

March 2012 Volume 15 Issue 1 - Number 73 Contents

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From The Editors – George Durbridge and Stephen Nurse

Late last year a very successful OzHpv gathering was held in Myrtleford. The OzHpv AGM was held at the gathering and we'd like to welcome new OzHpv committee member, Ken Smith. It was good to see so many riders have fun at an event where competition was not the name of the game. We are repeating and extending the Myrtleford event this year. As well we hope to bring you a wide range of events to enjoy the company of fellow HPV enthusiasts. And if an event doesn't exist in your area, there's no reason why you can't organise one. Ozhvp will always back its members as ride and event organisers with insurance coverage and assistance with venue hire. For a full list of events, see the back page of this issue and to organise an event, contact Ken, secretary@ozhvp.org.au.

This year I've stepped up the amount of riding I do. In part, I'm not letting my work commitments get in the way of riding at least 2 days a week, and in part I'm not using the train to get to work and riding all the way instead. So slowly a few kilos are dropping off my weight and slowly I'm getting fitter. It takes some discipline and I hope I'll be able to keep it up. So my bike's getting used a bit more and I discovered today it needs a bit more attention as well. What I thought was a stretched derailleur cable turned out to be the derailleur bolt very loose and the trouser guards were really loose on the chainring, well worth fixing. So look after your bike and it will look after you!

OzHpv's new Secretary, Ken Smith

Ken was elected at the last agm and we asked him to introduce himself for Huff Magazine.



Kenneth David SMITH 1949-

Some three years ago I joined OzHPV, as I had become fascinated with recumbent cycles, following an unfortunate accident between a car and my Giant. The Giant and I fared badly. I currently ride a "Cleanskin" Greenspeed X5. This cycle now referred to now as my '...Yella Terra...', due to the chosen colour after a recent frame replacement, due to a fatigue/stress fracture. Although I had ridden cycles as a sub 20 year old, I took up cycling again more seriously in the mid 1980s, as a form of exercise to assist with the management of Type II Diabetes - a plague that riddles the family on my paternal side. Whilst the Diabetes remained in reasonably good control, 2004 was a bad year as I had surgery for five coronary artery bypass grafts. Undeterred, I continued to cycle on a social basis individually. I joined the (then) Over 50s Riding Program and met all of these wonderful people with an interest in adults cycling together, but this was initially limited to weekend cycling activities. I am able to cycle even more often now, as I have finally pushed the chair back from the desk and threw the overly-chewed pen in the bin for the final time at stand-down on 11 Feb 2011.

Experience:

I served with the Royal Australian Air Force (1973-1993) initially as an Accountant Officer, since 1977, a Logistics Officer, and on being made redundant in 1993, I continued to serve on the RAAF Standby Reserve (Reserve Staff Group) until November 2008. During this 35 year interval, I was involved in the administration, accounting and more recently, the auditing of a large number of RAAF Clubs, official Messes that included the Cadets' and Officers' Messes at the Australian Defence Force Academy - the Cadets' Mess is the largest single mess entity in the Australian Defence Force.. My last RSG task was with the Australian Army, at Bandiana (Wodonga), and this is where I started to learn about cycling communities, bike paths and similar stuff in relation to the Wodonga to Old Tallangatta Rail Trail. I bring with me this experience to OzHPV.



Although I did hold a Certificate in Business Studies since 1976, on being made redundant from the RAAF in 1993, I attended Deakin University as full time stud' in calendar years 1994-1995, and graduated in May 1996 with an undergraduate degree in Commerce. I have also included a picture of my cat - she keeps me sane!

