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Cover: An engraved acrylic plate, edge-lit with high intensity LEDs, gives this illusion of 3-D "depth".

Photo: Hongmei Yu

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Our Charter

We are IEEE Victorian Section, an autonomous all-Australian geographic unit of IEEE Inc., the world's largest technical-professional organisation dedicated to the advancement of technology for the benefit of humanity.

Our **Purpose** is to promote the theory and practice of electrical and electronics engineering and the related arts, sciences and disciplines, for human-centric purposes.

Our **Values** derive from our full and unequivocal upholding of the IEEE Code of Ethics (www.ieee.org/about)

Our **Strategy** is to organise and present a diverse program of meetings conferences and events to meet member needs and technical interests, together with such other activities as are consistent with our corporate 'presence' and professional status.

We are successful when:-

- Our volunteers have an ongoing 'sense of purpose'
- Our working teams are buoyant, inclusive and diverse
- Our professional colleagues and communities value their relationships with us
- Our assets are wisely applied and sustainably maintained
- Our IEEE members derive real 'value' from their individual memberships

Chairman's Report

Despite global fluctuations in IEEE membership, Victorian Section has fared very well during 2016, maintaining and in some cases increasing our numbers in the various member categories.

In September, we joined with Engineers Australia and other sponsoring bodies in presenting an "Engineering & IT Career Expo". This inaugural event exceeded all expectations, with 23 companies exhibiting and over 1,800 visitors through the doors – a very successful outcome indeed!

In a further "first" for the Section, we hosted a major industry-engagement event attended by over 40 CEOs, general managers and senior executives, from both small and large organisations. We also established an Industry Engagement Board, which we hope will give new purpose and direction to our Industry Development plans, in line with established Section policy.

Our chapters and affinity groups also performed well during the year, with over 70 technical and special-interest events organised. While this total does not approach the all-time high (97) reached in the previous year, it was still a very commendable result for an IEEE Section of our size.

The year 2016 will also be remembered as a "year of awards", since several of our members were honoured for their achievements in their respective areas of activity.

As to the year ahead, the main item of interest for us, and for all Australian Sections, will be the global Sections Congress to be held in Sydney in August 2017. This will be the first time this triennial event has been held in Australia, and only the second time outside North America.

Following the Congress, we will be honoured by the scheduled visit of 2017 IEEE President Karen Bartleson. We look forward to welcoming Ms Bartleson and her accompanying colleagues to our Section.

I close by thanking our volunteers and members for their support, and I look forward to leading our Section during 2017.

Eddie Custovic Section Chair 2016/2017.

Review of Operations

SECTION LEADERSHIP

Following changes to our Constitution made in 2015, the tenure of Section Officer is now two (2) years. Accordingly, the current office-bearers will continue in office during 2017, and are:-

Edhem Custovic, Chair
Golnar Khomami, Vice-Chair
Enn Vinnal, Treasurer
Nissanga Mendis, Secretary
Mehrnaz Shoushtarian, Assistant
Treasurer,

Elspeth McKay, Assistant Secretary Elections for 2018/2019 Section Officer positions will be held late in 2017. The Call for Candidate Nominations is scheduled for issue in June/July 2017.

MEMBERSHIP DEVELOPMENT

Our Section membership profile as at December 2016 is shown in the table on the next page. Our membership retention during the year has been generally satisfactory, although there are still a number of 'soft areas'. The latter may require completely new strategies to address satisfactorily. We note in particular that the new

directions being pursued by other

learned societies in Australia represent a new level of competition for IEEE member recruitment such as not previously encountered by our Section. Thus, we will need to devise effective countermeasures, particularly in support of our industry-employed members, a sector we are particularly keen to develop.

We expect that the recently-convened Industry Advisory Group, mentioned earlier in the Chairman's Report, will give valuable impetus to such strategies

CHAPTERS

The activity level of our technical chapters was somewhat less than in 2015, although still quite high in historical terms.

During 2016 the chapters ran a total of sixty-six (66) technical and special-interest events. A number of these were organised jointly with collaborating chapters or other subunits.

