



The Inlet

Newsletter for Guardians of Pāuatahanui Inlet

DECEMBER

2017

The Inlet is a newsletter that brings together local and regional news affecting the Pāuatahanui Inlet and its environs.

The Inlet comes out three times a year and current or back issues can be downloaded from our website.

The newsletter includes items of concern that affect the area as well as general interest topics for everyone.

Please contact us if you would like to contribute to The Inlet.

P O Box 57034

Mana

Porirua 5247

pauainlet@gmail.com

www.gopi.org.nz

Inside this issue:

- Lamb & Calf Day 2
- Inlet Clean-up 2
- Wildlife Reserve Trapping Program 3
- Fernbird Update 4
- FEATURE ARTICLE - Geology of the Inlet 5
- To Dredge or Not to Dredge? 8
- On The Horizon 8
- Family Corner 9
- Emergency Numbers 9
- Membership Form 10

FROM THE CHAIRPERSON

As everyone in the communities near the Inlet will know, the year is ending with a prolonged spell of hot dry weather. This is in total contrast to the same time last year when we were dealing with slips and a major flood. These dramatic weather fluctuations seem to be increasingly common and we should now be thinking about the impact these extremes are having on the flora and fauna of the Inlet, an effect greater than it is on ourselves.



During the year we have been busy with our usual annual activities: the photographic competition, the clean-up, membership of the Porirua Harbour Education Group, updating and adding to the GOPI website. We also made a submission to the Porirua City Council on proposed changes to the Dog Control Policy and associated laws. I can't, of course, forget the AGM and the statutory requirement to prepare and file annual returns as a registered charity and incorporated society.

In the last few weeks we lent equipment, and support, to the organisers of a shellfish survey in the Onepoto Arm of the Harbour. We also met a consultant preparing a report on proposals for dredging in the Harbour, the outcome of which is included in this edition of the newsletter.

I thank all the management committee for their work during the year: Helen, Stephen, Janet, Lindsay, John McKoy, Christine, Michael and John Wells.

Finally, I would like to recommend a visit to an excellent new exhibition in the education room at Pataka. It tells the story of natural and human history in the Harbour from the distant past to more recent times. It is an ideal way to entertain children over the holidays and, quite possibly, learn something yourself.

Very best wishes to you all for a happy and safe holiday.

Tony Shaw

LAMB & CALF DAY

Pāuatahanui School's annual gala, known as Lamb & Calf Day, was held in very good weather on 4 November. By all accounts it was an enormous success with a large number of visitors from within and outside the area.

As usual GOPI was granted space to set up a stand and be present during the day to talk about its aims and objectives and to answer questions from the general public. This year the stand was covered by four of the committee, taking turns throughout the peak, four-hour, period (Tony Shaw, John Wells, Michael Waldron and Janet Ryan). Tony was encouraged by his experiences of the day, making contact with a number of people interested in finding out more about our current activities, with some asking questions related to the issue of dredging as reported in the Whitby Newsbrief. Each of the other members also made contact with several people interested in talking with us.

It is always of value for us to have a stall at such a well attended event. It's a chance to be seen by, and talk to, a lot of people from local communities who might otherwise not be aware of GOPI and the importance of looking after the Inlet.

Our regular attendance gradually establishes us as part of the community. <

CLEAN-UP DAY

Sunday, 12 November, was the day of our Annual *Clean-Up* for 2017 on the shores of Pāuatahanui Inlet. As is quite often the case, the weather was very accommodating for the occasion with just a couple of minor showers during the morning. Our volunteers' spirits were never dampened and all seem to enjoy the event.

Just over 50 people arrived for the 9:30am start at Browns Bay ready to do their bit. There were sufficient numbers to cover all the areas around the Inlet. Among them were regulars who come back each year and enjoy the contribution they can make to keeping shores clear of rubbish. Interestingly, some of these regulars commented that, in their opinion, there was less litter than usual around the shores at the locations they were allocated.

