



NEWSLETTER N° 8  
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### Mission Statement

"To become the leading supplier  
of wind turbines for  
wind power projects in  
New Zealand and Australia."



*Welcome to our eighth newsletter.*

As always plenty has been happening over the last few months.

The Stage 2 rights issue has been an unqualified success with the majority of our shareholders choosing to increase their holding. We are honoured by the commitment you have made and continue to make to our company.

The strength of Windflow as a company has not gone unnoticed either, with our selection as one of the first fifteen companies to watch on the new NZAX board, which is set to be launched on the 14<sup>th</sup> November.

On the other side of the coin, we have not managed to complete all the sound abatement modifications within the three month window allowed by our resource consent. As a result we have had to suspend the operation of the turbine until the work is completed and the sound levels in McQueens Valley have been verified as being below the agreed 30 dBA limit. Rest assured we will let you know as soon as we are ready to resume operation. Our progress in the field of acoustics is detailed later in this newsletter.

Other happenings of note include:

- Three new fresh faces to the Windflow team
- New offices (to make room for the new faces)
- The tower receives its first cut and polish

Our AGM is also coming up and there will be no shortage of business to get through, particularly with our change from the Unlisted Securities to the new NZAX board.

So finally all that remains is to wish you well for the season of barbecues, sand, sun and Santa.

Geoff Henderson  
**CEO and Director**

# Tower Cleaning

Question: What happens when during routine maintenance the hydraulics contractor forgets to reconnect the filter bowl and the mistake is not noticed until after a 20 litres/minute hydraulic pump is switched on?

Answer: A big racing stripe reaching from the nacelle all the way to the ground. The natural question that follows is how do you remove unwanted racing stripes from wind turbine towers?

Observe...



A good job for a calm day.

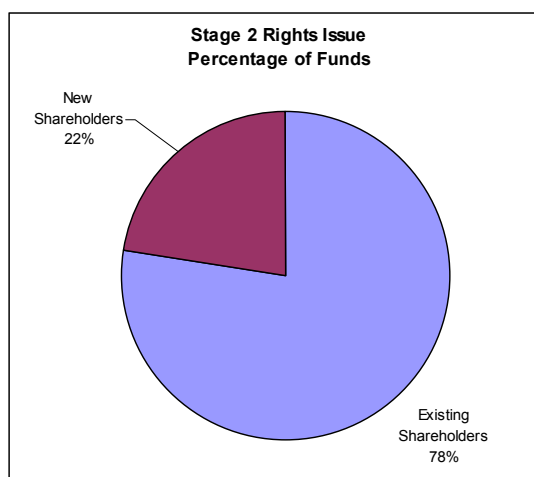
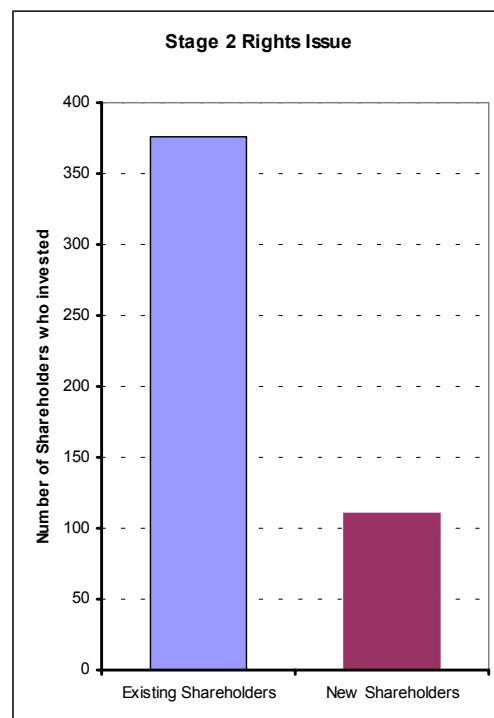


# Stage II Capital Raising

The Stage 2 rights issue was almost completely subscribed with \$5 million being raised. This is a great result and it reinforced for us once again what a tremendous depth of support there is for what Windflow represents, both in terms of being an ethical investment and the path we are building towards a sustainable future.

Since there are so many engineers involved with Windflow, it is only natural that a small amount of analysis should have been carried out on the Stage 2 result. See the accompanying graphs.

As you can see the depth of support from existing shareholders was fantastic. 78% of the funds raised came from our existing shareholders. We are honoured by the commitment you have made and continue to make to our company.



So what happens next? The plan going forward includes the construction of another six turbines, which will become the first step towards New Zealand's first indigenous wind farm 'Te Rere Hau'.

This project will be headed up by New Zealand Windfarms Ltd, which is currently a subsidiary of Windflow.

The official launch of NZ Windfarms will occur early next year, and we will be profiling it in the 'Summer' edition of this newsletter.

# NZAX

The NZAX (NZ Alternative Exchange) is a new board on the New Zealand share market which is aimed at little-big companies. The NZAX will replace the unlisted securities market (the USM - our current home) and is intended to provide a regulated market for the trading of securities without the large overheads associated with the “main board” NZSX.