The star performers were SMC Chapter and SSIT Chapter, a performance level they have both maintained for several years. But in fact, almost all chapters reported strong levels of activity. Five units organised or co-organised six or more events, and the overall average

Member Grade	2016	2015	%
Fellow	19	20	-5
Senior Member	167	156	+7
Member	1400	1421	-1.5
Associate Member	28	29	-3.5
Graduate Student Member	305	271	+12.5
Student Member	216	109	+98
Total Section Membership:	2135	2006	+6.4

was 4.4. Only two chapters failed to reach the required minimum of two (2) activities for the year.

Detailed activity profiles of our fifteen chapters are given in a later section of this Annual Report.

AFFINITY GROUPS

Our three Affinity Groups are: Women in Engineering, Young Professionals and Life Members, respectively. These groups operate in much the same way as the technical chapters, but without a stated technical speciality or defined field of interest.

All three Affinity Groups were active during the year, led by Women in Engineering, who have maintained an unassailable level of performance in recent years.

The aggregate number of affinity

group events held was eighteen (18). Several of these were organised jointly with other subunits.

The WIE program of workshops, displays and demonstrations of "wearable" electronics has attracted a great deal of attention, both inside and outside the Section. We naturally hope that these very successful (and creative) activities will continue for some time. They may well prompt similar or new initiatives in the future.

The Life Members and Young Professionals were both active in 2016, although both groups have at times had difficulty in maintaining an adequate number of volunteers, particularly in the key leadership positions.

Further information on the activity profiles of the three affinity groups is

given in a later section of this Annual Report.

STUDENT BRANCHES

Victorian Section has seven (7) IEEE Student Branches and all but one of these reported satisfactory levels of activity during 2016.

In an end-of-year assessment by the Victorian Section Executive, Monash University SB was deemed the Outstanding Student Unit for 2016.

RMIT University SB was commended for having the "most improved" performance record for the year.

RMIT's "return to the fold" after several years of inactivity is most welcome, in view of the large student population of that university.

But in fact, almost all student branches performed well, and we are pleased to acknowledge the energy and vitality of our student members in their respective operating units.

As has been our established practice, the Section sponsored three student members to attend the IEEE Region 10 Student Congress, held in Bangalore, India. This year individual travel grants were given to Gitansh Khirbat, Jignesh Jokhakar Prashant Dabholkar and Rebecca Thorburn

Further information on the activity profiles of our Student Branches is given in a later section of this Annual report.

STUDENT PAPER AWARD

This year the previous Student Paper Travel Grant, first introduced in 2009, was re-styled as a straightforward Best Paper prize, with several significant changes to the competition details and conditions of entry. Only one such award is now offered annually in place of the semi-annual competitions previously in operation.

The 2016 winner of the new Prize was Saman Gorji of Swinburne University of Technology.

The judges reported that the quality of the papers submitted continued at the high level generally achieved under the old competition.

INDUSTRY PAPER AWARD

A similar Best Paper Award is aimed at IEEE members working in Industry or Government, or otherwise employed outside the Academic and Research sectors. Our aim here is to encourage a greater degree of participation in IEEE conferences by Industry members, consistent with the general industry-

development strategies of the Section

This award was first launched in 2015 and the response to date has been somewhat equivocal. Further development of the program may be required to properly engage with the relevant membership sectors.

EXTERNAL SPONSORSHIPS

The Section is pleased to offer limited awards and prizes in selected areas of activity wherever our financial resources permit, and subject always to our constitution and bylaws.

During 2016 we supported the Endeavour program at the University of Melbourne, the Engenius Awards and Exhibition at RMIT University, and the Engineering Awards program at La Trobe University.

This year our participation in the Endeavour program was in the form of a named IEEE Prize, in place of the generic support previously provided. The prize was presented by Past Section Chair, Anthony Gascoigne.

We expect to continue our sponsorship of the above activities during 2017.

CONFERENCES

Several international conferences were held in Melbourne and elsewhere in the Section during 2016, including the following notable events:-

TM21C, 13-15 July 2016. This was the third in the "Thinking Machines" series marking the pioneering work of US mathematician Norbert Wiener. The Conference was held at The University of Melbourne and sponsored by the IEEE Society on Social Implications of Technology.

ISGT-Asia 2016, 28 November – 01 December 2016. This was the latest in an annual series of Innovative Smart Grid Technology conferences sponsored by the IEEE Power & Energy Society. The conference was held at the Melbourne Events and Convention centre, Southbank.