If that was the case, this really is good news. <



Reception desk for Inlet Clean-up. From left to right: Janet Ryan (GOPI), Tony Shaw (GOPI), Sharli Jo Solomon (Conservation Volunteers), David Wilkinson (Conservation Volunteers) and Phil Rhodes.

Photo by Councillor Anita Baker (PHAECT).

ANSWERS TO FAMILY CORNER

A: Kakaho Stream; B: Motukarakaka Point; C: Horokiri Stream; D: Ration Point; E: Pāuatahanui Stream; F: Duck Creek; G: Bradeys Bay; H: Browns Bay; I: Golden Gate Peninsula; J: Moorehouse Point; K: Shearers Point; L: Ivey Bay.

WILDLIFE RESERVE TRAPPING PROGRAMME

Trapping, the control of predators by means of mechanical trap devices, is a vital part of the Wildlife Reserve's regular management regime. While the introduced common brushtail possum (*Trichosurus vulpecula*) takes centre stage nationally in the battle against unwanted pests, for Pāuatahanui Inlet Wildlife Reserve rats, mice and stoats are the primary targets.

So, with the arrival of the fernbirds in May, which we reported on in the last issue of *The Inlet*, the importance of keeping the pest population under control, if not eradicated, was even more important if these, low-nesting, birds were to become established in the reserve. For that reason the regular pest programme was expanded, prior to arrival of the birds, to encompass the surrounding properties in what has been described as the 'halo' around the reserve. Mary Dinniss, former committee member of GOPI and now a member of the Wildlife Reserve Management team, took on the responsibility of bringing the surrounding community on board with this vital trapping programme. Since the start, Mary has been pivotal in organising the wider-area trapping programme, talking to all the house-holders around the Inlet.

All businesses with food on the premises, like the cafés for instance, are required by law to use bait stations around their properties. However, for the reserve and the local residential community, poison is not allowed. Hence the use of kill-traps. The programme that Mary is managing is also part of the Pest Free Porirua initiative that involves other suburbs in the city with the aim of finally covering the whole of the Porirua area.

Several types of kill-traps can be used. The most basic is a Victor Professional Rat Trap. Despite its name this is an easy trap to set by anyone and ideal for capturing rats. It should, however, only be used in a tunnel to avoid capturing birds and is not employed in the Reserve.



DOC200

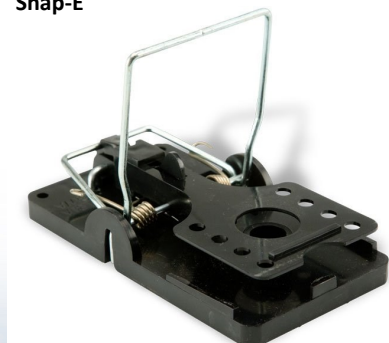


The DOC200 trap is a good quality trap designed by the Department of Conservation to humanely kill stoats, rats and hedgehogs. It also needs to be used in a box to minimise the chance of birds or pets being killed. Its biggest drawback is the difficulty of setting it. Users would need to have a training session to avoid injuring themselves. In general this is also not used in the Reserve.

The Snap-E trap, however, is the one being used for this programme. It is easy to set and therefore suitable for anyone at home. It is available in two sizes, rat and mouse. In this programme they are paired up inside a wooden box with an open-mesh window at the rear so that a target animal can see straight through. Peanut butter is normally used as bait, with Nutella as an alternative. The rat Snap-E is not set off by a mouse so this is placed at the front with the smaller Snap-E at the rear.

Snap-E can also be used to catch stoats with dehydrated rabbit meat as the ideal bait.

Snap-E



Trapping Program cont....

What the trapping programme has achieved is outstanding. As Wanda Tate of the Wildlife Reserve management team has said: 'We are very pleased with the dedication of the volunteers to this trapping programme which has continued right through the breeding season and seems to be keeping control of mice as well as rats and stoats. Having the traps checked so frequently makes a huge difference to their effectiveness.'