Recumbent Tandems



Recently I followed a link on the Velovision Website to Dutch cycle shop "Ace" making very exotic back to back tandems such as the one shown at left. The cycles are really "one with the lot" and can include all wheel drive, front and rear suspension, separation for transport, and you can attach a wheel to the front half to make a single bike. If you've been around OzHpv for a while, you might remember Damian Harkin's back to back tandems,
Links: [Velovision Story](#)
[Damian's Bike](#)

V15 Series Pedal Boats

By Rick Willoughby

Background

I have been building pedal boats since 2002 and have built numerous boats on my progression toward efficient water transport. I am now at version 15 of the pedal boats and there are also a number of variants of certain versions. For example there were four variants of V11 including the boat built by [Greg Kolodziejzyk](#) to establish the 24 hour distance record on water. So far I have built 3 variants of V15 and there are two others built in the USA.

V15 Concept

The basic elements of the design incorporates the minimum drag hard chine hull shape, originally developed for V14, combined with an integrated deck that consists of a wave-piercing bow, torque box for mounting the crank, recumbent seat and aft deck fairing. The first boat of the series is 5m long being used by my sister around the canals of the [Nerang River](#) in Queensland.



Donna on Nerang River

The main hull has a waterline beam around 220mm which is too narrow for inherent stability so surface skimming stabilisers are fitted to produce a very stable platform.

Other V15 Variants

I have built two boats in the V15 series for my own use. The first is 6m long with an aft mounted prop driven by a gearbox having 1:4 ratio able to accept cranks directly to the gearbox input shaft. The second boat is 5.8m long with a side mounted prop similar to what was used on V11 and V14.



V15-6m



V15-58

There are two wooden variants of this series being used in the USA. One is being raced regularly by the builder [Mike Lampi](#) in the Sound Rower's races in Puget Sound near Seattle. The other was built by [Cory Schaffhausen](#) in Minneapolis. It is mostly used recreationally but has been raced once at an IHPVA event soon after it was built.

Both Mike and Cory used machine cut ply panels for their boats. Panels were joined using glass tape with epoxy. They have varied the basic design to suit their particular needs and are still undergoing development. Both are contributing to the V15 design development. In particular Mike's regular racing against paddled or rowed craft in a wide range of conditions identifies opportunities for improvement.



Mike Lampi (Photo Courtesy Mike Lampi)



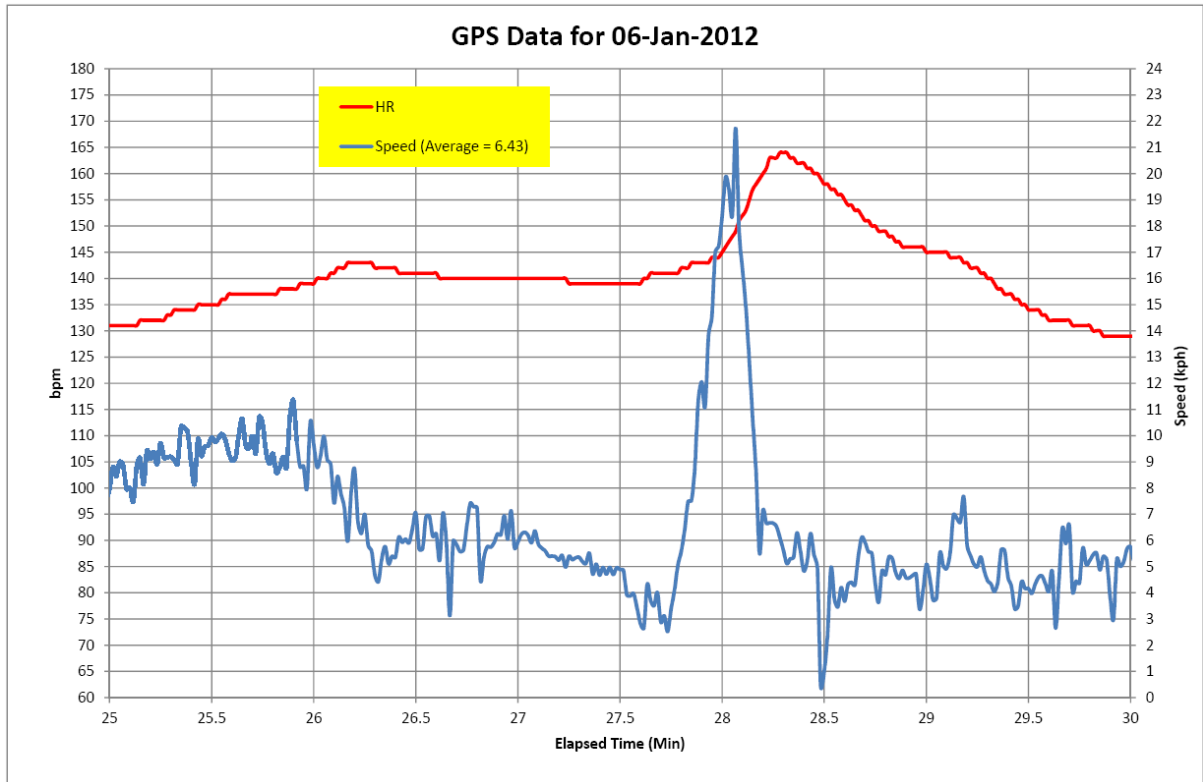
Cory Schaffhausen (Photo Courtesy Cory Schaffhausen)

