December 2016 (2015: nil).

#### 14. Related party transactions

#### (a) Key Management Personnel

The Key Management Personnel of the Group (KMP) include the directors of the Company and direct reports to the Executive Chairman. Compensation for KMP was as follows:

	Consolidated		
	2016 \$'000	2015 \$'000	
Directors:			
Fees and other short term benefits	834	949	
Share based payment compensation	144	475	
Management:			
Short-term benefits	1,078	1,203	
Share based payment compensation	739	757	
	2,795	3,384	

During the year ended 31 December 2016, 9,615,385 ordinary shares were issued to Dr Richard Treagus and 3,309,892 ordinary shares were issued to other KMP, following the exercise of vested Equity Performance Rights.

#### (b) Subsidiaries

The ultimate parent company in the Group is Neuren Pharmaceuticals Limited ("Parent"). The Parent funds the activities of the subsidiaries throughout the year as needed. Interests in and amounts due from subsidiaries are set out in Note 13. All amounts due between entities in the Group are payable on demand and bear no interest.

During the year ended 31 December 2016 Neuren Pharmaceuticals Inc charged the Parent fees of US\$681,628 (2015: US\$1,055,827) for pharmaceutical research services, and US\$1,245,757 (2015: US\$971,623) for reimbursement of third party development expenses. The Parent charged Neuren Pharmaceuticals Inc fees of US\$56,000 (2015: US\$56,000) for administrative services.

continued

#### 15. Events after balance date

Top-line results from Neuren's Phase 2 clinical trial of trofinetide in subjects aged 5 to 15 with Rett syndrome were announced on 22 March 2017. The highest dose of trofinetide achieved statistically significant clinical benefit compared with placebo for each of three syndrome-specific efficacy measures; the Rett Syndrome Behaviour Questionnaire (p=0.042), the Clinical Global Impression of Improvement (p=0.029) and the Rett Syndrome Domain Specific Concerns (p=0.025). These measures included assessments of both clinicians and caregivers. Clinical improvements of 15% to 16% from baseline were observed, which was considered by leading Rett syndrome physicians to be clinically meaningful, particularly in a short duration trial. The improvement increased through to the time that treatment ceased. This suggests that further benefit may be achieved with longer treatment duration. The results provided strong evidence of biological activity of the high dose across multiple symptom areas, indicating the potential for disease modification rather than simply addressing isolated symptoms. In addition, trofinetide was well tolerated and had a good safety profile in these younger subjects, with no dose-limiting effects observed.

As at the date of these financial statements, there were no other events arising since 31 December 2016 that require disclosure.

#### 16. Financial instruments and risk management

#### (a) Categories of financial instruments

	C	Consolidated		
	2016 \$'000	2015 \$'000		
Financial assets				
Cash and cash equivalents	5,051	16,642		
Trade and other receivables	21	34		
Total financial assets (loans and receivables classification)	5,072	16,676		
Financial liabilities				
Amortised cost:				
Trade and other payables	2,027	2,502		
Total financial liabilities	2,027	2,502		

### (b) Risk management

The Company and its subsidiaries are subject to a number of financial risks which arise as a result of its activities.

#### Currency risk

During the normal course of business the Company and its subsidiaries enter into contracts with overseas customers or suppliers or consultants that are denominated in foreign currency. As a result of these transactions there is exposure to fluctuations in foreign exchange rates. The Company also has a net investment in a foreign operation, whose net assets are exposed to foreign currency translation risk.

The principle currency risk faced by the business is the exchange rate between the Australian dollar and the US dollar. The majority of the Company's cash reserves are denominated in Australian dollars and the majority of its future expenditure is expected to be denominated in US dollars.

Where possible, the Group matches foreign currency income and expenditure as a natural hedge. When foreign currency expenditure exceeds revenue (such as US dollar expenditure), the group purchases foreign currency to meet future anticipated requirements under spot and forward contracts. This may result in the Group holding significant amounts of cash denominated in US dollars. The Group does not designate formal hedges. At 31 December 2016 and 31 December 2015, there were no forward contracts outstanding.