This has surely made a big difference in helping the fernbirds become established, which appears, tentatively, to be the case. <

Below is just a brief update to the fern birds programme which follows on from our report in the April issue of The Inlet.

FERN BIRD UPDATE

Since the translocation of the fernbirds in April this year keen interest is being taken on the success or otherwise of this project. We can, at this stage, give some feedback, from what is understood to be the outcome so far.

Of the 22 birds that were successfully released into the reserve it is thought, with some confidence, that 10 or more individuals have settled there, which, if that is the case, represents a handsome 50% success rate - more than is usually considered as a successful outcome with projects of this nature.

It is now well into the breeding season, and it is hoped that some of the birds will have paired, laid eggs and hatched young. Any fledglings that do survive will call the reserve home, and begin the new resident population for Pāuatahanui. It is with cautious optimism that the team involved has identified at least two un-banded birds in the reserve and these will definitely be from successful breeding pairs.



Photo of a ringed fernbird in the reserve. Dave Cornick

Unfortunately, power-lines contractors with helicopters, chainsaws and a general disturbance of the habitat during replacement of power poles in the reserve, are thought to have affected some of the breeding pairs. Also of concern now is the threat of a looming severe drought which will directly affect the insect population and thus the insect-eating fernbirds' food supply. These factors will continue to raise concerns for the current breeding season which runs through to February. Potentially, fernbirds can have 3 clutches, so late hatchings could still be vulnerable.

Kevin Parker, project manager for the translocation, will wait until early March before getting the Ornithological Society to do another monitoring round. By that time it should be clear whether any chicks have made it through the summer. Based on the success seen so far, however, the second batch of birds to be taken from Rotokare Scenic Reserve has been booked for April 2018. This is the remaining number that will be needed to establish a viable breeding population at Pāuatahanui. <

FEATURE ARTICLE

In any landscape, on any land, the hills, valleys and other features we can see are just the outward expressions of underlying rock formations, fracture planes, erosion and deposition patterns. The modern landscape is the result of very long term processes that result in what is called the geomorphology of a region. Geology is a fascinating subject that helps us understand how the current geomorphology came to be. In the following Feature Article we look at the geology of Pāuatahanui Inlet and examine why this body of water, and its surrounding hills, has the form we see today.

Geology of Pāuatahanui Inlet



Greywacke on Camborne Walkway showing layering and tilting

If you walk around Pāuatahanui Inlet you will see many rocky outcrops, both in the cliffs and on the shores that surround it. These outcrops often show layering of the rocks, with variations in texture, colour and hardness. The layers also vary in thickness and are tilted close to vertical. They alternate between fine-grained argillite, a hardened clay, and medium-grained sandstone, with the well-known name, greywacke (German for 'grey rock'). This type of rock formation is seen throughout the Inlet's catchment and, in fact, throughout New Zealand, where much of the mountain chains of the North and South Island are built from it.

Why is this so?

Greywacke and argillite are made from sediments deposited in the ocean over a very long duration, between 255 and 170 million years ago (*Triassic to Jurassic*). The sediment consisted of mineral grains eroded from granitic mountains and washed into the sea by ancient river systems. Coarser grains settled first, close to shore, while finer particles were carried further out and built up as muds on the deeper ocean floor. Periodically the coarser sediments were redeposited into deep water by submarine avalanches called turbidity flows and, in this way, alternating layers developed resulting in the stripy rock pattern that we see today. This process continued for many millions of years in a deep trench located off the coast of an ancient super-continent called *Gondwana*, when Australia and Antarctica were not separate continents but part of a single, very large, landmass. As the sediments continued to thicken, deeper layers became compacted, and heated, and slowly turned into rock.