V15 Design Features

Hull Shape Optimisation

The V11 series was the first of the hulls designed using the optimisation software produced by mathematician [Leo Lazauskas](#). The software is able to iterate to the hull shape of minimum resistance within set constraints. The design constraints for V11 were simply a displacement of 90kg and a speed of 3.3m/s. For both the V14 and V15 series an additional constraint was added to force the hard chine that is compatible with flat panel construction.

The hard chine constraint results in a drag increase of approximately 3% over an unconstrained section shape. However the hull is also shorter and narrower so can be built lighter, which I have found more than offsets the penalty of the constrained section. In addition the flat bottom produces dynamic lift at higher speed and this reduces drag compared with a round bottom under sprint conditions. I have been able to get V15-58 over 19kph in a sprint.



V15-58 Sprint Speed

Folding Propeller

All of the V15 series boats use folding propellers. Most commonly these comprise a hub machined from nylon rod and twisted blades shaped from stainless steel flatbar. The propeller designs are optimised to suit the method of hand fabrication. The design software used is similar to [Martin Hepperle's JavaProp](#). I have included optimisation algorithms in my program to maximise the propeller efficiency given prescribed constraints.

The folding propellers have a significant advantage over fixed blades for shedding weed. Coasting momentarily causes the blades to fold and accumulated weed flows off. They have also proven to be immune to damage from striking solid objects.

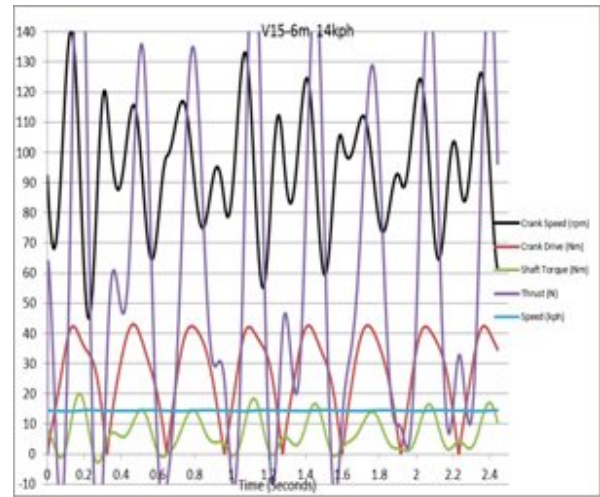
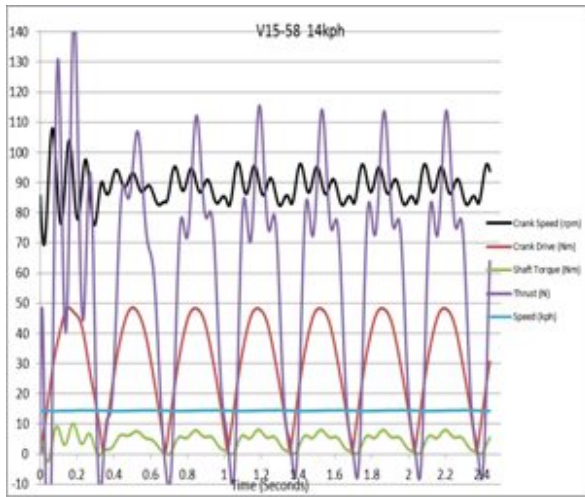
The low power and low speed of pedal powered boats means the propellers do not suffer cavitation problems of more heavily loaded marine propellers so high aspect blades with high lift sections can be employed. This raises efficiency to over 80% compared with typical marine propeller around 60%.