During the year, the US dollar fluctuated against the Australian dollar. A foreign exchange loss of \$185,000 is included in results for the year ended 31 December 2016 (2015: gain \$1,081,000). The majority of the loss relates to losses on the revaluation for reporting purposes of the Company's US dollar denominated cash reserves into Australian dollars.

continued

#### 16. Financial instruments and risk management (continued)

The carrying amounts of US dollar denominated financial assets and liabilities are as follows:

	Cc	Consolidated	
	2016 \$'000	2015 \$'000	
Assets			
US dollars	2,497	4,151	
Liabilities			
US dollars	1,736	1,676	

An increase of 10% in the value of the US dollar against the Australian dollar as at the reporting date would have increased the consolidated loss after income tax by \$69,000 (2015: \$225,000). A decrease of 10% in the value of the US dollar against the Australian dollar as at the reporting date would have decreased the consolidated loss after income tax by \$85,000 (2015: \$275,000).

#### Interest rate risk

The Company and the Group are exposed to interest rate risk as entities in the Group hold cash and cash equivalents.

The effective interest rates on financial assets are as follows:

	Consolidated	
	2016 \$'000	2015 \$'000
Financial assets		
Cash and cash equivalents		
Australian dollar cash deposits	2,554	12,491
Australian dollar interest rate	2.42%	2.85%
US dollar cash deposits	2,497	4,151
US dollar interest rate	0.01%	0.03%

The Company and Group do not have any interest bearing financial liabilities. Trade and other receivables and payables do not bear interest and are not interest rate sensitive.

A 10% change in average market interest rates would have changed reported profit after tax by approximately \$19,000 (2015:\$33,000).

#### Credit risk

The Company and its subsidiaries incur credit risk from transactions with trade receivables and financial institutions in the normal course of its business. The credit risk on loans and receivables of the Group, which have been recognised in the statement of financial position, is the carrying amount, net of any allowance for doubtful debts. Cash and cash equivalents held with financial institutions are exposed to credit risk. These have been assessed by S&P as having a financial credit rating of AA.

The Company and its subsidiaries do not require any collateral or security to support transactions with financial institutions. The counterparties used for banking and finance activities are financial institutions with high credit ratings.

#### Liquidity risk

The Company and Group's financial liabilities, comprising trade and other payables, are generally repayable within 1-2 months, and are managed together with capital risk as noted below. Refer to Note 1 for inherent uncertainties.

#### Capital risk

The Company manages its capital to ensure that constituent entities are able to meet their estimated commitments as they fall due. The capital structure of the group consists of cash and cash equivalents, and equity of the parent, comprising issued capital, reserves and accumulated deficit. Refer to Note 1 for inherent uncertainties, and Note 17 below.

continued

#### 17. Going Concern Assumption

The Directors monitor the Group's cash position and initiatives to ensure that adequate funding continues to be available for the Group to meet its business objectives. The Group recorded a loss after tax of \$12.0 million for the year ended 31 December 2016 and had net assets and cash balances at 31 December 2016 of \$4.2 million and \$5.1 million respectively.

As disclosed in Note 15, top-line results from Neuren's Phase 2 clinical trial of trofinetide in subjects aged 5 to 15 with Rett syndrome were announced on 22 March 2017. The highest dose of trofinetide achieved statistically significant and clinically meaningful benefit compared with placebo. The results provided strong evidence of biological activity of the high dose across multiple symptom areas, indicating the potential for disease modification rather than simply addressing isolated symptoms. Following these results, the Directors intend that the Group will enter into a commercial partnering arrangement in 2017, the timing and terms of which are presently unknown. In addition, the Directors will consider securing other sources of funding, including additional capital, depending on circumstances at the time. The Company's shareholders have approved, for the purposes of the New Zealand Takeovers Code, for the Company to allot up to 100 million additional shares to interests of Mr Lang Walker during the period to 30 June 2017, at a subscription price equal to the volume weighted average price at which the Company's ordinary shares are traded on the Australian Securities Exchange in the 10 trading days prior to each allotment. The Directors therefore have the ability to make such allotments if it is necessary and in the best interests of all shareholders. At the date of this report, no such allotments have been made.

The ability of the Group to enter into a commercial partnership arrangement or secure other sources of funding during the next 6 months gives rise to the existence of material uncertainties over the ability of the Group to continue to operate as a going concern, realise its assets and meet its obligations in the normal course of business. It is the considered view of the Directors that the group will have access to adequate resources to meet its ongoing obligations for at least a period of 12 months from the date of signing these financial statements. On this basis, the Directors have assessed it is appropriate to adopt the going concern basis in preparing its financial statements. The financial statements do not include any adjustments that would result if the Group was unable to continue as a going concern.



