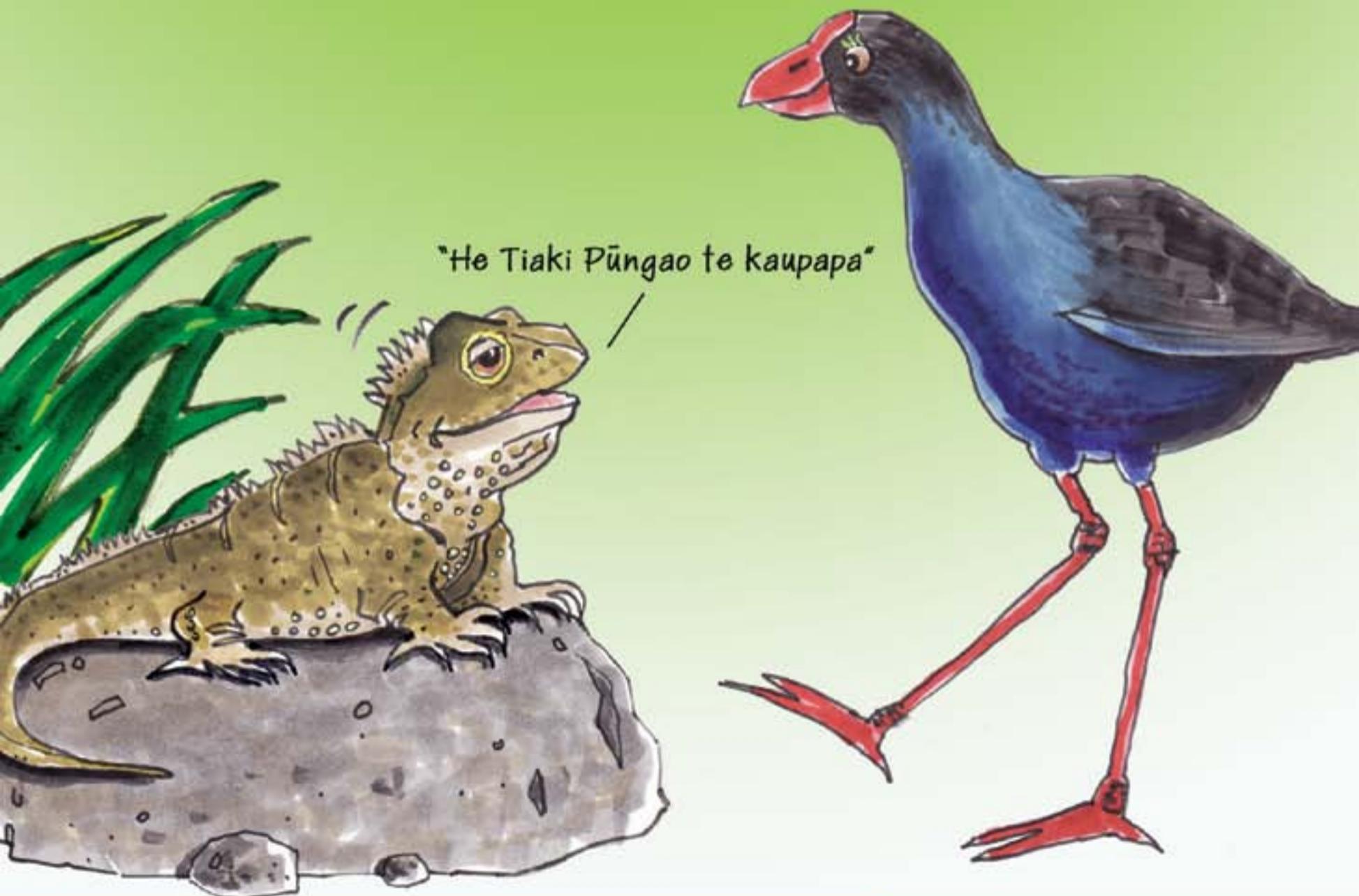


TE WHARE MANGA MOEMOEĀ

o HĪROKI rāua ko TUA





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He mea kōkiri tēnei kaupapa e Genesis Energy hei whakatinana i te pūngao kōmaru me te tiaki pūngao ki te ao o ngā kura o Aotearoa

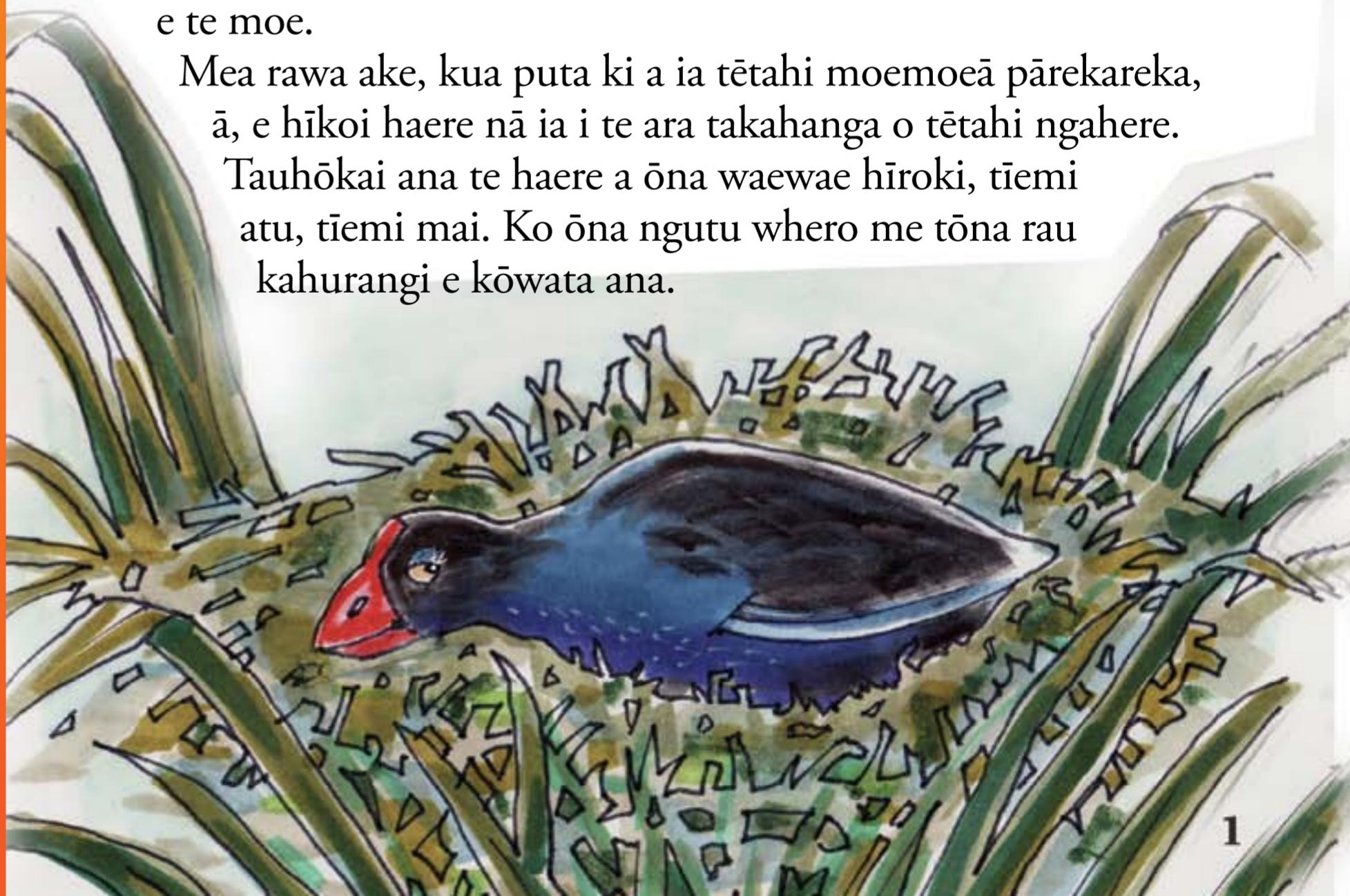
TE WHARE MANGA MOEMOEĀ

o HĪROKI rāua ko TUA

MANATĀ © RICK MCKINLEY 2012

E NGANA ana a Hīroki ki te moe. He haukū, he mātao hoki te kōhangā, ā, ka toko ake te whakaaro i a ia he aha rā i pēnei ai te noho a Ngāi Pūkeko. Ka wawata noa a Hīroki ki tētahi whare āhuru, whare maroke hoki. Tōna kuare ai, he kore nōna i paku mōhio kia pēhea hoki te hanga, ina rā ka hangenge i te whakaaroaro noa iho, ā, kātahi tonu ia ka warea e te moe.