Curved Shaft

Since V6 all boats have used curved shafts courtesy of a suggestion from Ken Houghton. Curving the shaft enables the propeller to be spun perpendicular to the water flow. This evens blade loading and avoids vibration that occurs with inclined shaft when using high aspect blades. Most of the shafts have been spring steel but V15-6m uses a carbon fibre shaft, purpose wound to give high torsional rigidity while having low bending stiffness.

One of the reasons for going back to the shorter shaft of V15-58 was to improve the shaft dynamics. Considerable time has been devoted to developing a dynamic analysis program for the biomechanics from legs to propeller. It is a factor that limits the top speed of V15-6m and also Mike Lampi's boat. Poor dynamics can make pedalling on the boat feel unnatural due to the recoil from the shaft at the crank dead-spot.





V15-58 Drive Dynamics

I have a maximum foot speed under load, on a high momentum system with 175mm cranks that corresponds with a cadence of 140rpm. With V15-6m this instantaneous crank speed is being approached at a boat speed of 14kph. By comparison the peak cadence for the same speed on V15-58 is less than 100rpm. This means higher top speed is attainable with a low compliance drive train.

V15-6m Drive Dynamics

Construction & Weight

All three of the V15 series boats I have built use fibreglass on 3mm thick PVC closed cell foam with epoxy resin for bonding. Using fibreglass cloth is more economic and achieves a lighter hull than using carbon fibre as there is a wider range of cloth weights available with fibreglass. The cloth weight is selected to suit the part of boat where it is used.

The basic hull on V15-58 weighs 8kg. The torque box and seat with fairing adds 3kg. The stabilisers and mounting wings add another 4kg while the drive train takes the total weight to 21kg. This is light enough to lift and carry as a complete assembly. The stabilisers fold up to make transport and storage easier.



Cruising Lysterfield Lake

I am a regular visitor to [Lysterfield Lake](#) as it is close to home and suits two other local boaters Ian Cassell and [Dean Maksimovic](#) who have pedal boats at various stages of development. Both boats have the basic form of the stabilised monohull and both are using direct crank driven gearboxes. They also use curved shafts and folding propellers.

Ian's current boat is his fourth and it has been through a few iterations. It is 5m long and constructed from ply. Dean's boat was built from a disused beach catamaran whereby the two shorter hulls were combined to produce one longer hull. It is also 5m long. Both are planning on lighter boats.



Ian Cassell



Dean Maksimovic



The current bike (recently christened Monsterbike) I ride uses a Schlumpf Mountain Drive crank gearbox. Recently I've installed a Sturmeier Archer in-wheel gearbox on a similar bike so I decided to make a comparison. Even though the systems are quite different, I am using the 'boxes to do the same thing, ie provide low gears where a derailleurs system is hard to fit. I'm a little bit tired of doing all the development of this style of bike myself and have put the basic design on the internet for free. Hopefully the end result will be a diverse range of these bikes on the road. For details and latest news, see the blog pages at www.modularbikes.com.au Regards Steve Nurse.