### Independent auditor's report

To the shareholders of Neuren Pharmaceuticals Limited

The financial statements comprise:

- the consolidated statement of financial position as at 31 December 2016
- the consolidated statement of comprehensive income for the year then ended;
- the consolidated statement of changes in equity for the year then ended;
- the consolidated statement of cash flows for the year then ended; and
- · the notes to the financial statements, which include a summary of significant accounting policies.

#### Our opinion

In our opinion, the consolidated financial statements of Neuren Pharmaceuticals Limited (the Company) and its subsidiaries (the Group) present fairly, in all material respects, the financial position of the Group as at 31 December 2016, its financial performance and its cash flows for the year then ended in accordance with New Zealand Equivalents to International Financial Reporting Standards (NZ IFRS) and International Financial Reporting Standards (IFRS).

### Basis for opinion

We conducted our audit in accordance with International Standards on Auditing (New Zealand) (ISAs NZ) and International Standards on Auditing (ISAs). Our responsibilities under those standards are further described in the *Auditor's responsibilities for the audit of the financial statements* section of our report.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

We are independent of the Company in accordance with Professional and Ethical Standard 1 (Revised) Code of Ethics for Assurance Practitioners (PES 1) issued by the New Zealand Auditing and Assurance Standards Board and the International Ethics Standards Board for Accountants' Code of Ethics for Professional Accountants (IESBA Code), and we have fulfilled our other ethical responsibilities in accordance with these requirements.

Our firm carries out procedures over the interim financial statements of the Group. The provision of this service has not impaired our independence as auditors of the Group.



### Our audit approach

#### Overview



An audit is designed to obtain reasonable assurance whether the financial statements are free from material misstatement.

Overall materiality: \$693,000, which represents 5% of net loss before tax.

We chose net loss before tax as the benchmark because, in our view, it is the benchmark against which the performance of the Company is most commonly measured by users, and is a generally accepted benchmark.

Our key audit matter is research and development costs

#### Materiality

The scope of our audit was influenced by our application of materiality.

Based on our professional judgement, we determined certain quantitative thresholds for materiality, including the overall materiality for the financial statements as a whole as set out above. These, together with qualitative considerations, helped us to determine the scope of our audit, the nature, timing and extent of our audit procedures and to evaluate the effect of misstatements, both individually and in aggregate on the financial statements as a whole.

#### Audit scope

We designed our audit by assessing the risks of material misstatement in the financial statements and our application of materiality. As in all of our audits, we also addressed the risk of management override of internal controls including among other matters, consideration of whether there was evidence of bias that represented a risk of material misstatement due to fraud.

We tailored the scope of our audit in order to perform sufficient work to enable us to provide an opinion on the financial statements as a whole, taking into account the structure of the Company, the accounting processes and controls, and the industry in which the Company operates.

#### Material uncertainty related to going concern

We draw attention to Note 17 to the financial statements, which discloses that the Group recorded a loss after tax of \$12.0 million for the year ended 31 December 2016. The Company also had negative operating cash flows for the year of \$12.4 million.



Following the release of the results of the Phase 2 trial of trofinetide for Rett syndrome on 22 March 2017, the Directors intend that the Group will enter into a commercial partnering arrangement during 2017, the timing and terms of which are presently unknown. In addition, the Directors will consider the need to secure other sources of funding, including additional capital in order to progress to next phase of development.

The ability of the Group to secure a commercial partnering arrangement and/or other sources of funding during the next 3 to 6 months gives rise to the existence of material uncertainties which, in the event the Group is not successful, may give rise to significant doubt over the ability of the Group to continue to operate as a going concern. Our opinion is not modified in respect of this matter.

### Key audit matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements of the current year. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

In addition to the matters described in the material uncertainty related to going concern section, we have determined the matter below to be a key audit matter to be communicated in our report.

#### Key audit matter

How our audit addressed the key audit matter

#### Research and Development Costs

As disclosed in Note 2(f) of the financial statements, the Group has incurred research and development expenses of \$12.4 million for the year ended 31 December 2016. The majority of these expenses relate to the research and development of the drug trofinetide for Rett syndrome.

We have focused on this expense because research and development represents a significant part of this business and judgement is required in determining the appropriate accounting treatment.