Typical greywacke rock outcrop

About 120 million years ago (mya), in the *Mid-Cretaceous*, crustal movements pushed the offshore deposits

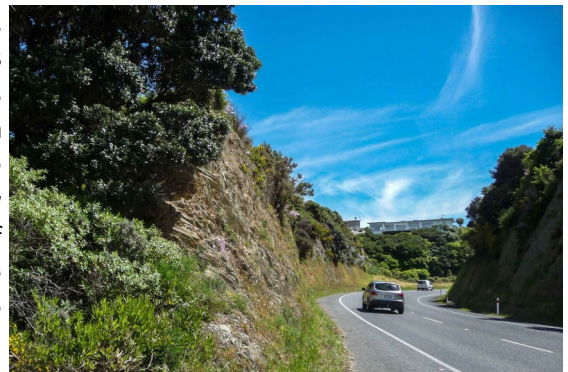
FEATURE ARTICLE cont.

up against the margin of Gondwana, compressing and folding the consolidated sediments which rose up out of the sea to form an extensive, mountainous land. Complex folds and faulting caused the originally horizontal layers to be tilted, sometimes vertically, and broken into many large and smaller blocks.

Then, between 80-60mya (*Late Cretaceous to Palaeocene*), after a period of stability, a rift formed inland that caused this block of land to separate from Gondwana creating, in the process, the continent of Zealandia and the Tasman Sea. The separated land gradually move eastwards into the Pacific, sinking slowly as it did so, while erosion wore the mountains down to a low lying, gently rolling, landscape called a 'peneplane', with flat surfaces produced by wave action at the margins. The remnants of this surface can be seen in many places around the Wellington region. Mana Island shows a typical example of the flat-topped surface created in this time. Much of the peneplane became covered with younger shallow marine mudstone and limestone.

Total submergence was averted when, around 23mya, a renewed phase of mountain building pushed the land up again, out of the sea, creating the Southern Alps and the North Island backbone of hills, such as the Rimutakas and the hills of the Wellington region. Most of the younger sediments were eroded away exposing the old bedrock which was then eroded into the landscape we see today.

So, Pāuatahanui Inlet is surrounded by 200 million-year old, Permian, 'basement rocks'. The only other geological periods represented here are very much younger scattered patches of unconsolidated sediments from the *Pleistocene*, less than 2.5mya, lying on top of the old bedrock. The onset of the Pleistocene Ice Age resulted in several periods of very low sea level when global glaciation stored up vast quantities of water, starving the oceans of their supply. In between the glacial episodes, interglacials occurred where the climate was as warm, or warmer, than it is today. The last glacial period, 22,000 years ago (ya), was the most extensive, with sea levels estimated to have been 130m below the present levels. Pāuatahanui Inlet was then a dry river valley that continued out to the coast lying 8km beyond Mana Island. It was part of a major fault-controlled river system that flowed westwards from Upper Hutt and through the Judgeford basin, a route that is now traced by the Haywards Hill road. The river built up wide terraces of gravels created by ice-fracturing of rocks from the cold, barren hilltops and it cut deep valleys as it kept pace with the lowering sea level. In some places layers of windblown silt called *loess* were deposited on the river gravels. These conditions lasted for thousands of years during the last glacial episode before the climate warmed into the present interglacial conditions.



Cutting through greywacke on Grays Road

The present warm *Holocene* epoch began around 10,000ya. Global sea levels rose for the last time, inundating Cook Strait and very rapidly flooding the Pāuatahanui river valley, to reach its present level about 7,000ya. The Inlet's coastline, initially sloping down to low-water mark, was eroded by wave action to create small cliff faces and a wave-cut platform around the edge. Fine sands, muds, silts and peats were deposited over the gravel layers as the forests returned to the surrounding hills. A sand bar formed at the entrance to the Inlet, narrowing the gap, on which the Mana Esplanade is now built. The old river bed, in some places around 13m below current harbour floor, began to be covered with accumulating sediment from the rivers and streams that flow into the harbour, a process of infilling that naturally continues today.

Despite flooding of the valley, remnants of the old river terraces, and a few marine deposits, can be found in several places around the shore as gradual tectonic uplift has raised them above the current sea level. Ration Point is one such site where the elevated bluff is covered by a bench of gravels from the penultimate glaciation. Another, more recent terrace, is situated behind the Pāuatahanui village on which St

FEATURE ARTICLE cont.

