

# Orari River Birds and Flow Modelling Results

A South Canterbury foothill sourced river

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# A Representative Community of Riverbed Birds is present

- |                          |               |
|--------------------------|---------------|
| • Black shag             | diver         |
| • Little shag            | diver         |
| • Paradise shelduck      | dabbler       |
| • White-faced heron      | deep wader    |
| • Pied oystercatcher     | deep wader    |
| • Pied stilt             | deep wader    |
| • Banded dotterel        | shallow wader |
| • Black-fronted dotterel | shallow wader |
| • Spur-winged plover     | riparian      |
| • Welcome swallow        | riparian      |
| • Black-fronted tern     | aerial hunter |
| • Black-billed gull      | aerial hunter |
| • Black-backed gull      | aerial hunter |

# Numbers of threatened and at risk bird species on the Orari River

	1985	1987	1994	2006	2008	2009	2010	2011	2012	2013
Pied oystercatcher	21	43	11	19	22	36	19	34	12	27
Banded dotterel	21	59	21	5	3	18	21	6	11	33
Pied Stilt	27	102	12	71	78	139	63	34	24	91
Black-billed gull	78	2401	40	77	89	176	4	115	1623	18
Black-fronted tern	38	162	3	158	73	58	64	71	775	461

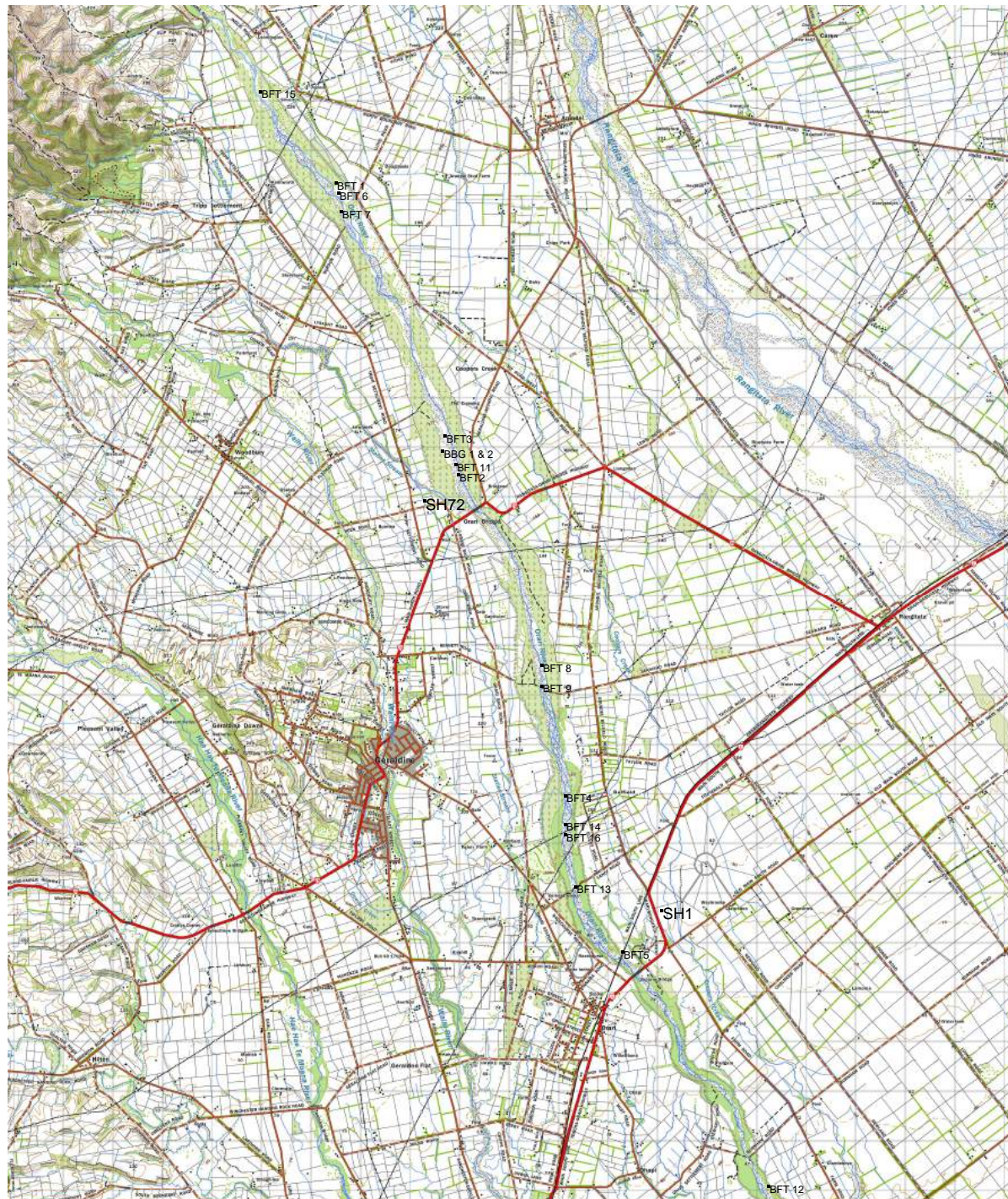
# Numbers of threatened and at risk bird species on the Orari River