Mea rawa ake, kua puta ki a ia tētahi moemoeā pārekareka, ā, e hīkoi haere nā ia i te ara takahanga o tētahi ngahere. Tauhōkai ana te haere a ūna waewae hīroki, tīemi atu, tīemi mai. Ko ūna ngutu whero me tōna rau kahurangi e kōwata ana.



Ka karepa te kanohi, he nukuhanga ka kitea. I te taha tonu o te ara takahanga tētahi tipua kāore anō i kitea e ia. He punua mokoweri te āhua e takoto pāinaina ana i runga i tētahi toka. Tē nuku me te mea nei he toka tonu. He pērā rawa tōna kiriwhina i a ia ka uaua te kitea.

Kātahi tonu ka mōhio a Hīroki ki te mea e whakapōrearea ana i a ia. I tōna rerenga, pēnei i te hiko, i mau i tōna arero roa me te māwhero tētahi māwhitiwhiti e whēkoki tonu ana.

“He aha hoki tō titiro?” te tangi whakarāwa a te tipua ukiuki nōna e karihi ana i tana maunga ki waenga i ūna niho rei, “tōu āhua me te mea nei kua kite kēhua!”

Ka tūmeke a Hīroki i tōna reo hāmama.

“Aii...mō ta..taku hē,” me te papepape o tōna reo. “Kore rawa atu nei au i kite noa i tētahi mea pēnei i a koe nei, engari kotahi tau noa iho ahau...”

“He tuatara kē ahau. Karangatia tōku ingoa ko *Tua*,” te whakautu a te ngārara nei i tōna reo hānene. “He *kotahi rau tau* tōku pakeke, tōna kotahi rau nei...” me te taukamo mai o tētahi o ūna karu nui.

“Kua miriona tau te tuatara ki te ao, nā reira he mōhio mātou ki ngā mea katoa, tōna katoa nei...” He *rerekē* hoki ia, engari warea katoa a Hīroki ki tōna kiri pakaua me te kōtingotoingō mā i raro iho o tōna kauae me tōna puku. Tētahi anō, ahakoa tōna rerekē, he tau kē tōna āhua. Heoi anō, he rarata tonu, ahakoa tōna āhua whakamataku.



“Pāinaina ai ahau ki te rā kia mahana ai, he mātao hoki nō tōku nā rua,” te kī a Tua.

“E rua, e rua, he mātao anō hoki ki tōku kōhangā – he wāhi pai ake pea hei nōhangā,” te kōrero a Hīroki.

“Ehara! Ko te *Whare Manga Moemoeā* ia tōna ingoa – haere mai, māku koe e arataki atu!” te hāmama a Tua nōna ka kōkiri i a ia ki runga i te toka. “He mōhio katoa au!”

I a ia ka whai atu i tōna hoa hou i te aratakahanga, ka whakamārama haere ia he mea āta waihangā taua whare rā hei **penapena pūngao** mā te whakamahi pūngao kōmaru me ētahi atu āhuatanga penapena pūngao.

“Katia ū karu ka whakaaro ai i tētahi whare manga ātaahua,” te kī a Tua i a ia ka tohu i tētahi koraha matomato i mua tonu i a rāua. Pēnei tonu a Hīroki he mea māminga ia, heoi, ka aro tonu ka kati i ūna karu, me te mōhio anō he moemoeā noa iho.

I te huakitanga, ka whakatinanatia mai.

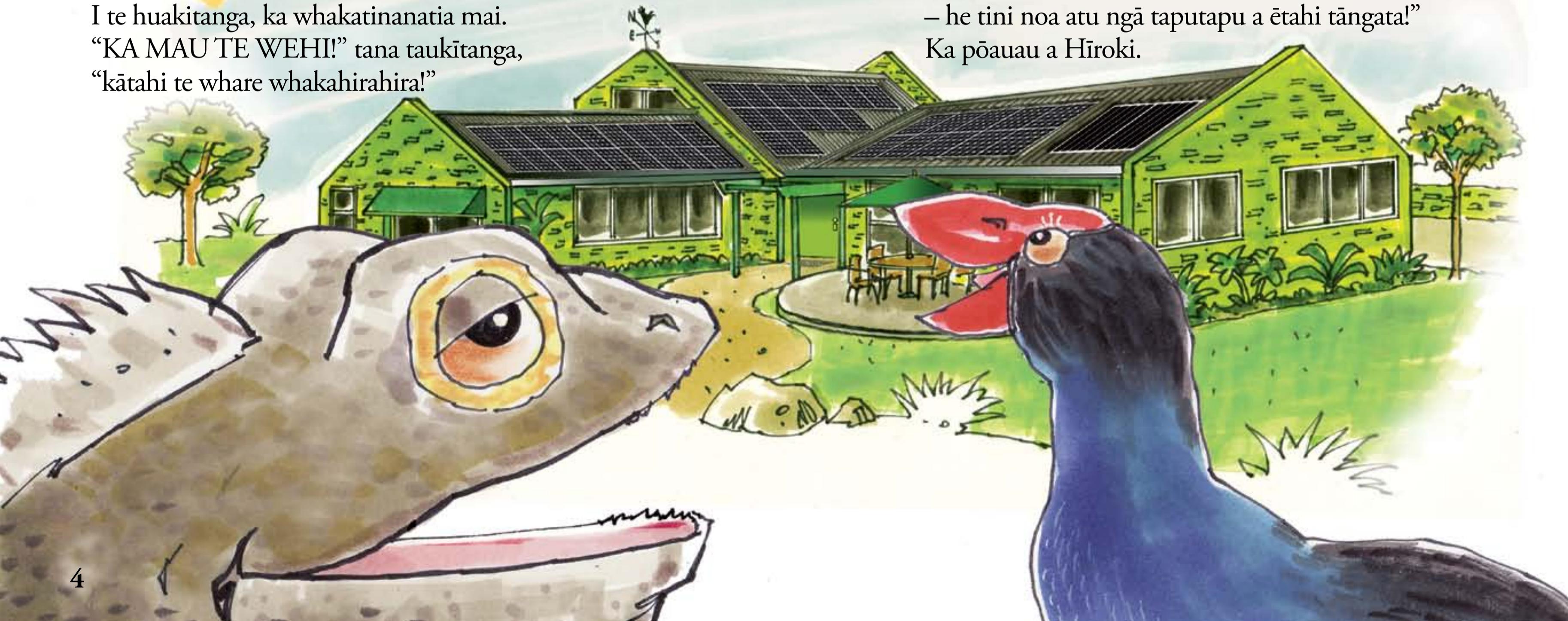
“KA MAU TE WEHI!” tana taukītanga, “kātahi te whare whakahirahira!”

“Anāia!” te kī a Tua me tōna whakaae. “E kite koe i te tuanui, he **papa kōmaru** kua mau ki te tuanui mā tēnā ka puta he hiko mō te whare. Ko ngā papa kōmaru e rua kei te pito matau o te tuanui hei whakawera i te wai mō te whare. He mōhio anō koe e 60% te pūngao o te whare ka kaingia hei whakawera i te wai, hei whakamahana i te whare? Ei, tōna 60% nei..”

“He pēhea ngā rama?” te pātai a Hīroki. “Ko taku whanaunga tētahi o ngā whetū o tētahi whakaaturanga pouaka whakaata, ā, he whakaweto rama te kaupapa nui...”

“10-15% te rahi o te hiko ka pau i ngā rama,” te whakautu a Tua, “e 25-30% o te hiko ka pau i te whakamahia o ngā pūrere hiko, pēnei i te whata mātao, te tō, te umutira, te mihi horoi kaka, te pūrere tauraki kaka, te pūrere whāngote puehu, te tāina, te tiaka hiko, te haeana, te rōau tāora hiko, te pouaka whakaata, te kopae kiriata, te rorohiko, te whakahiko waea pūkoro, te ī-papa – he tini noa atu ngā taputapu a ētahi tāngata!”

Ka pōauau a Hīroki.



“Ko te rā anō hei *whakamahana* i a tātou,” te kī a Hīroki.

“He tika tonu, engari ia he whai kia *tiakina* te pūngao, arā, kia mau tonu te mahana ki *RŌ* whare mā te whakauru kaupare mātao, te whakamahi i ngā taputapu e tika ana ki te hanga whare, te purupuru i ngā kōhao kauanu, te ārai i te mahana ka puta i ngā matapihi, te whakaweto i ngā rama me ngā pūrere hiko kāore i te whakamahia.”