Alban's church is built, originally the site of Te Rangihaeata's pa.

The southern margin of the Inlet is surrounded by elevated cliff faces showing very weathered basement rocks, stained with iron oxides that give a reddish colour. These are the remains of an eroded landscape dating from the time of the peneplane phase when intense weathering took place. Much of this material has been removed during glacial times but there are local isolated outcrops like this one.

The tectonic movements associated with our, still-rising, landmass, as evidenced by the recent Kaikaoura uplift, have created many faults, some of which cross Cook Strait and track up the North Island. Movement and uplift on these faults have significantly changed the landscape. One effect was to raise the Western Hutt Hills, diverting the old river course so that it now follows the Wellington Fault down to Port Nicholson. The current Pāuatahanui Stream is therefore much smaller than the old river used to be.

The natural drainage systems in the catchment are almost entirely fault controlled and most show a marked parallelism, with a direction 5 degrees west of north, due to faults that were active during the Ice Age. The modern active faults trend north-east: the Pukerua, Ohariu, Ration Point and Moonshine Faults. The most important of these is the Ohariu fault. This was responsible for the creation of the Onepoto Arm which formed first by river erosion along the fault-crush zone prior to flooding by rising sea levels. From there the fault runs under the Paremata Bridge and across Pāuatahanui Inlet to follow the Kakaho Stream. It has been estimated that it last ruptured between 1070-1130 years ago, with a horizontal displacement of 3.7m, at an estimated 7.1-7.3 magnitude. An aerial view of the Kakapo valley shows the dog-leg paths of tributaries resulting from movements of this fault line.

However, the most significant geological event for the Inlet in recent times was the 1855 Wairarapa earthquake that raised the whole catchment by up to 1.5m. This uplift resulted in further shallowing of the Inlet and the exposure of the wave-cut platforms around which the roads have been built. Up until this time smaller ships were able to navigate up to at least Ration Point where there once was a customs house. Prior to 1855 the Pāuatahanui Stream entered the Inlet via a broad estuary. The uplift raised 40-50ha of tidal flats creating a salt marsh. It is on this newly exposed wetland area that the current Wildlife Reserve is situated.

In summary, therefore, the present geomorphology of Pāuatahanui Inlet is a result of tectonic faulting and uplift of the 200 million-year-old basement rocks, river erosion and re-deposition of sediments, and fluctuating sea levels through cycles of climate change. The history of the Inlet is written in the land. <

Below are a list of reference materials used to help in the writing of this article.

Ref: *Pauatahanui Inlet - an environmental study* (WB Healy 1980)
On Shaky Ground (Graeme Stevens, 1991)
Geology of the Wellington Area (Begg & Mazengarb, GNS 1996)
The Porirua Harbour and its Catchment (Porirua City Council 2010)

Thanks also to :
 Dr Cliff Atkins (Senior Lecturer In Geology, Victoria University)
 Wally Brown (Local resident)

Photos: Michael Waldron (GOPI)

Ration Point terrace



Old weathered greywacke outcrops exposed below The Portage, Whitby.

TO DREDGE OR NOT TO DREDGE? (that is the question!)

There were two items in the November issue of the *Whitby Newsbrief* that have re-awaked the conversation about dredging of Pāuatahanui Inlet. This is indicative of a push from members of the community who advocate dredging as a solution to the build-up of sediment and who perceive a lack of progress in dealing with the sedimentation through the programmes in the Te Awarua-O-Porirua Harbour and Catchment Strategy and Action Plan. Recreational benefits are also believed to accrue from the deepening of the harbour floor and associated shoreline improvements.

GOPI's management committee viewed the proposals as lacking the specific information required to make any meaningful comment on possible environmental benefits or risks to the Inlet. We have already advised our membership that further clarification would be needed before our stance became clear.