The Directors use judgement to determine whether research and development costs should be expensed or whether they meet the criteria for capitalisation. This criteria includes assessing whether the product being developed is commercially feasible, whether the Group has

Our audit procedures over research and development costs included:

- Gaining an understanding of the Rett syndrome project and product and the associated costs incurred to-date;
- Agreeing a sample of costs incurred in this period to supplier invoices to verify the nature and amount of the expenditure and ensure classification as research expense was appropriate;
- Gaining an understanding of the current stage of development to 31 December 2016, the results of the Phase 2 trial subsequent to balance sheet date as disclosed in note 15 and the remaining dependencies the Group has in relation to commercialising the product;



adequate technical, financial and other required resources to complete the development and whether the costs will be fully recovered through future sale or licensing of the product. The Directors determined that the costs did not meet the criteria for capitalisation based on the fact that:

- Commercialisation of the product is dependent on the success of further trials, studies and approvals, the outcomes of which are unknown; and
- The Group is dependent on obtaining sufficient funding and/or a commercial partnering arrangement to further develop the product and complete all required processes to meet the criteria of commercial feasibility.
- Using this understanding, we evaluated management's assessment of whether the Rett syndrome costs met the criteria for capitalisation.

We have no matters to report.

### Information other than the financial statements and auditor's report

The Directors are responsible for the annual report. Our opinion on the financial statements does not cover the other information included in the annual report and we do not and will not express any form of assurance conclusion on the other information.

In connection with our audit of the financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated. If, based on the work we have performed on the other information that we obtained prior to the date of this auditor's report, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

### Responsibilities of the Directors for the financial statements

The Directors are responsible, on behalf of the Company, for the preparation and fair presentation of the financial statements in accordance with NZ IFRS and IFRS, and for such internal control as the Directors determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Directors are responsible for assessing the Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the Directors either intend to liquidate the Company or to cease operations, or have no realistic alternative but to do so.



#### Auditor's responsibilities for the audit of the financial statements

Our objectives are to obtain reasonable assurance about whether the financial statements, as a whole, are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs NZ and ISAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

A further description of our responsibilities for the audit of the financial statements is located at the External Reporting Board's website at:

 $\underline{https://xrb.govt.nz/Site/Auditing\_Assurance\_Standards/Current\_Standards/Page 2.aspx}$ 

This description forms part of our auditor's report.

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### Who we report to

This report is made solely to the Company's shareholders, as a body. Our audit work has been undertaken so that we might state those matters which we are required to state to them in an auditor's report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the Company and the Company's shareholders, as a body, for our audit work, for this report or for the opinions we have formed.

The engagement partner on the audit resulting in this independent auditor's report is Julian Prior.

For and on behalf of:

Chartered Accountant 30 March 2017 Auckland

### **Additional Information**

#### **Equity Securities Held by Directors as at 30 March 2017**

		Interests in Ordinary Shares		
Director	Direct	Indirect		
Richard Treagus	_	50,115,385		
Larry Glass	20,000,000	_		
Bruce Hancox	-	_		
Trevor Scott	20,000,000	50,118,249		

On 13 and 16 May 2016, Dr Richard Treagus purchased 500,000 shares at \$0.07 per share. On 31 August 2016, 9,615,385 shares were issued to Dr Richard Treagus following the exercise of Equity Performance Rights.

#### Directors of subsidiary companies at 31 December 2016

	Richard Treagus	Larry Glass	Bruce Hancox	Trevor Scott	Jon Pilcher
AgVentures Limited				$\sqrt{}$	
NeuroendocrinZ Limited					$\sqrt{}$
Neuren Pharmaceuticals Inc.	$\sqrt{}$	$\sqrt{}$			
Neuren Pharmaceuticals (Australia) Pty Ltd		$\sqrt{}$	$\sqrt{}$		

The director's remuneration for the year to Larry Glass disclosed on page 28 was received from Neuren Pharmaceuticals Inc. During the year, no donations were made by subsidiary companies, no amounts were payable to an auditor and the subsidiary companies had no employees.

#### **Australian Stock Exchange Disclosures**

Neuren Pharmaceuticals Limited is incorporated in New Zealand under the Companies Act 1993.

The Company is not subject to Chapters 6, 6A, 6B and 6C of the Corporations Act, Australia, dealing with the acquisition of shares (such as substantial holdings and takeovers).

Limitations on the acquisition of shares are imposed by the following New Zealand legislation: Companies Act 1993, Securities Act 1978, Securities Amendment Act 1988, Takeovers Act 1993, Overseas Investment Act 1973, Commerce Act 1986 and various regulations and codes promulgated under such Acts.