“Whakamahia ai te pūngao kōmaru e ngā whare katoa?” te pātai a Hīroki.

“Kāore rawa. He mea hono ngā whare ki ētahi pūhiko matua mai i te papa ā motu, arā, te whatunga hiko e whakarato nei i a Aotearoa. Ko te nuinga o ā tātou hiko ka ahu mai i ngā *teihana huri hiko*. Ka tukuna

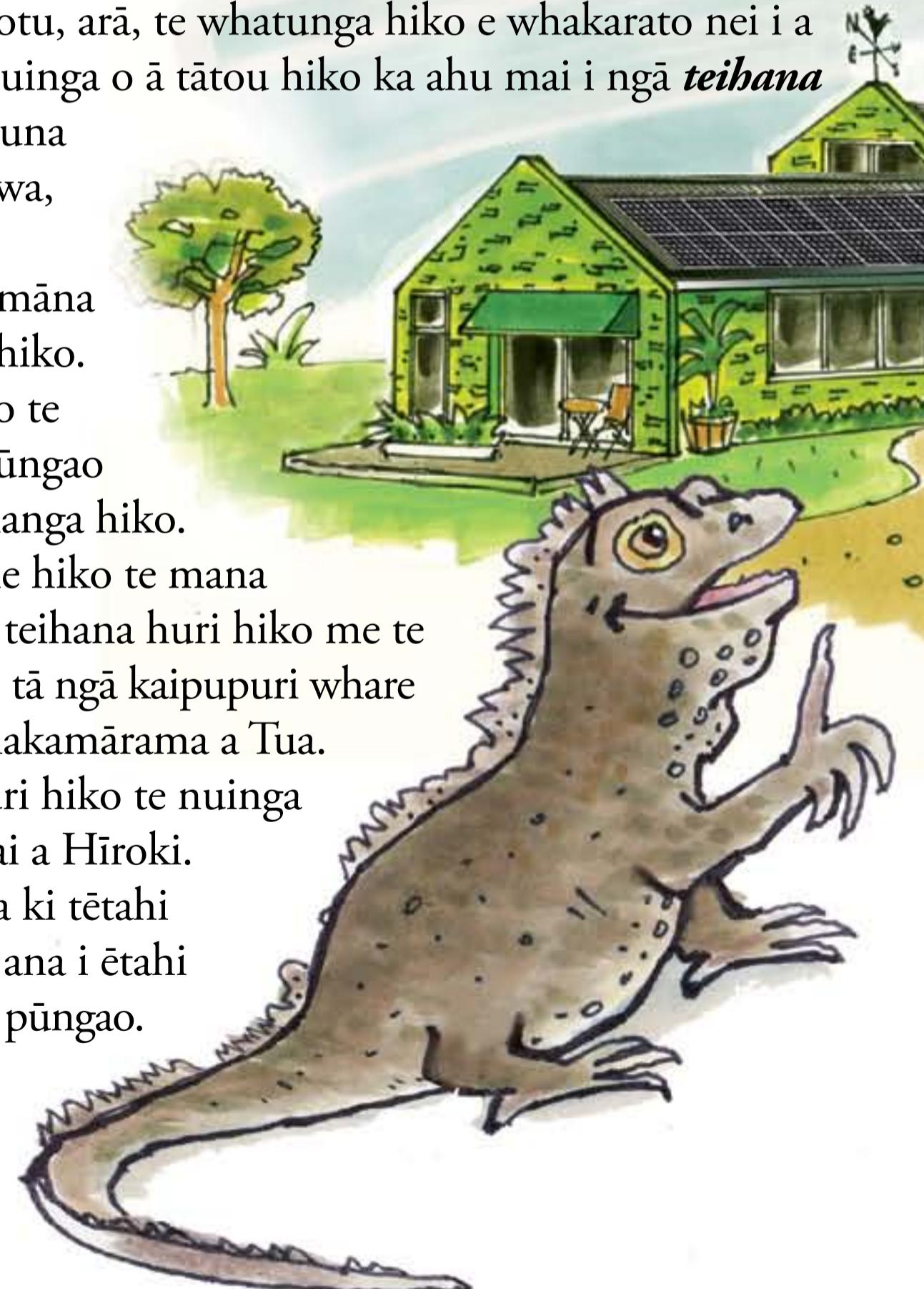
te wai o ū tātou awa,
ngā roto mā ētahi
mihini huri hiko māna
ka hua mai ko te hiko.
Koinei tētahi ara o te
whakamahi i te pūngao
whakahou ki te hanga hiko.

Kei ngā kamupene hiko te mana whakahaere i ngā teihana huri hiko me te whakarato hiko ki tā ngā kaipupuri whare e hiahia ai,” te whakamārama a Tua.

“Nā reira, nō te huri hiko te nuinga o te hiko?” te pātai a Hīroki.

“Ae, engari tata ana ki tētahi haurua e ahu mai ana i ētahi atu mātāpuna o te pūngao.

Hei tauira ake,
whakamahia ai



e ngā teihana ***pūngao ngāwhā*** te korohu nō raro i te whenua hei takahuri i ngā mihini huri hiko kia hua mai ko te hiko. Ā, he ***teihana pūngao pua*** e tahu ana i te hau, i te waro rānei, arā he kora mātātoka ka pau a tōna wā. Kāore e taea ngā kora mātātoka te whakahou, he miriona noa atu ngā tau hei mahi mai. Me te aha, i te tahunga iho ka puta ake he hauhā ki te hau takiwā. Ka kīia tēnei he ***hau whare manga*** nā te mea ka mau tonu i a ia ētahi pūngao o te rā e hoki atu ana ki te ātea. Nā tēnei ka whakamahanatia te ao, ā, koia hoki tētahi mea e tāpiri ana ki ***te whakamahanatanga o te ao***, ka tā te manawa o Tua me te hopu hau pai.



“Nā reira, he aha rā te take e whakamahi pūngao ***kōmaru*** ai te Whare Manga Moemoeā?” te pātai a Hīroki me te pōhēhē hoki.

“He hira te pūngao kōmaru nā te mea he pūngao ***whakahou*** e kore hoki e peto, ka mutu, *kāore he utu!* I tua atu i te ***rā***, i ū tātou ***awa, roto***, ko te ***hau*** me te ***moana*** anō hoki ētahi atu mātāpuna o te ***pūngao whakahou***. Inaianei, he mea puta anō hoki i ngā pāmu hau he hiko” te kī a Tua.



Tētahi anō, mēhemea he manga wai e pātata ana ki a koe, ka āhei te whakamahi i tētahi mihihi huri hiko hei whakaputa hiko. Inā rā, tata te **80%** o te hiko o Aotearoa ka hua mai i ngā mātāpuna whakahou.” “Pēhea ai te whakamahia o ngā papa kōmaru i runga i te tuanui?” te

nanunau a Hīroki nōna e titiro ana ki te tuanui. Ka reka te ngākau o Tua mōna i uia, ka mutu, ko tōna kaupapa kaingākau tēnei.

“Kia mōhio koe, ko ngā papa kōmaru e hanga hiko ana ka kīia he **papa taiahohiko** he pūnaha PV rānei.” I a ia e kōrero ana ka purata ūna karu nunui. “He mōhio anō koe, nō te rā hoki te pūngao o te Tuatara! He ngārara toto māeke mātou, nā reira ka iti iho tā mātou kai hei pūngao, engari anō koutou ngā kararehe toto mahana.

He nui te pūngao o te rā ka pā mai i te pāinaina rā...”

Ka mahara noa a Hīroki ki te tarapekenga o Tua i runga i te kōhatu.

“Nā reira, pēhea ai te whakamahia?” te ui a Hīroki i runga i te whāwhai.

“Tēnā, i Aotearoa nei, whiti ai te rā mai i te raki nōna ka rere mai i te rāwhiti ki te hauāuru i te rā, nā reira ka tino whaihua ngā papa kōmaru mēhemea ka anga whakarunga atu ki te **Raki**,” te kī a Tua i a ia e tohu ana ki te raki anō nei he mātanga huarere ia. “Ka ngongo rātou i ētahi pūkoro iti o te pūngao kōmaru e kīia nei he **pūaho**. Kātahi ka unuhia te pūngao o ngā pūaho e ngā **irahiko**, e rere ana hei **iatautika**, arā, he momo hiko. Me whai **pūburikōwaro** hei huri i te iatautika ki te **iaħoboko**, he momo iahiko māna hei whakakā ngā rama me ngā pouaka whakaata i te nuinga o ngā whare...”