Meanwhile, Te Awarua-O-Porirua Harbour and Catchment Joint Committee commissioned an independent report from consultants Stimpson & Co to provide a high-level overview of the elements to be considered and the process required to consider the question of dredging in the whole Harbour. The report was received by the joint committee at a meeting on 5 December and is available to read from the Porirua City Council website. It is well worth reading, being very comprehensive, clear and logical in its conclusions.

We understand the question of dredging will be considered further when the Strategy and Action Plan is reviewed in 2020 and agree that this is a sensible approach. However, the chair of the joint committee, Councillor Anita Baker, in a press statement, has made it clear that the proposals are not likely to get the go-ahead. The Stimpson report concluded that dredging was unlikely to gain resource consent; at an estimated overall nominal cost of \$13m it would be too expensive to consider; and it would be in-effective if were to be undertaken.

With the opinions of the joint committee and the expert report as it stands we are unlikely to make any further submissions on this issue in the near future. <

ON THE HORIZON

Photographic Competition 2018

Each year the Guardians of Pāuatahanui Inlet run their now famous Photographic Competition and 2018 is no exception. With the uncharacteristically early, and possibly long, hot summer that we are now experiencing, there should be no lack of opportunities to take photographs of our beautiful Inlet and its various features: landscape, water, natural habitats and wildlife, and the human influences on these features.

More details for the competition will be published in the New Year and, when the closing dates are known, these will be put up on our website.

For now, however, we invite all keen photographers, beginners and experienced alike, to take their cameras to the Inlet and see what can be captured in print that will demonstrate the beauty, or otherwise of this place we call home. The same categories as last year are available to focus on: Nature, Scenic, Human Impact, Recreation and Artistic.

We also intend to run the Photographic Workshop again and Destina Munro has once more agreed to present the material for this class and guide the young photographers, at whom this workshop is aimed, on a walk through the Reserve to practice the principles discussed in the class. <