OzCHI 2016, 29 November – 02 December. OzCHI is an annual series of conferences sponsored by the Computer-Human Interaction Special Interest Group (CHISIG), a nonprofit all-Australian body. The event was held in Launceston, Tasmania.

IEEE Victorian Section was a Technical Co-Sponsor of each of the foregoing events.

In 2017 we look forward to the International Conference on

Mechatronics, which will be held at the Gippsland campus of Federation University.

UPLINK

Three issues of the Section newsletter *Uplink* were published during 2016. This publication has long been one of our main channels of communication with the Section membership. We publish articles on technical, professional and historical topics, also reports on significant events and activities in the Section.

Uplink is edited by Dr Alan Harvey and compiled by Marie van der Klooster and other volunteers.

Contributions to this publication are always in demand, and photographs of interest to IEEE members are particularly welcome.

Intending contributors should contact Dr Harvey (contact@ieeevic.org) for further details.

INDIVIDUAL AWARDS & ACHIEVEMENTS

We are pleased to acknowledge the following personal attainments by volunteer members of our Section:

Dr Andre Oboler has been elected Vice-Chair of the IEEE Australia Council

Dr Mehrnaz Shoushtarian received the IEEE Region 10 Outstanding Professional Volunteer Award (WIE Division) for 2016.

Assoc. Prof. Lyria Bennett-Moses was ranked equal-first in a professional essay competition organised by the Law Society of NSW. Her essay topic was "Technology and the Law".

Prof. Henry B.L. Duh, formerly of The University of Tasmania, has been appointed to a Chair in Information Technology at Latrobe University.

Mr Gitansh Khirbat, PhD candidate at The University of Melbourne and Chair of the UniMelb IEEE Student Branch, was awarded a Richard E. Merwin Scholarship of the IEEE Computer Society.

ANNUAL GENERAL MEETING

The Annual General Meeting of IEEE Victorian Section was held at Graduate House, Parkville, on 8th December 2016. Sixty-five (65) persons attended, including IEEE Members and their partners and Invited Guests. Many Student and Graduate Student members and their partners were present.

Section Vice-Chair, Dr Golnar Khomami, presided in place of Section Chair Eddie Custovic, who was overseas at the time. A prerecorded audio-video presentation by the Section Chair was one of the main items of business.

The guest of honour and invited speaker was Professor Iven Mareels, Dean of Engineering at the University of Melbourne. Prof. Mareels gave an interesting account of his early professional career in Europe

Long-serving volunteer and former Section Chair Robert Slaviero received the Section's inaugural Distinguished Service Award in recognition of his valuable service, "...with unassuming willingness and competence", in many different roles, for over 20 years.

Dr Mehrnaz Shoushtarian received a High Commendation Award for her "significant contributions" as Past Chair of the WIE Affinity Group, current Chair of the EMBS Chapter, and (during 2016) Section Assistant Treasurer.

Ms Harmony Yu, a final-year Honours student at La Trobe University, gave a brief musical recital on her *er hu*, a traditional two-stringed Chinese instrument. The talented Ms Yu has performed at previous Annual General Meetings of the Section.

IEEE AUSTRALIA COUNCIL

The Section was active in IEEE Australia Council proceedings during the year. Items of agenda in which the Section played a leading role include the revision and updating of the Council Bylaws, and finalisation of the Rules & Guidelines protocols for ANZSCON, the Australia -New Zealand Student/WIE/YP Congress.

We were similarly proactive in regard to the general Financial Practices of the Council. Improvements in financial reporting that have since been introduced were based largely on Victorian Section submissions.

This active involvement will continue in the future in accordance with established Section policy.

IEEE REGION 10

The Annual General Meeting of IEEE Region 10 was held in Kuala Lumpur, Malaysia, in February/March 2016. The Section was represented by Section Chairman Edhem Custovic.

A key agenda item was the forthcoming 50-Year celebrations of Region 10, which was founded in 1967. A Commemorative Book is planned to mark this event.

Apart from the routine Plenary

sessions, separate business meetings were convened by the various regional Committees and National Councils.

IEEE Australia Council met on the latter basis, and the Section was again represented by Section Chair Edhem Custovic. This was the only face-face meeting of Australia Council during 2016.