“He taiahohiko *māota*?” te papepape a Hīroki. He uua ki ia te whakahua i ngā kupu roa. “Ko taku tino kano ināianei.”

“He pango, he pukepoto rānei ngā taiahohiko,” te whakahoki a Tua, “nā te mea ka *ngongo* ngā

kano uriuri i te nuinga o ngā hihi Ināianei, he taputapu tuanui hou, arā, **katoa te tuanui** ka hopu i te rā. Ka takā te wā ka noho ko ēnei taputapu kē ki runga tuanui, kāore ngā papa kōmaru.”



“Pono mārika, he tukituki tērā i tōku roro manu nei!” te kata a Hīroki, “engari kia pēhea ki te kore te rā e whiti ana?”

“Hei ngā rangi kāpuapua tonu ka whakaputaina *ētahi* hiko e ngā taiahohiko,” te whakamārama a Tua. “Ko te hiko āpitī ka puta e taea te hoko atu ki te whatunga ā-motu, ka putuputungia rānei ki te pāteri hei kāinga rua ki te kore ngā taiahohiko e whakaputa i tētahi hiko e rahi ana mō ngā hiahia o ngā whare. Engari koa, ko te whare *tino* tiaki pūngao *rawa* ka whakaputa i te hiko katoa e hiahiatia ai mai i te rā, i tētahi atu mātāpuna pūngao whakahou rānei.”

“E tika ana ko tāu i kī rā mō ngā papa kōmaru kei te taha me te pito matau o te tuanui, he whakawera wai?”

te pātai a Hīroki me tōna hia mōhio.

“Tika tonu,” te whakautu a Tua. “***He pūnaha kōmaru whakawera wai***, he whakaputa waiwera e whakawerahia ana e te rā. Ko te tikanga, ka papuhia te wai mai i te kura waiwera ki ngā papa kōmaru, ka wera ai i te rā, ka whakahoki ai. Ki te kore e rahi te pūngao o te rā hei whakawera i te wai, ka riro mā te hiko, mā te korohū rānei e pupuri te wai ki roto i te kura waiwera, ki te pāmahana e tika ana. Nā reira nō te rā te painga o te waiwera, ā, inā noa atu te hiko ka penapenahia,” te kī a Tua.

“He moemoeā te whiwhi i te waiwera,” te mapu a Hīroki, “He manga wai mātao hoki noa iho tōku.” I te kati ūna karu me te anga tonu ki te raki ki te hopu i te hana o te rā.

“Kei te pā makariri, kia hoatu pea tātou ki roto ināianei?” tana pātai.



Tēnei ka kautorohī mai tētahi tangata nepinepi me te kākāriki i te kore, e pupuri ana i tētahi kī kōura. I te *rerekē haere* tēnei moemoeā, ia mēneti, ia mēneti!

“Ngā manahau o tēnei ata ki a koe, te kī a te tangata nepinepi me te menemene nōna e huaki ana i te tatau kākāriki. “Kuhu mai ki roto!”

“A, tē-tē-tēnā koe,” te whakahoki a Hīroki e tūmeke ana i tōna hanga.

Ko ōna makawe me ōna pewa pōruru he kākāriki pīataata, ā, he mōwhiti kākāriki e tau ana ki tōna ihu māwhero. Ōna kākahu, he tini ngā tae kākāriki, he poto ōna waewae – he roa rānei tōna tarau poto.

Ahakoa rā, he tangata hahaki.



“Nōku tonu tēnei whare, ka mutu, he mōhio katoa ahau ki ōna nei, tūturu tonu”, tana kī i tōna anō mita me te mea nei e waiata ana i ngā kupu.

“Me koe hoki?” te tangi a Hīroki me tana titiro korotaha ki a Tua i a rāua ka kuhu ki roto. “Ū, te āhuru **hoki**!”

“Ae, nā te mea kua ārai katoa te whare i te mātao hei pupuri i te mahana,” te kī a Tua me te menemene i te tūngoungou ki te tangata nepinepi kākāriki. “Tēnā Hīroki, kia tūtaki koe ki tōku hoa o mua, ki a Kirīni.”

“Nōku te whiwhi ki te tūtaki ki a koe Mihi Hīroki, tūturu tonu. Tōku ingoa tūturu ko Pātariki Kirīnitiriti, engari ki te ao ko **Kirīni!**” tana kī.

Ka whakatuwhera i ōna ringaringa ki te whakaatu i tōna tīhate kākāriki:

G – R – E – E – N... Get
Renewable Energy Efficient Now!

“Tau kē tō tīhate!” te pūkoto a Hīroki. “Tau kē hoki te ingoa!”



He pai te whakatamatama a Kirīni i a ia anō, ā, ka mahi tonu a Tua i tōna akoranga mō te wai wera. “Mā tētahi **tākai kaupare mātao** huri rauna i te kura wai wera ka nui ake te tiakina o te pūngao,” ā, ka huaki ia i te kāpata o te kura wai wera, “ka tākaihia hoki ngā kōrere o te kura ki tētahi **hautai** hei whakaiti i te mahana ka puta atu. Kia mau te inenga o te waiwera kia 55 whakarautanga te pāmahana, ā, mā tētahi ūpoko uwhiuwhi tiaki wai e penapena ai te wai wera. Katoa ēnei mea rikiriki hei tiaki i te hiko.”

He “M-m-m-m-m,” anake te kōrero a Hīroki. Inā rā kāore anō ia i rongo i tēnei mea i te kura wai wera – i te ūpoko uwhiuwhi rānei.

“Ko te waihanga whare kia tino arotauhia te mārama me te mahana o te rā ka kīia he **'hoaboa kōmaru bāngū'**, ā, he maha ngā mea kia whakaarohipa, tūturu tonu,” te tāpiri a Kirīni i whai wāhi paku atu ki te kōrero.

“Tuatahi me matua whakatū te whare kia anga atu ki te **raki**,

ko te painga atu ki tētahi wāhi e whitingia ai e te rā. Ko ngā wāhi mahi, ngā rūma rānei he nui te whakamahia o rātou i te rangi, ki te taha raki kia arotau i te mārama me te mahana o te rā. Tēnā ia ko ngā rūma iti iho nei te whakamahia pēnei i te rūma uwhiuwhi, te rūma horoi kaka me te karāti, ki te taha tonga kē ēnei. He mea tino hira ngā **hiku**, he tuku mai i te rā ki roto i te takurua i te wā kei raro iho kē te whakarewatanga ūna, me te ārai anō i te rā i te raumati kia kore ai e wera rawa. Ko ngā **papa ārai rā**, ngā **ārai**, ngā **tatau**, katoa ēnei hei āwhina atu,” te kupu whakakapi a Kirīni.

“Ū, he nui tonu ngā mea hei pupuri mā te hinengaro,” te kī a Hīroki me te ngana kia urupū tonu tōna hinengaro.



“Engari he mea anō,” ka kōrero tonu a Kirīni, “Kia whakatūria te whare ki tētahi waerenga, arā, kāore he mea hei taumarumaru i te whare i te takurua, pēnei i ētahi atu whare, i ngā puke, i te rākau rānei. Ka whaitake te whakatō rākau **tokerauhoro**, māna, ka tukuna ngā hihi o te rā i te takurua, i te raumati ia, ka taumarumarutia kia mātaotao ai te whare...”

“Me te whakamahi i ngā rauemi taumaha he hoahoa kōmaru hāngū pai rawa,” te tāpiri a Tua, “pēnei i te papa raima, i te uku papa iti i ngā pātū perekī rānei. Mā ēnei mea ka puta he ‘**papatipu mahana**’ e ngongotia ai, ā, e ‘mau’ ai te mahana kōmaru ina anga nui atu ki te rā, ā, ka āta whakahokia te mahana ki roto i te whare i te tōnga o te rā.”

“Pēnei me te pāteri whakahihiko i a ia anō kia mau ai te mahana,” hei tā Hiroki me tōna mōhio rā.

“Anāia! Tō pai hoki Hiroki, heoi anō tētahi o ngā mea hira mō te kāinga tiaki pūngao, **kia whaitake te mahi kaupare mātao**, me pēnei ka tika **kia mau tonu ai ki rō whare te mahana**”, te hahau a Tua. “Ko te kaupare mātao o te tuanui o runga, o roto hoki he whakaiti i te putanga o te mahana mā te **40%**, nā, *he nui hoki te pūngao ka penapenahia...*”

“Kāore he tuanui o te kōhangā hei ārai i te mātao!” te kī a Hiroki.