Sturmeier Archer CS-RF3		Schlumpf Mountain Drive	
Epicyclic Gear built into standard Cassette hub, 3 gears, multiplies standard gear inches by 0.66, 1 or 1.33. No gearbox losses in middle gear.	✓	Format & Specifications	✗ Epicyclic Gear built into bottom bracket, multiplies standard gear inches by 1 or 0.42. No gearbox Losses in top gear
Compatible with 3 speed indexing front derailleur	✗	Changing Gear	✓ Click central spindle with heel to change gear
From USA through Ebay, shipping costs were almost as high as the cost of parts themselves	✗	Supplier	✓ Greenspeed Australia, parts readily available
Must be built into 32 spoke wheel. Standard installation needs 8mm thick dropouts. Simple and adequate instructions provided	✓	Installation	✗ Needs 45 degree chamfer on bottom bracket. Simple and adequate instructions provided
Single part provided everything needed except for gear changer and cables which I found in my shed	✓	Parts Supplied	✗ This installation needed bottom bracket, 2 cranks, 2 trouser guards, chainwheel all to be ordered separately. Expensive but everything works well
All Usable	✓	Usable Gears	✗ All high gears usable. Only 3 low gears are usable, in low ratio, high gears jump the chain due to high torque and in low gears it's too slow to balance. Despite a wider nominal gear range, the usable range is not as good
Landed Cost about \$140 plus \$160 wheelbuilding. Transmission still needs a crankset and cluster.	✓	Cost	✗ About \$1000 depending on accessories, Transmission still needs a rear wheel and cluster
Good, additional gearchanger required	✗	Aerodynamics & Appearance	✓ Exceptionally Good, gears are built into bottom bracket with no external controls.
Adds 1kg or so to bike weight	✗	Weight	✓ Minimal Extra weight
Sram Dualdrive is the established competition, widely used on trikes.		Competition	None that I know of
Chain for gearchange		Useful Spares	Gear change button
http://www.sturmeier-archer.com/products/hubs/cid/8/id/58		Website	http://www.schlumpf.ch/hp/schlumpf/faq_getriebe.engl.htm
If the cycle you ride needs extra gears but a derailleur doesn't fit, the Sturmeier 'box provides a very competent alternative. For my application, the extra high gears and ease of use of gears make it better than the Schlumpf	✓	Overall	✗ A loser here but I am nevertheless very impressed. I like the simple way the bottom bracket is fitted and the uncluttered gearchange. Maybe a (alternative Schlumpf Model) Speeddrive would be better in this application

Myrtleford Rally and AGM

For the last several years, the OzHpv annual general meeting has been held as a video linkup between Melbourne and Canberra OzHpv members. That changed last year with a large contingent of riders converging on Myrtleford in Victoria's Ovens Valley for a Rally and AGM weekend. We were blessed with warm weather after weeks of rainy Saturday and Sundays. The rally is set to become a fixture on the OzHpv calendar with the 2012 event due to extend over 5 days (see coming events).

The caravan park operators Steve and Kim were most enthusiastic about our vehicles. Some of the other caravan park guests made an oversize trailer-bike train and did a blocky of the park, much to the amusement of all. Many of the innovations presented in the last issue of Huff were present in the metal including Alan Ball's Evolve trikes, Pete Heal's leaning trike (Eileen!), Steve Nurse's front wheel drive bike and Paul Worden's Metaphysic bike with carbon fibre seat spring. The sheer variety of vehicles made for most interesting riding.

Graham Signiorini easily won the spirit of hpv award (ok, there was never such an award but he would have won it had there been one) by riding up to Myrtleford from Melbourne for the weekend. He got a lift back to Melbourne with Kim Tolhurst from Cruzbike and said he had to attend a Bonsai plant society AGM, otherwise would have ridden the whole way back as well! The Rotovelo was instantly popular in the Caravan Park. Following are some photos of the event by Pete Heal and Steve Nurse.



Big mob just before heading out to Lake Buffalo, the trailer train is at right



Andrew Stewart leads a group on the rail trail



A detail of Alex McNee's front drive lowracer



Paul Worden and the MetaPhysic



David Downing, William Reid, Ken Smith



Faye, William, Alan and the Evolve trike



Pete Heal and his mini-trike, "Eileen"



Trailer train in action.