In a separate item of Regional interest, in October 2016 former Section Vice-chair Dr Alan Harvey travelled to Kuala Lumpur at the invitation of the Circuits & Systems Chapter of IEEE Malaysia Section and presented two technical seminars.

Dr Harvey has made several previous Invited Speaker visits to Malaysia.

IEEE GLOBAL

As noted in the Chairman's Report, the key global event of the coming year.

As mentioned in the Chairman's report, the key event of 2017 will be IEEE Sections Congress, which will be held in Sydney, NSW, in August 2017. This will be the first time that the Congress has been held in Australia, and only the second time outside North America.

Following the Sections Congress,

2017 IEEE President Karen
Bartleson, 2016 President Barry
Shoop, and 2018 President-Elect Jim
Jeffries will visit Melbourne.

We look forward to welcoming these distinguished visitors to our Section. We hope to have some constructive discussions with President Bartleson and her colleagues, on various items of IEEE business and policy development.

In a further item of note for all IEEE members, during 2016 a proposal to make significant amendments to the IEEE Constitution was narrowly defeated when put to a worldwide vote of members.

But in view of the very small margin of the NO vote, the future of the said Amendments remained uncertain at the date of publication of this Annual Report.

Financial Overview, 2016

A summary of Victorian Section financial results for 2016 is set out in the Table overleaf. Further details are given in the Consolidated Accounts appended to this annual report.

In accordance with established business practice, all reported amounts are shown exclusive of GST, where this tax is applicable.

Compared to 2015, the Balance Sheet shows an increase in net assets of \$7,858, prior to inclusion of the IEEE Headquarters Section Reserve.

Cash holdings at the end of the year were \$176,959, an increase of \$7,771 over the previous year.

The Profit & Loss statement shows that in comparison with the previous year, revenue increased and at the same time expenditure decreased, leading to a rise in net earnings of 5%.

These results, together with our adequate cash reserves, bode well for the financial health of the Section during the coming year.

But an aspect of some concern is the steadily-increasing amount of the IEEE Headquarters Section Reserve Allocation, which now stands at 27% of total section assets.

We have been assured that the allocated amount is "only a book entry" for the balance sheet. But if the Allocation continues to rise at the same high rate in the future, its ultimate impact on our Section operations is unclear.

In overview, our expenditure in 2016 was less because of the smaller number of member-facing meetings funded by the Section. And the increase in revenue was largely due to two high profile career-orientation events.

The Section also operated a thirdparty ledger for the SSIT Norbert Wiener Conference held in Melbourne in July 2016.

The funds in that account belong to SSIT and are not included in the Section financial report.

Enn Vinnal
Section Treasurer
e.vinnal@ieee.org

Item	2016	2015	%
Revenue	58,740	42,166	+39
Expenditure	51,600	60,709	-15
Operating Surplus (Deficit)	7140	(18,543)	
Cash at Bank	176,959	169,188	+4.6
Bank Interest Earned	3553	4236	-16
IEEE HQ Rebate Received	17,248	16,849	+2.4
IEEE Reserve Allocation	47,123	30,804	+53

Year-on-year financial summary for 2016

Tasmanian Sub-Section

Although we still have some distance to go in restoring the Tasmanian Sub-Section to its normal state as a semi-autonomous subunit of our Section, there was certainly plenty of action in Tasmania during the year, not all of it visible from the mainland.

We were particularly pleased to learn of the continuing success of the Big Data Visual Analytics (BDVA) conference. The first in this series was held in Hobart, Tasmania in 2015, largely on the initiative of Dr Ulrich Engelke of CSIRO Data 61, also based in Hobart. IEEE Victorian Section was a Technical Co-Sponsor of the event

The success of the founding event lead to a sequel in Brisbane in November 2016, and the BDVA label will again appear at a similar conference now being organised in Adelaide during 2017.

In September 2016, Section Past Chair Anthony Gascoigne travelled to Hobart to meet Dr Engelke, who subsequently agreed to act as the Tasmanian representative of the Victorian Section Computer Chapter. We hope that this CS connection can be developed to the stage where

regular computer-oriented events are held in Hobart, as a second tier of the Computer Chapter program.

Another matter of interest is the continuing success of the OzCHI series of conferences on computer-human interaction. The latest in this series was held in Launceston, Tasmania in November 2016. The event was hosted by The University of Tasmania, HIT Laboratory.