“Tūturu tonu Hiroki, engari ka puta hoki te mahana i ngā *matapihi*,” te kōrero a Kirīni. “Nā reira, he pai te hoahoa kōmaru hāngū mehemea he nui ake ngā matapihi i te taha ki raki o te whare hei hopu i ngā hihi o te rā, ki ērā atu taha ia, kia iti iho, ka iti iho ai te mahana ka riro atu. He ātaahua te hanga o ngā tuanui karāhe me ngā mataaho rangi engari mā ēnei anō e riro atu ai te mahana i te takurua – me te tuku mai ki roto i te nuinga o te mahana i te raumati.

Ka mutu, he nui atu te mahana ka riro atu mā ngā matapihi tapa *konumohē* tēnā i ngā matapihi rākau, PVC rānei...”





“E rongo ana ahau he mātao ake te rūma moe i te rūma noho,” te whakaaro o Twiggy i a ia ka mātai i ngā rūma.

“Tūturu tonu, nā te **hoahoa kōmaru hāngū** anō hoki,” te kī a Kirīni. “Kei te taha hauāuru ngā rūma moe kia mātao ai i te ata, kia hopu hoki i te mahana o te rā i tōna tōnga iho. Ko ngā rūma nui te whakamahia, pēnei i te rūma noho, te parani, kei te taha raki, te taha kaha nei te whiti o te rā. Ka anga atu te kīhini ki te rāwhiti ki te hopu i ngā hihi me te mahana nō te rā ka rewa ake ki runga. Tēnā ia ko te rūma kaukau, te rūma horoi kaka me te karāti, kāore he tino take o te rā e anga ai ēnei rūma ki te tonga – te taha mātao rawa o te whare,” te whakamārama a Kirīni i a ia ka rotarota i ūna ringaringa ki ngā hau e whā.

“Kia mahara mai, e **60% o te hiko e whakapaungia ana ki te whakamahana whare me te whakawera wai**, tōna 60%

nei,” te tāpiri a Tua me te whakaputa mōhio anō. “Nā reira hei penapena i te hiko he mea nui te whakamahia o te rā, ūna mahinga katoa e taea ana. I te takurua, ka tahuri kē ki ētahi atu ara hei whakamahana pēnei i te papu whakamahana, te whakamahana ā-hiko, ā-hinu, ā-korohū, te ahi wahie, te ahi tuwhera. Engari te *Whare Moemoeā Kākāriki*, ka iti noa iho te whakamahana nā te hoahoa kōmaru hāngū. Me te aha koa, mā te whakamahi i te rā ki te hanga hiko me te whakawera wai, kāore pea e nui te hiko ka ahu mai i te papa hiko o te motu!”

“He *kākāriki* hoki tēnā!” te kī a Hīroki, me te kite he **tiaki pūngao** te tikanga o te kupu “*kākāriki*”. He mōhio anō hoki ia whakamahia ai taua kupu rā hei whakamōhio atu ki ngā hua ‘tika ki te taiao’.

“I tua atu i te penapena moni hei tiaki i te pūngao, ka puta hoki he hua ki te motu katoa mā te whakaiti i te hiahia ki te pūngao. He whakaiti hoki i tā tātou whakaputa i ngā whare haurehu kati mahana nō reira mai te mahana haere o te ao me te huringa o te huarere,” te whakapuaki a Tua me te rotarota i ūna ringaringa anō nei he pūkōrero tōrangapū.

“He mōhio anō koe, ki te whakaputa hiko mō ia whare toharite, neke atu i te kotahi tana ngā tukunga korohū hauhā whare haurehu kati mahana ia tau, ia tau! Koirā te take mā te tiaki i te whakapau pūngao ‘***ka iti iho tā tātou tapuwae waro***’ ka mahue ki te taiao.”

Ka titiro whakararo a Hīroki ki ō rātou waewae. He nui ake ngā matikara o Tua i ūna, me te aha ka nui ake tōna tapuwae waro, engari ka mahara ia he kupu whakarite kē hoki rā. He piataata rawa ngā hū o Kirīni ki te titiro atu.

“Mehemea te ***kaupare mātao***, he mea hira, kei hea hoki tērā?” te pātai a Hīroki me te whakaputa mōhio.

“Tūturu tonu, koirā te mea pārekareka o ngā whare tiaki pūngao!” te kī a Kirīni i runga i te ngākau pai, “kāore pea e tino kitea te rerekētanga, engari te *rongo*. Tēnā, kia whakataruna kē tātou he tīahoaho ngā pātū, tōna tikanga he moemoeā kē,” tana whakamahara i a ia me te kemo atu.



I kite hōmiromiro a Hīroki i ētahi mea tāhungahunga e mau pai ana ki waenga i ngā anga rākau ki roto i ngā pātū. “Ko te *candy floss* tōna rite!” tana wē. “Ae, he momo paraikete tēnei o ngā kaupare mātao,” te whakamārama a Kirīni, “he tini noa atu ngā momo – he weu karaihe, he wūru, he whītau manawa, he pareaku me te kōmāmā tīwhera – he mea hanga ki ngā whītau e whakawhiti haere ana tētahi i tētahi kia hua mai ko te pūtau hau ririki. Mā ēnei ka tōmuri te whitinga o te mahana mā roto i te kaupare mātao. Ko te painga atu inā mātotoru ake, pururua ake, me te aha, ka whakaurua atu, kia kaua he āputa e puta atu ai te mahana.

He kaupare mātao atu anō, he whakakīnga rere noa.”

“Pēhea ai tōna *urunga ki rō* whare?” te ui a Hīroki.

“Pai kē atu te whakauru i te kaupare mātao i te wā e hangaia ana te whare, engari he hira kē atu te ***whakauru kaupare mātao ki te tuanui***,” te tauākī a Kirīni, “me te aha, ka taea te mahi hei taua wā tonu, hei te wā hoki e whakahoungia ai ngā whare tawhito.”

“Kia mōhio koe, ka rewa ake ki runga te mahana, nā reira tata ki te **40% o te mahana ka puta mā te tuanui**,” te kōrero tāpiri a Tua me te tohu i tōna ringa ki te rangi. “Ina whakaritea ki te mahana **ka puta mā ngā pātū ā waho tata ki te 25%**, ā, tata ki te **15% ka puta atu mā te papa**.”

“Nā reira hei te takurua mā te kaupare mātao e mau ai te mahana **KI ROTO**. I te raumati, he mea nui kia noho **KI WAHO** kē te mahana, tūturu tonu,” te tauākī a Kirīni.

“Mahana ana i te takurua, mātaotao ana i te raumati,” te rāpopoto a Hiroki. “Kāore hoki i tua atu i tēnā!”

“Tōna tua atu nei, engari tonu **te mahana ka puta atu mā ngā matapihi** he kino kē ake i ngā pātū, nā, me pēhea hoki te kaupare atu i tēnā?” te wero a Tua. “Me whakakaupare mātao i ngā matapihi?” te whakautu kapo noa a Hiroki me te hikihiki pakihivi. “Ae tata tonu,” te kī a Tua i a ia ka whakapiri atu i tōna karu ki te mata o te wini. “Tēnā, kia āta titiro tātou nā te mea he kaupare mātao ake ō ēnei matapihi. Arā, ka kīia **he matapihi tōrua**, nā tēnei **ka heke iho te putanga o te mahana i ngā matapihi** i te takurua **ki te 50%**. Nā whai anō i turengia ai kia whakauru i te kaupare mātao ki roto i ngā whare hou katoa, me te whakarite kia taea hoki te whakautu ki ngā whare tawhito hoki...”

“Kāore au e kite ana i tētahi mea ko tahi – hāunga te māra,” te kī a Hiroki e titiro ana mā te matapihi, “ei, me tētahi pūrerehua...”

Ka kata a Kirīni i te rekareka.

“Kia pono mai koe, **e rua koa ngā mata karāhe** me tētahi āputa i waenganui – rite ki te hanawiti karāhe me te hau.”



He *hanawiti?* te mahara a Hiroki me te rangirua hoki.

“Kia aro mai, ko te pūkoro hau e tina nei te mau ki waenganui, tōna āheinga he whakawehenga puia i waenga i te whakaroto me te whakawaho, me te whai kia mahana te whare i te takurua, kia mātaotao i te raumati. Mā te matapihi tōrua hoki e whakaheke te whakatōtā, tūturu tonu, me te hoihoi o waho...”

“He *hanawiti?* Kāore e reka te hā,” te hamumu a Hiroki.