	2014	2015
Pied oystercatcher	17	10
Banded dotterel	2	7
Pied stilt	37	64
Black-billed gull	56	100
Black-fronted tern	205	76

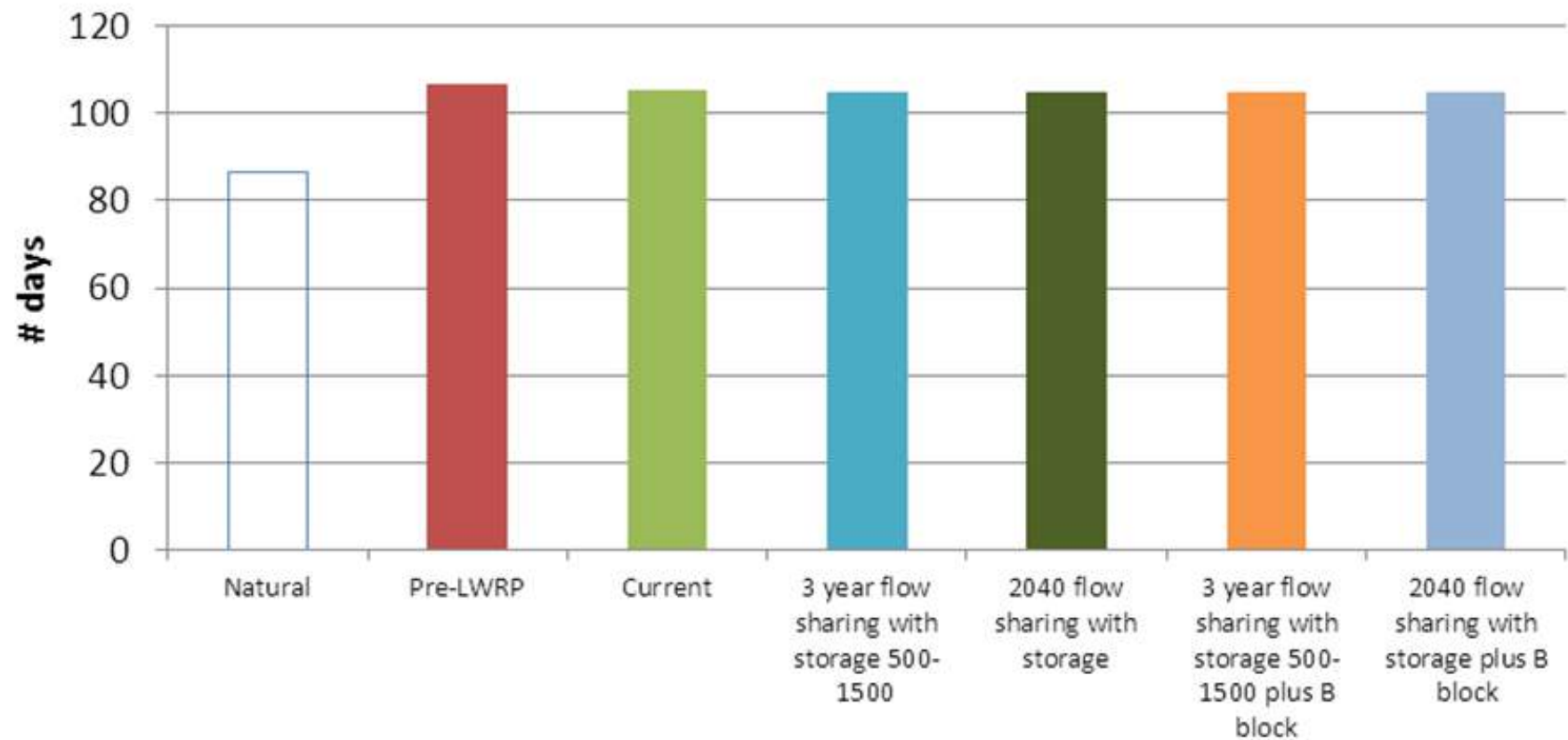
# Nesting of Black-billed gulls and Black-fronted terns