Graham Signiorini (left) & the Rotovelo



Andrew Powell and Simon Watt leaving lake Buffalo

COMING EVENTS

LOCAL

OzHpv Challenge: Wodonga Go-Kart track May 5 and 6 2012. The date for the Challenge was just being set as we went to press, Ozhpv members will receive updates by email and details will be posted on the [Ozhpv website](#). More details and sponsors details next issue

Sunday October 28: Ozhpv will hold a short series of races at the Belmont Island Criterium Track, corner Barwon Heads Road & High St (Opposite K -Mart, Melways 451 K10) from 2-6pm. Its possible we'll extend the race series and have several Sunday afternoon races near Melbourne in October.

December: OzHpv AGM Meeting Myrtleford, dates to be confirmed.

INTERNATIONAL

SPEZI- Spezialradmesse in Germersheim (28.-29. April 2012). www.spezialradmesse.de

World Human Powered Vehicle Championship, June 8 & 9, Southeast England, see <http://www.wc2012.bhpc.org.uk/>

European Weekend for Long Distance Records: Lausitzring, Germany,
Saturday 28th of July /
Sunday 29th July - see <http://www.hpv.org/> or its [google tranlate equivalent](#).

2011 OzHPV Annual General Meeting.

3rd December 2011 - Myrtleford Victoria, Meeting started: 10:00 pm

Present: Stephen Nurse, George Durbridge, Peter Heal, Lloyd Charter, Alex McNee, Andrew Stewart, Andrew Powell, Graham Signorini, Kim Tolhurst, Ken Smith, Simon Watt, Ian Boehm, Alan Ball, Peter Mathews Paul Worden, Val Worden, David Downing, John Kuljis, William Reid

Apologies: Rob Wartenhorst, Rob Leviston, Atholl Reid, Eric Ball, Ben Goodall, Robert Waryszak

Minutes from Previous meeting were not available but the last AGM meeting held 12 December 2010.

Peter Heal presented Tim's Treasurer Report.

Tim had been unable to finalise the report and get it audited before the meeting. Peter had prepared the summary before the meeting based on the account statements See attached.

Moved by Ken Seconded that unaudited be accounts be accepted subject to presentation of properly audited accounts at later date to a special meeting.

Unanimously agreed by meeting.

Action:

1/ PH to finalise report and get audited as required.

2/ PH to organise a Special General Meeting to consider and accept the financial statement in near future. (Special General Meeting Held on 22/2/2012 and accounts which follow were ratified on that date Ed.)

Peter Heal presented the Secretary's report covering:

Memberships

- Currently only 63 financial members at 30/9/2011 (down from 76 in 2010)
- Members locations by state
 - o Vic - 25
 - o ACT - 20
 - o NSW - 9
 - o QLD - 3
 - o SA - 2
 - o TAS - 1
 - o WA - 1
 - o NT - 2

- The issue of members not knowing when their subscriptions were due was raised and it was decided that a better system for advising members was needed.

Action: PH to investigate and set up a better member's database system to track renewals.

Group lists

- Peter H brought up the issue of many non members on the various Yahoo lists promoted by OzHPV and asked members what should be done to try and convert these to full members.
- Much discussion, but no real decision.
- Subscribers on Yahoo lists
 - o OzHPV - 161 , o VIC HPV - 174, o OzHPV Canberra Mob - 77

Insurance

- Peter H was pleased to advise that an alternative insurer had been found and the annual Public Liability insurance premiums had now reduced from \$1,900 to \$1,000.

Secretary's report unanimously accepted.

Steve Nurse gave the President's Report

HUFF

Main contribution Steve feels he has made is bringing HUFF up to a higher standard.

Thanks to George for his assistance and support with the HUFF.