“Ha, ko Ngāi Manu mā, whakapau whakaaro ana ki te kai,” te haku a Tua, “nōku e whakapau whakaaro ana ki ngā ārai.”

“Kai ai koe i te ārai?” te tangi hotu a Hiroki.



“Engari te māwhitiwhiti!” te kī a Tua, “ko tā ngā ārai ia **he āwhina ki te whakaheke i te mahana ka puta atu**. Kia tuituia e te papanga puia taumaha, e te papanga kahupeka rānei, kia roa hoki tae noa ki te papa ina taea, kia mahana hoki te whakapaparanga rua,” tana kī me te mea nei he mātanga ārai.

“Kia nui ake i te anga o te matapihi, kia pipiri tonu, tē kitea he āputa e puta ai te mahana, ā, kia katia hei te tōnga o te rā kia mau tonu ai te hau mahana ki roto. Mā tētahi **kaho paetara** ki te wāhi ā runga ake o te ārai e tino whakaheke te mahana ka puta,” te tāpiri a Tua nōna ka whakapuare i te ārai kia kitea tōna whakapaparanga i muri atu.

“Kei te kaha whiti mai te rā ki ngā matapihi tōmua nui – he rawe te pāinaina,” te kī a Hīroki.

“Tūturu tonu,” te whakahoki a Kirīni, “nā te mea e anga atu ana ki te **raki**. He iti iho ngā matapihi e anga ana ki te rāwhiti me te hauāuru – he iti iho anō ngā mea i te taha tonga o te whare – hei whakaheke i te putanga o te mahana.”

“Ko te mea nui ehara i te kauanu, pēnei i tōku kōhangā,” te kī a Hīroki.

“Kāore kau hoki,” te tūngoungou a Kirīni i tōna reo tīoro me te tohu i tōna ringa ki te whatitoka o te kuaha tōmua. “Ka whakaurua he **puru kauanu** ki raro i ngā kuaha, waihoki ko te **pepa hanga whare** e whakaurua ai ki ngā hononga o te papa, ngā pātū me ngā tuanui kia tina ai te hau o te whare. Mā **te hoahoah abuwhenua** anō hoki e pai ai, arā, mā te rākau me te tūpakihi hei ārai i te hau pūmau ka karawhiu i te whare. Hei ngā whare tawhito ake, whakamahia ai te **tēpa kāpia huka** i ngā anga kuaha me ngā matapihi hei puru i te kauanu.

Mehemea he takuahi, mā **te ārai takuahi** hoki hei whakaheke i te kauanu. E taea hoki te putaauahi te purupuru i te raumati – engari waiho he tohu hei whakamahara i a koe kei reira, kei mahue i a koe, kei auahitia tō whare!”

Pakaru mai ana te kata a Kirīni.



“Kāore kau he kauanu i konei – ehara i te *haukū* pērā i tērā atu kōhanga ōku,” te kī a Hīroki.

“Mā tētahi **kirihou ārai haukū** e horahia ai ki raro i te whare e kaupare atu te haukū ka rewa ake i te papa,” te kōrero anō a Tua me tōna mātauranga. “E taea te haukū mamaoa nō te tao kai me ngā hīrere te unu mā ngā **kōwhāwhā** i te kīhini, te rūma kaukau me te rūma horoi kaka. E taea hoki te whakamahi i ngā **kōhauhau** me ngā **pūnaha kōwhāwhā**. Mā te kaupare mātao, te matapihi tōrua, te ārai mahana me te kōwhāwhā e āwhina hoki ki te kaupare atu i te huinga o te haukūtanga ki te taha roto o ngā matapihi – ka kīia he **whakatōtā**.”



“E taea rānei te huaki noa i te matapihi kia puta ai te haukū?” te pātai rorirori a Hīroki.

“Tūturu tonu, engari te ngau o takurua!” te whakautu a Kirīni me tōna hia kōrero. “Me huaki ngā matapihi kia uru mai ai he hau pai ki ngā rūma ka wera rawa hei te raumati me te unu i te mamaoa i ngā wāhi haukū. Me kī, tata te 30% o ngā matapihi me matapihi e taea te huaki.”

“I ngā wāhi tīkākā, pēnei i whare karāhe wera, me whai pūrere kōwhāwhā teitei, ki raro iho anō hoki mō te kuhunga me te putanga o te ia hau,” te tāpiri a Tua. “Mā tētahi **kōhauhau tuanui** hoki hei takahurihuri i te hau mahana me te kukume ake i te hau mātao kia hua mai ko tētahi kauanu mātao.”

“Aue, kōrengarenga ana te ipu ki tōku hinengaro,” te wē a Hīroki.



“He aha hoki tērā mea tōrino? He rite ki te aihikirimi o Mita Whippy!” te wē a Hīroki i a ia ka titiro hōmiromiro ki raro i tētahi kōpare rama.

“Kia moemoeā tonu! He **pūrama tiaki pūngao**,” te whakautu a Kirīni e rarawhi ana i ētahi pūrama. Ka muramura haere tōna kanohi i a ia ka kōrero ana. “Iti iho i te 80% o te hiko e kaingia ana tēnā i te pūrama ratarata, ka mutu, he whakarau 10 te ora roa ūna!”

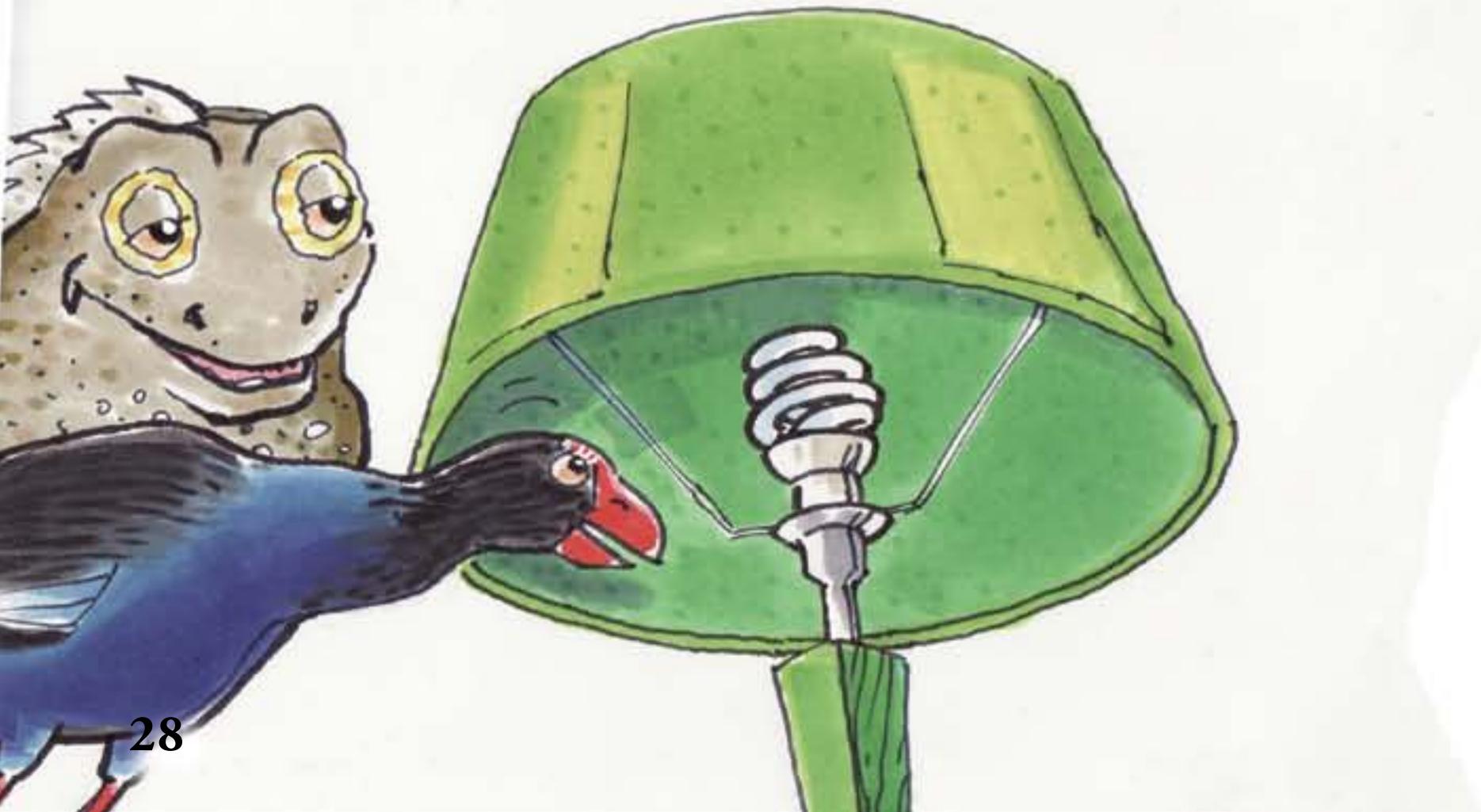
“Tōna ora roa nei...” te kī a Tua i runga i te ngākau tika.