As a closing comment, we note that Tasmania's unique situation as a provider of low-cost hydro-electric power should provide many opportunities for professional activity and discussion in this context. We hope that our Power and Energy Chapter will be able to take a leading role in promoting such discussion – in both Victoria and Tasmania.



EMC Chapter's Mark Mifsud (L) with Distinguished Lecturer, Scott Piper



Lyria Bennett-Moses: winning essay on Law-Technology interface



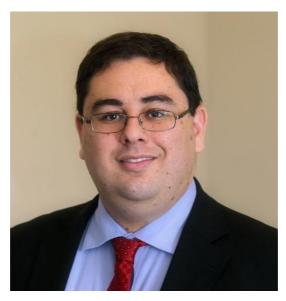
Mehrnaz Shoushtarian: Outstanding WIE Volunteer



Gitansh Khirbat: awarded Richard E. Merwin Scholarship



Robert Slaviero: Distinguished Service Award



Andre Oboler: elected Vice-Chair of IEEE Australia Council



A full house for this Australian Defence Force presentation to La Trobe University students



Monash University students survey brown coal mining operations in the La Trobe Valley

Subunit Activity Profiles

CHAPTER ACTIVITIES

The performance of our fifteen (15) technical chapters is summarised in the Table below. Although the overall total of 66 activities does not approach the all-time record of 90 achieved in the previous year, the general level of activity was very commendable, and one of the highest ever recorded on an historical basis. This achievement is particularly notable in view of the **zero** tallies of two chapters, that is, no activities reported. But no fewer than five (5) chapters logged six or more activities, making these units eligible for bonus payments in our 2016 IEEE Rebate account.

Chapter	2016	2015
Circuits & Systems/SSC Joint Chapter	4	4
Communications Chapter	5	2
Computational Intelligence Chapter	0	4
Computer Chapter	6	6
Education Chapter	2	2
Electromagnetic Compatibility Chapter	3	4
Engineering in Medicine & Biology Chapter	6	9
Microwave Theory & Techniques/Antennas & Propagation Joint Chapter	4	6
Photonics/Electron Devices Joint Chapter	0	6
Power & Energy Chapter	6	5
Signal Processing Chapter	3	5
Systems, Man & Cybernetics Chapter	9	20
Social Implications of Technology Joint Australian Chapter	12	10
Technology & Engineering Management Chapter	2	4
Vehicular Technology Chapter	4	3
Total - all chapters:	66	90

AFFINITY GROUP ACTIVITIES

Of our three Affinity Groups, Women in Engineering in Engineering led the way in 2016, with 11 reported activities, some 61% of the affinity group total (18). Also to the credit of the women is their multifarious range of contacts and influence established in "outside" organisations. The goodwill so created has been very much to the benefit of the Section, particularly in terms of our corporate objectives and strategies. None of which detracts from the quite creditable performance of the Life Members and the Young Professionals. Both of these groups have now established their own distinctive identities in the Section, which we hope will grow still stronger in the future.

Group	2016	2015
Life Members Affinity Group	3	3
Women in Engineering Affinity Group	11	18
Young Professionals Affinity Group	4	4
Total – all affinity groups:	18	25

Student Branch Activity Profiles

Four of our seven IEEE Student Branches reported very strong levels of activity during 2016, one student branch had just two events, and there was one defaulting unit that failed to report any activity. The star performer was Monash University SB with eighteen (18) events. But in fact, all of the top four units deserve great credit for the commitment and energy of their volunteers. The SB activity profiles are summarised in the Table below. We wish all student branch leaders and members every success in the coming year.

Student Branch	2016	2015
Deakin University Student Branch	0	4
La Trobe University Student Branch	12	10
Monash University Student Branch	18	15
RMIT University Student Branch	13	0
Swinburne University of Technology Student Branch	4	0
University of Melbourne Student Branch	16	20
Victoria University Student Branch	2	2
Total – all student branches:	65	51