#### Corporations Act, Australia - Directors' declaration

The Directors of Neuren Pharmaceuticals Limited ("Neuren") declare that:

- 1. The financial statements on pages 30 to 49 of Neuren and its subsidiaries for the year ended 31 December 2016 and the notes to those financial statements:
  - (a) comply with the accounting standards issued by the Institute of Chartered Accountants of New Zealand; and
  - (b) give a true and fair view of the financial position as at 31 December 2016 and of the performance for the year ended on that date of Neuren and its subsidiaries.
- 2. In the Directors' opinion there are reasonable grounds to believe that Neuren will be able to pay its debts as and when they become due and payable.

This declaration is made in accordance with a resolution of the Board of Directors dated 30 March 2017.

On behalf of the Board

**Dr Richard Treagus** Chairman **Dr Trevor Scott** Director

## **Additional Information**

continued

#### **Equity securities information**

The Company has only one class of shares, being ordinary shares. Each ordinary share is entitled to one vote when a poll is called; otherwise on a show of hands at a shareholder meeting every member present in person or by proxy has one vote. There are no securities subject to escrow and there is no current on-market buy-back of securities.

The following information is based on share registry information processed up to and including 27 March 2017.

The number of ordinary shareholdings held in less than marketable parcels at 27 March 2017 was 784, holding 2,358,793 ordinary shares.

### **Distribution of security holders**

Ordinary shares

Size of holding	Number of ordinary shares	%	Number of holders	%
100,001 and Over	1,739,005,809	94.41	1,298	27.80
10,001 to 100,000	96,672,513	5.25	2,156	46.18
5,001 to 10,000	4,705,632	0.26	570	12.21
1,001 to 5,000	1,499,402	0.08	378	8.10
1 to 1,000	45,659	0.00	267	5.71
Total	1,841,929,015	100.00	4,669	100.00

Unquoted equity performance rights to acquire ordinary shares (EPR)

Size of holding	Number of EPR	%	Number of holders	%
100,001 and Over	1,308,901	100.00	1	100.00
Total	1,308,901	100.00	1	100.00

#### **Substantial Security Holders**

Langley Alexander Walker – relevant interest in 365,342,357 ordinary shares at 27 March 2017.

# **Additional Information**

continued

Twenty largest holders of ordinary shares

Twenty largest holders of ordinary shares:	Number of ordinary shares	% of issued share capital
AUCKLAND TRUST COMPANY LIMITED	338,092,357	18.36%
NEUREN TRUSTEE LIMITED	90,000,000	4.89%
UBS NOMINEES PTY LTD	74,911,684	4.07%
CAMERON RICHARD PTY LTD	70,418,018	3.82%
ESSEX CASTLE LIMITED	45,707,595	2.48%
HSBC CUSTODY NOMINEES (AUSTRALIA) LIMITED	38,854,104	2.11%
INVESTMENT CUSTODIAL SERVICES LIMITED	29,611,730	1.61%
SMITHLEY SUPER PTY LTD	29,000,000	1.57%
CITICORP NOMINEES PTY LIMITED	27,637,123	1.50%
WALKER GROUP HOLDINGS PTY LTD	27,250,000	1.48%
LINWIERIK SUPER PTY LTD	24,000,000	1.30%
FORSYTH BARR CUSTODIANS LTD	23,665,726	1.28%
LARRY GLASS	20,000,000	1.09%
DR TREVOR SCOTT	20,000,000	1.09%
ROXTRUS PTY LIMITED	19,000,000	1.03%
STUART ANDREW PTY LTD	18,471,641	1.00%
J P MORGAN NOMINEES AUSTRALIA LIMITED	13,748,992	0.75%
BNP PARIBAS NOMS PTY LTD	13,236,120	0.72%
NAMARONG INVESTMENTS PTY LTD	11,111,111	0.60%
MR ROBERT ALBERT BOAS	10,160,806	0.55%
Total	944,877,007	51.30%
Balance of share register	897,052,008	48.70%
Total issued share capital	1,841,929,015	100.00%

# neuren

### pharmaceuticals

### **Neuren Pharmaceuticals Limited**

Unit 4, 435 Williamstown Road Port Melbourne Victoria 3207 Australia

Tel: +61 3 9092 0480 ABN: 72 111 496 130 ASX code: NEU

#### New Zealand Registered Office:

At the offices of Lowndes Jordan Level 15 PWC Tower 188 Quay Street Auckland 1141 New Zealand

### Share Registry:

Link Market Services Limited Tower 4, 727 Collins Street Docklands Victoria 3008 Australia

Postal address:

Locked Bag A14 Sydney South NSW 1235

Tel: +61 1300 554 474 Fax: +61 2 9287 0303