Karahā ana a Hīroki i te rekareka ki tōna anō ngākau tauwhāinga.

“He **pūrama aho whāiti**, he **CFL**,” te whakaae a Tua. “He tōrino te āhua, engari arā atu anō ngā āhuahanga o te kānara me ngā mea tawhito o mua noa iho. He pūrama tiaki pūngao mārika ngā CFL, ā, ko te hangarau rite tonu ki ngā ngongo aho, he oranga roanga, he tiaki pūngao hoki ō ēnei. Arā atu anō ngā pūrama ratarata **Halogen** whakatupuranga hou. He rite te āhuahanga ki ngā pūrama o mua, engari e 30% iti iho te hiko e kaingia ana, e rua ūna oranga neke atu, e taea hoki te whakaheke iho i tōna tiahotanga...”

I pēhea hoki a Tua *i mōhio ai* ki ēnei āhuatanga? te mahara o Hīroki.

“He rama **LED** hoki, arā he *Light Emitting Diodes*, he tini rā ūna kaha me ūna momo,” hei tā te reo taikaha o Tua.



“Ko ētahi, he iti noa ngā LED e huihui ana, ā, kāore e muramura ake pēnā i ngā LED nui te kaha, arā, neke atu i te 30 tau te oranga. Ki tōku whakaaro tūturu, ko ēnei ngā pūrama mō ā haere ake.”

“*He mate pea ō* ngā pūrama tawhito o mua?” te pātai a Hīroki.

“Ehara ko ngā pūrama tawhito i ngā mea tiaki pūngao, e 5% noa iho e whakaputa pūngao ana, ko te toenga e 95% e *whakaputa wera* noa iho ana!” te reo hākiki o Tua. “Ehara hoki ngā pūrama whakaroto i te mea tiaki pūngao nā te mea ka tapahia he kōhao i te kaupare mātao huri noa i te pūrama mō te haumaru ahi, ka waiho noa he āputa e rere atu ai te mahana.”

“Ko te mutunga iho, ka whiriwhiri ana koe i ngā taputapu whare, ngā pūrere ā hiko me ngā pūrama, tūturu tonu, rapua *tēnei mea!*” te aruarunga a Kirīni. “Te **WHETŪ PŪNGAO!**” tana pīoioi. “He tohu whakapiri e whakaatu ana i te pūngao o runga i ngā hua wai, me te hau hoki, nā, e taea te whakatauriterite.”

Ka whakaatu a Kirīni i ngā tohu whakapiri e rua.

“Ko ngā hua tino tiaki pūngao anake ngā mea ka whakawhiwhia ki te tohu Whetū Pūngao kikorangi,” tana whakataukītanga.

“Kia mōhio mai, mehemea *he whiwhinga Whetū Pūngao* ngā taputapu o ngā whare katoa o Aotearoa, e hia tiriona tāra o te pūngao ka penapena hia ia tau! Tōna penapena nei...” te kī a Tua.



“Tētahi anō mehemea ka whakawetohia e tātou katoa ngā pūrama me ngā taputapu kāore e hiahiatia ana, e hia kē nei *tiriona* taara ka penapenahia! He mahana whare, he maroke whare, he whare hauora, tūturu tonu. Nā, anei rā taku rārangi tohutohu hei penapena pūngao!” te whakatau a Kirīni i runga i te hihiri me tana whakaputa i tētahi mātārere kākāriki me ētahi poihamu.

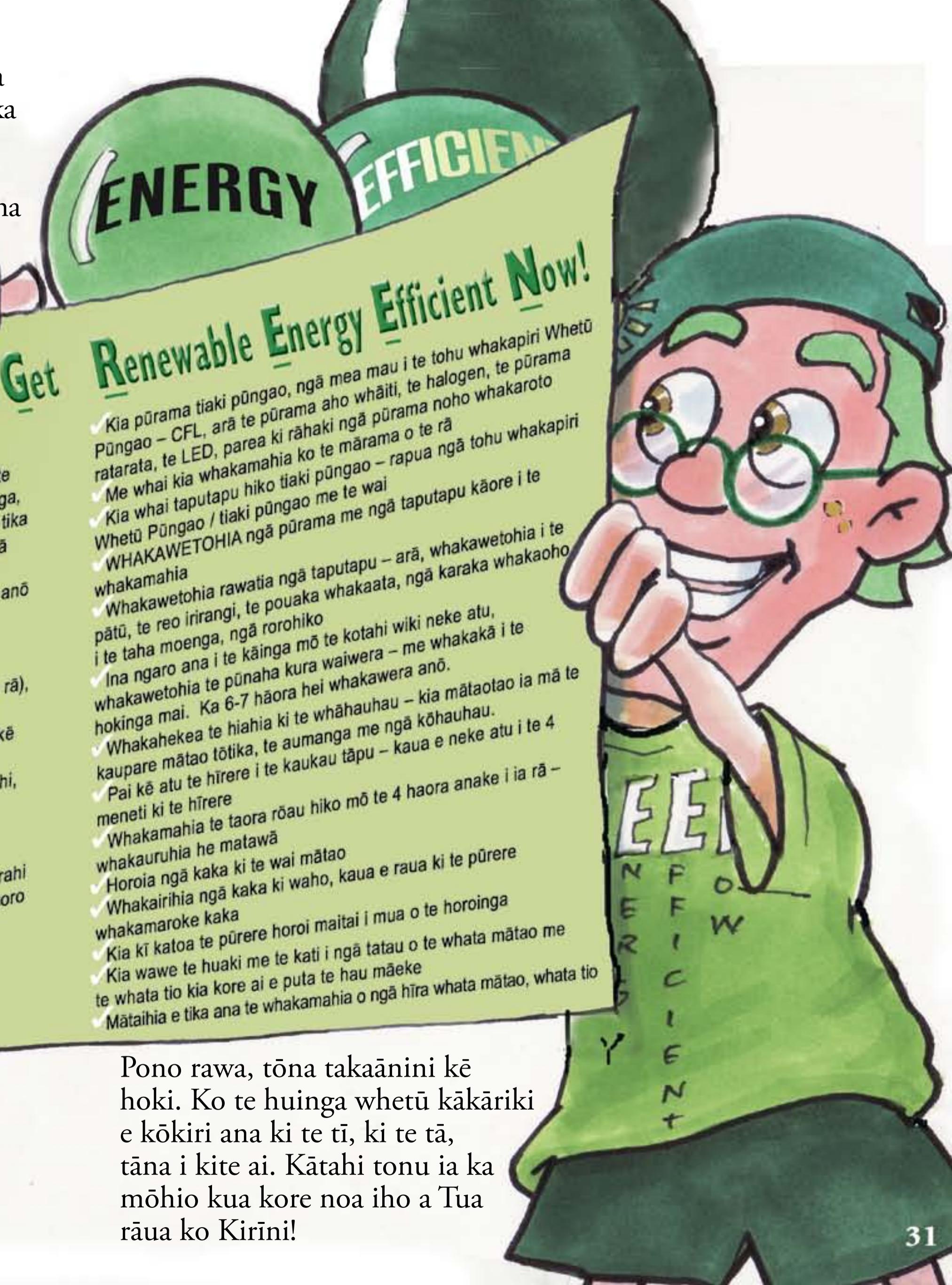
“Pai tonu tēnā whakaaro...*nē*” te whakautu a Hiroki, me tōna māhunga e rorohuri ana i te nui o ngā mātauranga i akona mai.