Section & Chapter Officers

SECTION OFFICERS

Edhem (Eddie) Custovic - Chair, e.custovic@ieee.org

Golnar Khomami - Vice-Chair, g.khomami@latrobe.edu.au

Enn Vinnal - Treasurer, e.vinnal@ieee.org

Nissanga (Nishad) Mendis - Secretary, nnrm786@uowmail.edu.au

Elspeth McKay, Assistant Secretary, elspeth.mckay@rmit.edu.au

Mehrnaz Shoushtarian – Assistant Treasurer, mehrnaz.shoustarian@gmail.com

Anthony Gascoigne - Past Chair, aeg@gnsassoc,com.au

CHAPTER & AFFINITY GROUP OFFICERS

Alan Harvey - Circuits and Systems / Solid-State Circuits Societies Chapter Chair, acupak00@hotmail.com

Kandeepan Sithamparanathan - Communications Society Chapter Chair,

Annick Boghossian - Computer Society Chapter Chair, annick.n.bogossian@ieee.org

Kevin Korb - Computational Intelligence Society Chapter Chair, kevin.korb@monash.edu.au

Paul Junor - Education Society Chapter Chair, p.junor@latrobe.edu.au

Mark Mifsud - Electromagnetic Compatibility Society Chapter Chair, mark.mifsud@NovaSystems.com

Mehrnaz Shoushtarian - Engineering in Medicine & Biology Society Chapter Chair, mehrnaz.shoushtarian@gmail.com

Stephan Burger - Microwave Theory & Techniques/ Antennas & Propagation Societies Chapter Chair, s.j.burger@ieee.org

Malin Premaratne - Photonics/ED Societies Chapter Chair,

Apel Mahmud - Power & Energy Society Chapter Chair,

Karim Seghouane - Signal Processing Society Chapter Chair,

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Lyria Bennett-Moses – Society on Social Implications of Technology Chapter Chair, *lyria@unsw.edu.au*

Saeid Nahavandi - Systems Man & Cybernetics Society Chapter Chair, saeid.nahavandi@deakin.edu.au

Claudio Insaurralde - Technology & Engineering Management Chapter Chair, c.insaurralde@ieee.org

Mehran Ektesabi - Vehicular Technology Society Chapter Chair, mektesabi@swin.edu.au

Keith Adams - Life Members Affinity Group Chair, wortel30@gmail.com
Chamath Divaratne - Young Professionals Affinity Group Chair,
Nalika Dona - Women-in-Engineering Affinity Group Chair, Nalika.dona@gmail.com

For further contact details, please email to contact@ieeevic.org

Financial Accounts

I. Consolidated Operating Statement (calendar year 2016)

	2016 (\$)	2015 (\$)
Revenue		
Meetings & social	11,589	1917
Conferences/workshops	18,913	9977
Student activities	2287	229
Merchandise	713	0
Rebate from IEEE HQ	17,248	16,849
IEEE societies	2602	4636
IEEE Australia Council	0	700
Bank interest	3553	4236
Miscellaneous receipts	802	474
Total Revenue:	58,740	42,166
Expenditure	'	
Meetings & social	15,065	15,376
Conferences/workshops	12,393	17,842
Student activities	6138	4771
Sections Congress expenses	0	3618
Grants & awards	10,576	10,946
Travel & accommodation	1186	3283
Publication Expenses	1115	61
IEEE Australia Council levies	0	1647
Postage, supplies & miscellaneous	1686	3227
Total Expenditure:	50,230	60,709
Sumly (Deficit).	8510	(10 542)
Surplus (Deficit):	8510	(18,543)

II. Balance Sheet as at 31 December 2016

	2016 (\$)	2015 (\$)
Assets		
Cash at bank	176,959	169,188
Receivables	1277	1885
GST tax credits	782	1141
Total Assets:	179,018	172,214
Liabilities		
Accounts payable	569	342
ATO creditors	751	147
Total Liabilities:	1320	489
Net Assets:	177,698	171,725
Reserves		
IEEE – Section Reserve Allocation	47,123	30,804
Net Assets Less Reserves	130,575	140,921

III. Cash Flow Statement (calendar year 2016)

	2016 (\$)	2015 (\$)
Operating Cash Profile		
Cash from (to) Section activities	(15,632)	(59,997)
IEEE - HQ rebates	17,248	16,849
IEEE – other receipts	2602	8484
Bank interest	3553	4236
Loan repayments to Section	0	4111
Net Cash Inflow (Outflow):	7771	(26,317)
Cash Reconciliation		
Cash at start of year	169,188	195,505
Cash at end of year	176,959	169,188
Net Change in Cash Held:	7771	(26,317)