We are excited at being given this opportunity and it would appear that the NZAX is excited at our joining, as Windflow will be one of their 1<sup>st</sup> XV companies. The 1<sup>st</sup> XV being a ‘footy inspired’ promotion to launch the NZAX and highlight their pick of companies which are expected to perform strongly.

The NZAX is a ‘listed’ board so there are a few new reporting processes which have to be put in place. To this end there will be a special resolution tabled at the AGM which, if approved, will make the required changes to our constitution.

## Certification

As part of the IEC certification process, we will be putting another blade through it paces. Unlike the destructive testing (which was carried out last year) this fatigue test will not be as spectacular, but this does not make it any less important.

The fatigue test involves bending the blade back and forth about three times a second, twenty four hours a day, for a couple of months. The lucky blade has already been selected (it will be number 9) and all we need now is a big shed, which we can take over and convert into a fatigue-testing laboratory.

# Acoustics

Over the past two months the team here at Windflow has been working extensively on solving the noise problem. We're finding out at first hand just how frustrating the science of acoustics can be; when one dominant source of excessive sound is identified and remedied, another (previously masked by it) becomes apparent.

The frustration has been intensified by wind conditions: no wind means the windmill will not operate, too much means the wind noise masks the windmill noise. And for some work we need “just right” conditions when we are trying to measure the effect of a modification on a “before and after” basis. (The “after” measurement has to be in very similar wind conditions as the “before” measurement).

And we're not talking of a loud noise; it is the volume of a whispered conversation!

Nevertheless we are systematically working towards the solution. The sound levels inside the tower have been reduced by 8 dBA by gluing 50 mm thick sheets of rubber to the inside of the tower to absorb the structure-borne vibrations. However it made only a small difference at a distance.

This ‘free layer damping’ has also been applied to the gearbox casing with little discernible effect.

The next step was to add Acoustop flexi-barrier to the nacelle cladding, the result of which was to uncover the sound of the outlet duct of the generator cooling fan as being another significant sound source. We are currently designing a suitable muffler for the outlet duct.

We expect that the cumulative effect of all these measures will ensure that we comply with our resource consent. There remains the possibility that the blades themselves are picking up the gearbox vibration structurally, ie in a similar way that the tower was. If so the solution will be to inject foam into the blades to absorb those vibrations.

The Banks Peninsula District Council has arranged for an independent acoustic consultant to do compliance testing, once we have completed all necessary

modifications. It is worth noting that at no time in this process have we ever exceeded the District Council’s normal night-time sound level of 40 dBA. For comparison a refrigerator is typically 43-44 dBA. In working towards 30 dBA we are committed to achieving international best practice.



This shot will give you some idea as to the size shed we will be requiring



# On the Move

It's finally happened, we have outgrown our Victoria Street offices. So armed only with a small four-page checklist, knocked together by the rest of the staff, Terry has conducted an exhaustive search of the inner city and found us new lodgings at 315 Manchester St, Level 2.

The offices are approximately twice the size, which is a good thing because Windflow now has almost twice the staff it had two years ago. We will be moving into the new premises during the weekend of November 22<sup>nd</sup>.

## New Faces

There are three newcomers to the Windflow team:

### **Business Development Manager – Chris Freear**

Chris has taken up a new position as Business Development Manager, a role which includes the production of this newsletter. Chris is a double graduate with degrees in engineering and management science. He has been working in the energy industry for the last decade particularly in the area of energy efficiency.



### **Mechanical Design Engineer - Gavin Williams**

Gavin is a mechanical engineer and has joined the team from Motovated Design & Analysis (a local design consultancy). He will be responsible for our design documentation and working with Warwick on the IEC certification.



### **Engineer/Analyst – Francis Jackson**

Francis is returning to us via South Africa from Canada where he has completing his studies in engineering including a thesis on the Windflow 500 dynamics. Francis will be resuming his excellent work on the modelling, and analysing the actual performance based on monitored data.



## Recent Share Sales History

Date:	Number	Price (NZ\$)
1/9/03	3000	\$2.25
2/9/03	300	\$2.25
3/9/03	8800	\$2.25
5/9/03	800	\$2.25
8/9/03	1000	\$2.25
16/9/03	100	\$2.24
23/9/03	2000	\$2.24
30/9/03	7500	\$2.15
1/10/03	433	\$2.15
3/10/03	1567	\$2.15
7/10/03	4000	\$2.10
15/10/03	4000	\$2.25
29/10/03	2000	\$2.15
3/11/03	1320	\$2.22
6/11/03	1000	\$2.16
12/11/03	1500	\$2.15

During the rights issue (July 28<sup>th</sup> to August 28<sup>th</sup>), the rights (1 for 1 at \$2.00) traded between 2c and 95c each.

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## Videos for Sale

The 16 minute video which has been screened at the presentations will be available to shareholders and members of the public. The video tells a great story about laying the foundations for a new manufacturing business in New Zealand. In order to recover the copying costs, Windflow will be charging \$25 for the DVD version or \$20 for the VHS tape version. A \$10 discount will be available to shareholders for either version. Please contact Terry Moon (Ph. 03-365 8960 or email [terry@windflow.co.nz](mailto:terry@windflow.co.nz)) to order.