WHPVA

The WHPVA website is up and running and should be linked to from the Ozhpv site, it includes details of the 2011 WHPVA world championships in England from June 8 - 10. <http://www.whpva.org/>

OzHPV WEBSITE

Steve thinks OzHPV website needs more work and revision and asked for this to be given attention.

BIG RIDE RECUMBENT BANS

OzHpv were part of a successful movement to remove the ban on recumbents on the Eastlink ride which meant access to this ride to many able bodied and physically challenged recumbent riders.

Election of Officers

President - Steve nominated- Kim Tolhurst Second- Simon Watt . Elected.

Secretary - Ken Smith nominated himself. Alan Ball moved George Durbridge Seconded. Elected.

Treasurer - Pete Heal - Nominated by Simon Watt Seconded Ian Boehm. Elected

Committee - George Durbridge agreed to be a committee member.

Public Officer - Andrew Stewart happy to continue in this non committee role.

General Business

Web Page - Andrew and Peter H offered to revamp the website

Alex suggested that some of the money available might be use to fund some professional help for website development.

George suggested that users look at website to get news but there is none there.

Simon commented that website not up to date on website so lost interest in visiting.

Paul suggested that automate the website to notify members of changes in website.

Kim T suggested sponsors be approached to fund and advertise on website to offset any costs. No real objections to this issue from members present.

Action: Pete and Andrew to prepare some options to committee.

Events

2011 Challenge. Steve said this event not well promoted. Better promotion needed. Encourage local Albury/Wodonga area people to attend. Wodonga track should be booked for 2012 soon.

Other events like rally discussed.

Simon asked what is our target? Racing, rallies and get togethers

Rally very popular activity for current membership but might not attract riders with a different outlook or age group.

Peter H suggested a major event like a world championship could be held where some of OzHPV's money is spent on promotion and ongoing development.

Steve said we need to set a standing calendar for OzHPV events for the year.

Simon spoke about committing to say 4 events for the year at least for the year.

Lloyd described the new Upper Murray Trail association work in Hume weir area.

Steve asked if prize money is an important aspect. General view is that it's not important and better a bit of fun and giveaways at events.

Meeting closed 11:16pm

**OZHPV FINANCIAL STATEMENT
FOR PERIOD 01/10/10 TO 30/09/11**

2010/2011

Balance Sheet 1/10/10 to 30/09/11

ASSETS

Cash at Bank Account

68 638-2698 @ 1/10/10	\$8,424.44
68 638-2698 @ 30/9/11	\$10,550.43
Accounts Receivable @ 30/09/11	\$0.00

TOTAL ASSETS

\$10,550.43

LIABILITIES & EQUITY

LIABILITIES

\$0.00

EQUITY

\$10,550.43

Profit & Loss Statement 1/10/10 to 30/9/11

INCOME

Interest Bank Account	\$0.99
Membership Fees (63 members at 30/09/11)	\$1,390.00
Canberra Speed Challenge 2010	\$235.00
OZHPV Challenge 2011	\$1,185.00
Lang Lang Entry Fees	
Maryborough TT Entries	
Donations (1)	\$430.00
Advertising	\$10.00
TOTAL INCOME	\$3,250.99

EXPENDITURE

ACT Registrar General	
Bank Charges and Fees	
Govt Charges and Taxes	
Insurance (2)	
Stationery, Printing, Postage, Courier	
Equipment	
Challenge Expenses	\$425.00
Venue hire - DISC	
Venue hire - Lang Lang	
Venue hire - Maryborough TT	
World record attempt (3)	\$335.00
Venue hire - Stromlo	\$240.00
Internet Expenses	
AGM Expenses 2010	\$85.00
Membership Refund	
Entry fee refund - cancelled event	\$120.00
TOTAL EXPENDITURE	\$1,205.00

TOTAL INCOME - EXPENDITURE

\$2,045.99

NOTES

1/ Sale of donated recumbent \$400 & donation
2/ Insurance for 2011-12 renewed after 30/9/11
for \$1,017.42

3/ Jeff
Nielsen's 24
hour records