G-R-E-E-N TIPS ...Get

- ✓ Whakamahia nuitia ngā momo pūngao whakahou ki ngā wāhi e taea ai – kia iti iho te whakawhirinaki atu ki te hiko matua
- ✓ Whakamahanatia te whare i runga i te tiaki pūngao – te hohoa kōmaru hāngū (kia hāngai te te takoto o te whare, taiahohiko, mō le hanga whare kia whai taputapu papatipu mahana, kia tika te rahi o ngā matapihi, te aha, te aha), ētahi atu mea whakamahana, kia whakamahanatia ngā rūma anake e whakamahia ana, me whakatō rākau hei kaupare i te hau hūkerikeri
- ✓ Whakamahanatia te wai i runga i te āta tiaki – te pūnaha kōmaru whakamahana, kia whai ūpoko hei whakamahana i te wai, tākaikaingia ngā kura waiwera me ngā kōrere, kia whai ūpoko uwhiuwhi e tika ana te tiaki wai, whakaritea te pāmahana o te waiwera
- ✓ Whakaitingia te putanga o te mahana – he kaupare mātao tōtika, he matapihi tōrua, kia tika te rahi o ngā matapihi, kia tika te uhinga o ngā ārai puia i ngā matapihi (katia hei te tōnga o te rā), mataphi, kia kōhau hau kore te angaanga o te whare(whakamahia te pepa hanga whare), pai kē atu te rākau, te PVC rānei i te konumohē hei taitapa
- ✓ Puritia te mahana – mā te papatipu mahana, te kaupare mātao, te tika o te rahi o ngā matapihi, ngā ārai papatipu mahana, katia ngā kuaha i te takurua
- ✓ Whakakorea te haukūtanga – ūhia te papa ki te kirihou, te kaupare mātao, te aumanga, te matapihi karāhe rua, ngā ārai kua tika te rahi, ngā kōhauhau
- ✓ Kauparetia te tīkākā – ngā hiku me ngā taumarumaru, ngā aumanga (he matapihi kua tika te rahi me te wāhi), katia ngā ārai, ngā kōhauhau, ngā ārai, ngā tatau waho, te whakatō rākau tokerauhoro

Renewable Energy Efficient Now!

- ✓ Kia pūrama tiaki pūngao, ngā mea mau i te tohu whakapiri Whetū Pūngao – CFL, arā te pūrama aho whāiti, te halogen, te pūrama ratarata, te LED, parea ki rāhaki ngā pūrama noho whakaroto
- ✓ Me whai kia whakamahia ko te mārama o te rā
- ✓ Kia whai taputapu hiko tiaki pūngao – rapua ngā tohu whakapiri Whetū Pūngao / tiaki pūngao me te wai
- ✓ WHAKAWETOHIA ngā pūrama me ngā taputapu kāore i te whakamahia
- ✓ Whakawetohia rawatia ngā taputapu – arā, whakawetohia i te pātū, te reo irirangi, te pouaka whakaata, ngā karaka whakaoho i te taha moenga, ngā rorohiko
- ✓ Ina ngaro ana i te kāinga mō te kotahi wiki neke atu, whakawetohia te pūnaha kura waiwera – me whakakā i te hokinga mai. Ka 6-7 hāora hei whakawera anō.
- ✓ Whakahekeia te hiahia ki te whāhauhau – kia mātaotao ia mā te kaupare mātao tōtika, te aumanga me ngā kōhauhau.
- ✓ Pai kē atu te hīrere i te kaukau tāpu – kaua e neke atu i te 4 meneti ki te hīrere
- ✓ Whakamahia te taora rōau hiko mō te 4 haora anake i ia rā – whakauruhia he matawā
- ✓ Horoia ngā kaka ki te wai mātao
- ✓ Whakairihia ngā kaka ki waho, kaua e raua ki te pūrere whakamaroke kaka
- ✓ Kia kī katoa te pūrere horoi maitai i mua o te horoinga
- ✓ Kia wawe te huaki me te kati i ngā tatau o te whata mātao me te whata tio kia kore ai e puta te hau māeke
- ✓ Mātaihia e tika ana te whakamahia o ngā hīra whata mātao, whata tio



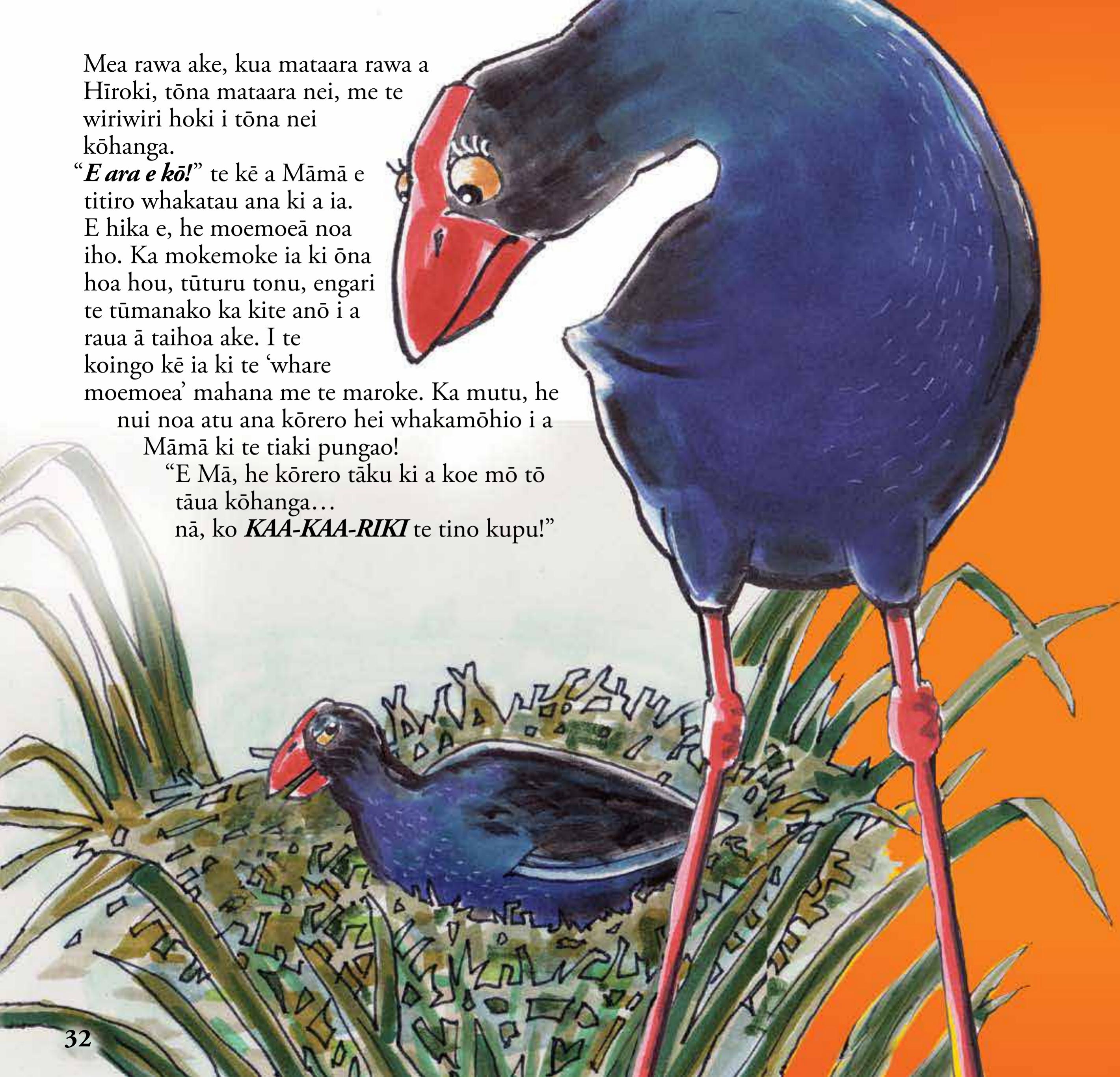
Pono rawa, tōna takaānini kē hoki. Ko te huinga whetū kākāriki e kōkiri ana ki te tī, ki te tā, tāna i kite ai. Kātahi tonu ia ka mōhio kua kore noa iho a Tua rāua ko Kirīni!

Mea rawa ake, kua mataara rawa a
Hiroki, tōna mataara nei, me te
wiriwiri hoki i tōna nei
kōhangā.

“*E ara e kō!*” te kē a Māmā e
titiro whakatau ana ki a ia.
E hika e, he moemoeā noa
iho. Ka mokemoke ia ki ōna
hoa hou, tūturu tonu, engari
te tūmanako ka kite anō i a
raua ā taihoa ake. I te
koingo kē ia ki te ‘whare
moemoea’ mahana me te maroke. Ka mutu, he
nui noa atu ana kōrero hei whakamōhio i a

Māmā ki te tiaki pungao!

“E Mā, he kōrero tāku ki a koe mō tō
tāua kōhangā...
nā, ko **KAA-KAA-RIKI** te tino kupu!”





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**He mea kōkiri tēnei kaupapa e Genesis Energy hei
whakatinana i te pūngao kōmaru me te tiaki pūngao
ki te ao o ngā kura o Aotearoa**