FAMILY CORNER

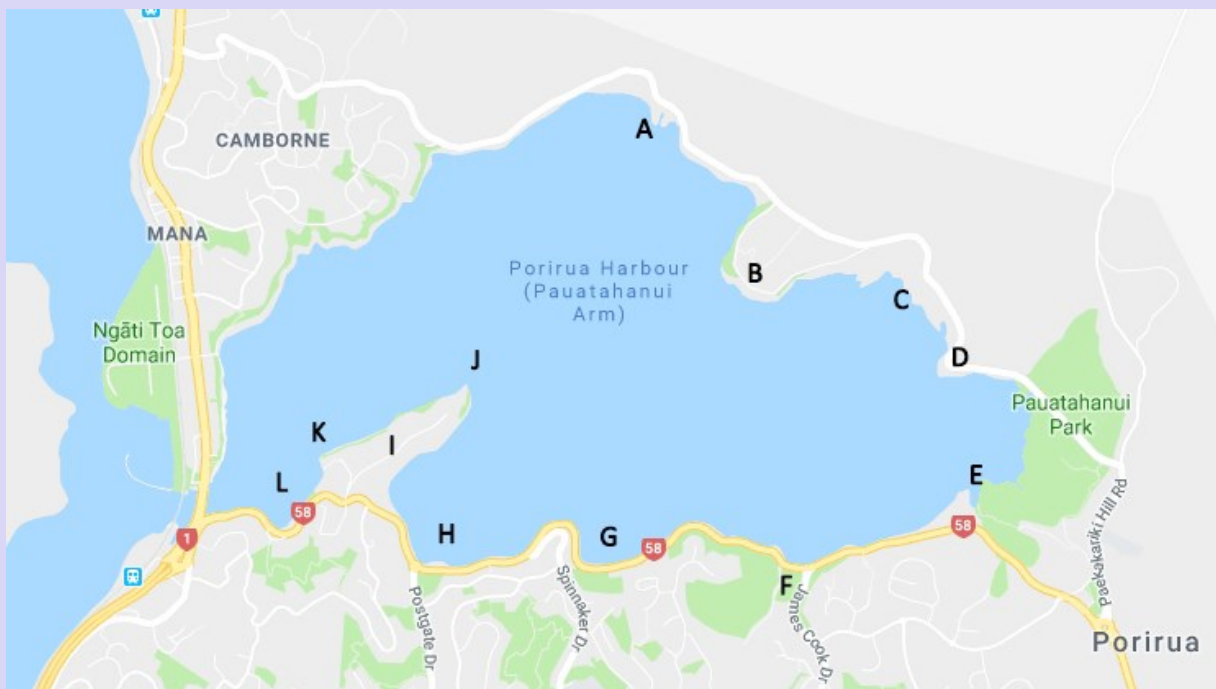
Pāuatahanui Inlet Map

Below is a map of our Inlet. Around the margins of the harbour are a series of letters from A to L (12 letters in total).

Each letter is the position of a place name around the shores of the harbour. Some of these names are well known but there are some that are not so familiar. Can you name them all?

Eg: letter E represents Pāuatahanui Stream. Two other streams are also labelled.

The full list is on page 2.



PLEASE SIGN UP A FRIEND OR NEIGHBOUR

Sign up a neighbour, friend, or another family member. Just explain to them that membership numbers really count in giving us a strong voice to argue for what we all value about the Inlet. Membership forms can be downloaded from our website <http://www.gopi.org.nz/assets/membersForm/Membership-new.doc> or copied from the one at the back of this newsletter. Better still, if you've received this newsletter by email, just forward it to others with a note encouraging them to join.

EMERGENCY NUMBERS FOR THE PĀUATAHANUI INLET

Pollution: Discharges of contaminants to air, land, storm-water drains, streams, rivers or sea and for after hours consent enquiries: Greater Wellington 0800 496 734 (24 hours)

Boating infringements: Greater Wellington 384 5708 (24 hours)

Illegal fishing activity: Ministry for Primary Industries 0800 476 224 (24 hours)

Pāuatahanui Wildlife Reserve: Department of Conservation 0800 362 468

Let us know what you have reported so we can keep an accurate record and follow up if necessary.

233 9391 (Chairman, GOPI) or pauainlet@gmail.com.



Guardians of Pāuatahanui Inlet

www.gopi.org.nz
pauainlet@gmail.com

Membership Form: new members

To join the Guardians of Pāuatahanui Inlet, you can pay your subscription either online or by post. **IF YOU ARE PAYING ONLINE, PLEASE REMEMBER TO FILL IN THIS FORM WITH ALL DETAILS, AND EMAIL OR POST IT TO US.**

Online payment

1. Pay your sub via e-banking into our Westpac account 03-1533-0009387-00. In the 'Particulars' or 'Reference' columns, **YOU MUST** write your surname **AND** initials **AND** the period of your sub (1-yr or 5-yr).
2. Then fill in this form and either email it to us at pauainlet@gmail.com or post it (see next column for our postal address)

Postal payment

1. Write a cheque made payable to 'Guardians of Pāuatahanui Inlet'.
2. Then fill in this form and send it, along with your cheque, to: Membership Secretary, Guardians of Pāuatahanui Inlet, Box 57034, Mana, Porirua 5247.

Please fill in your details for our records. If you are filling in this form electronically, **click** at the beginning of a dotted line and then type.

Name:

Address:

E-mail: Phone:

Please put next to the subscription you are paying (electronic completion – **highlight** the box and type lower case x.) We are also very grateful for donations. (We are a registered charity for tax purposes: registration number CC47523.)

One-year individual (\$12.00) Five-year individual (\$50.00)

One-year family (\$15.00) Five-year family (\$60.00)

Donation: \$ Do you require a receipt for your sub? or your donation?

Date subs paid: Reference appears as:

(e-banking only)

We'd like to send you newsletters and notices via email. May we do this?

Please tell us which of our activities you would like to be part of.

Annual Clean-up day Submissions to local bodies

Three-yearly cockle survey Our educational programmes for schools

Website and video clips Other:

NOW EMAIL OR POST THE FORM. THANK YOU AND WELCOME