- Black-billed gulls nested some years with up to 1500 birds in a colony
- Black-fronted terns attempt to nest on the Orari each year.
- Black-fronted terns:
  - 2012 4 colonies with up to 500 birds per colony.
  - 2013 5 colonies with up to 200 birds per colony.
  - 2014 2 nesting colonies of up to 70 birds.
  - 2015 1 nesting colony of 30 birds.



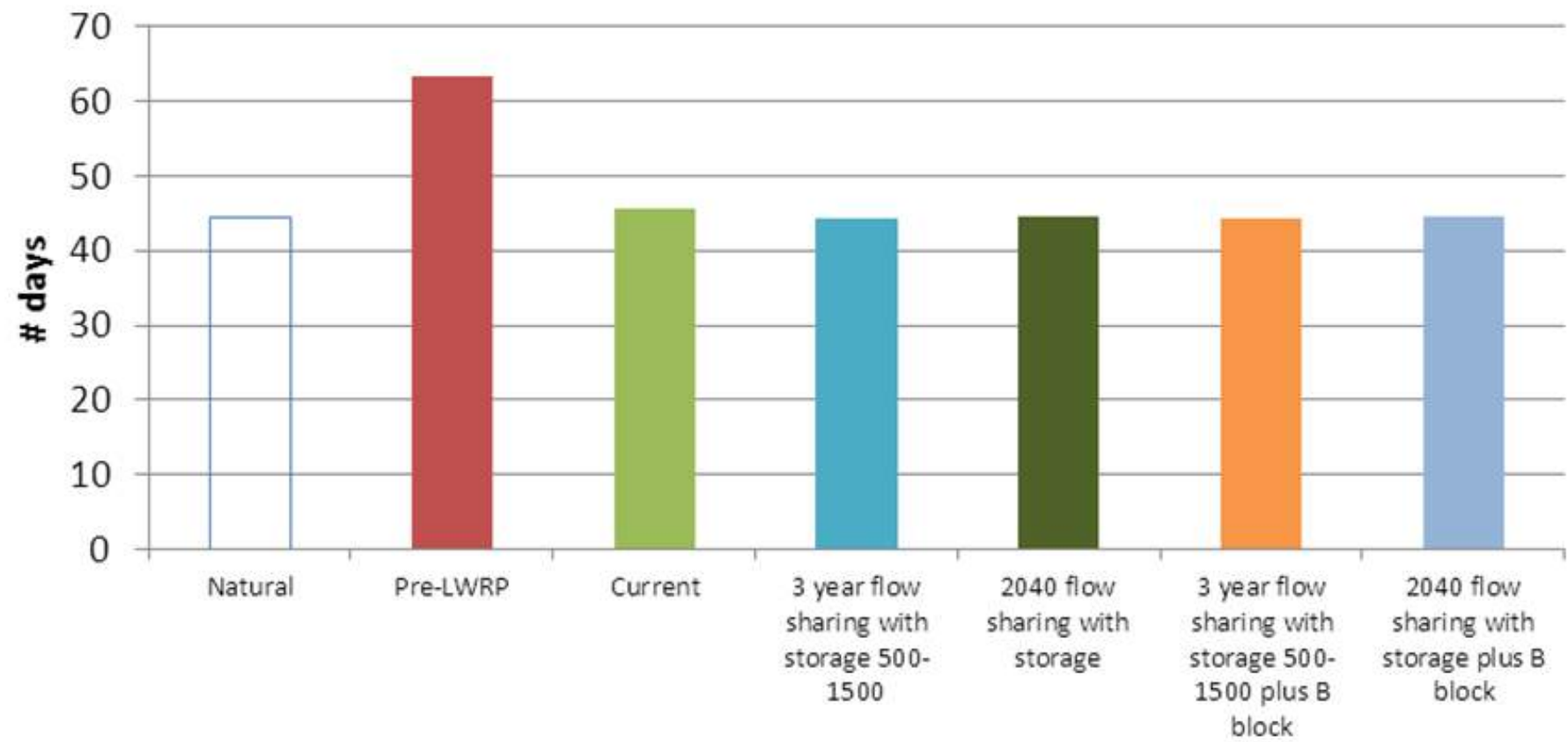


a) SH72 dry days



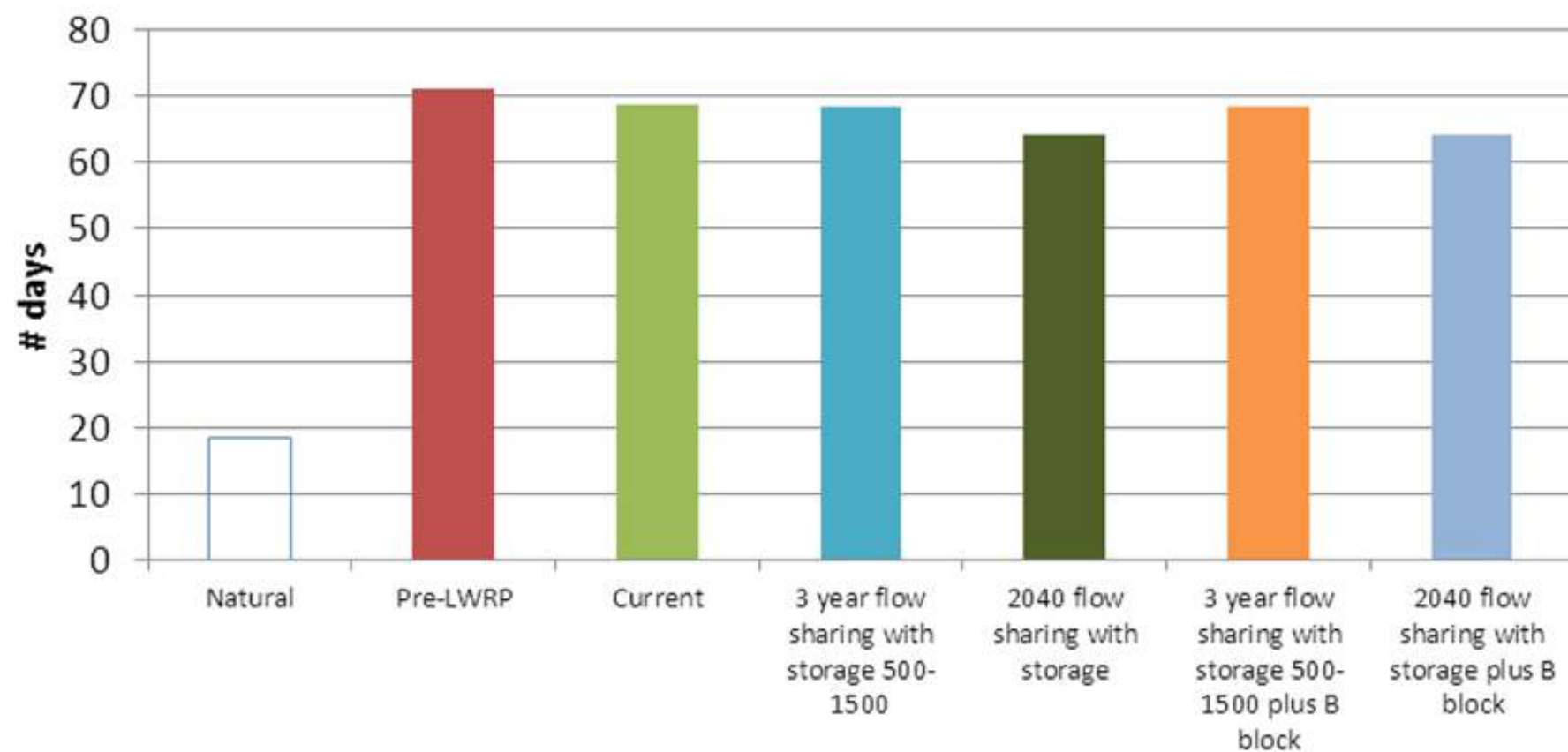


**b) SH1 dry days**

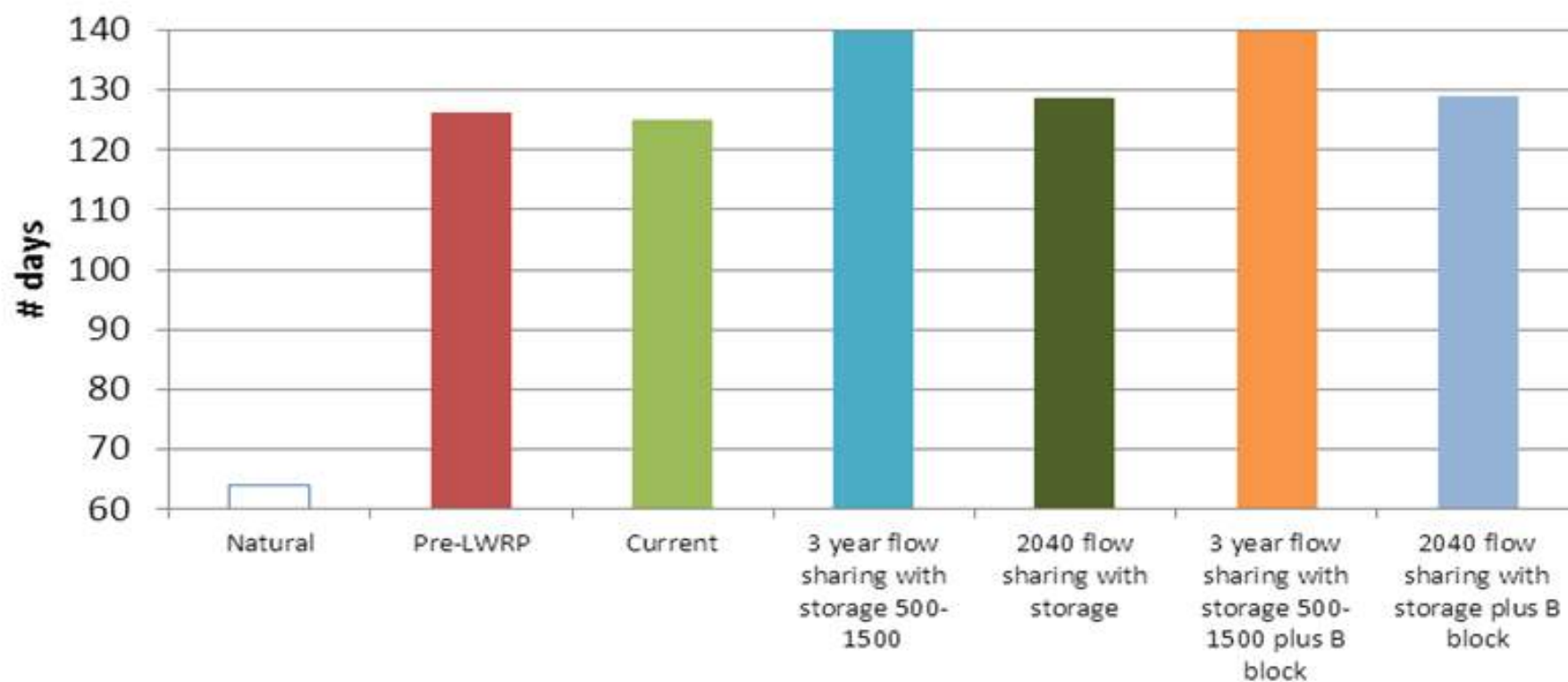




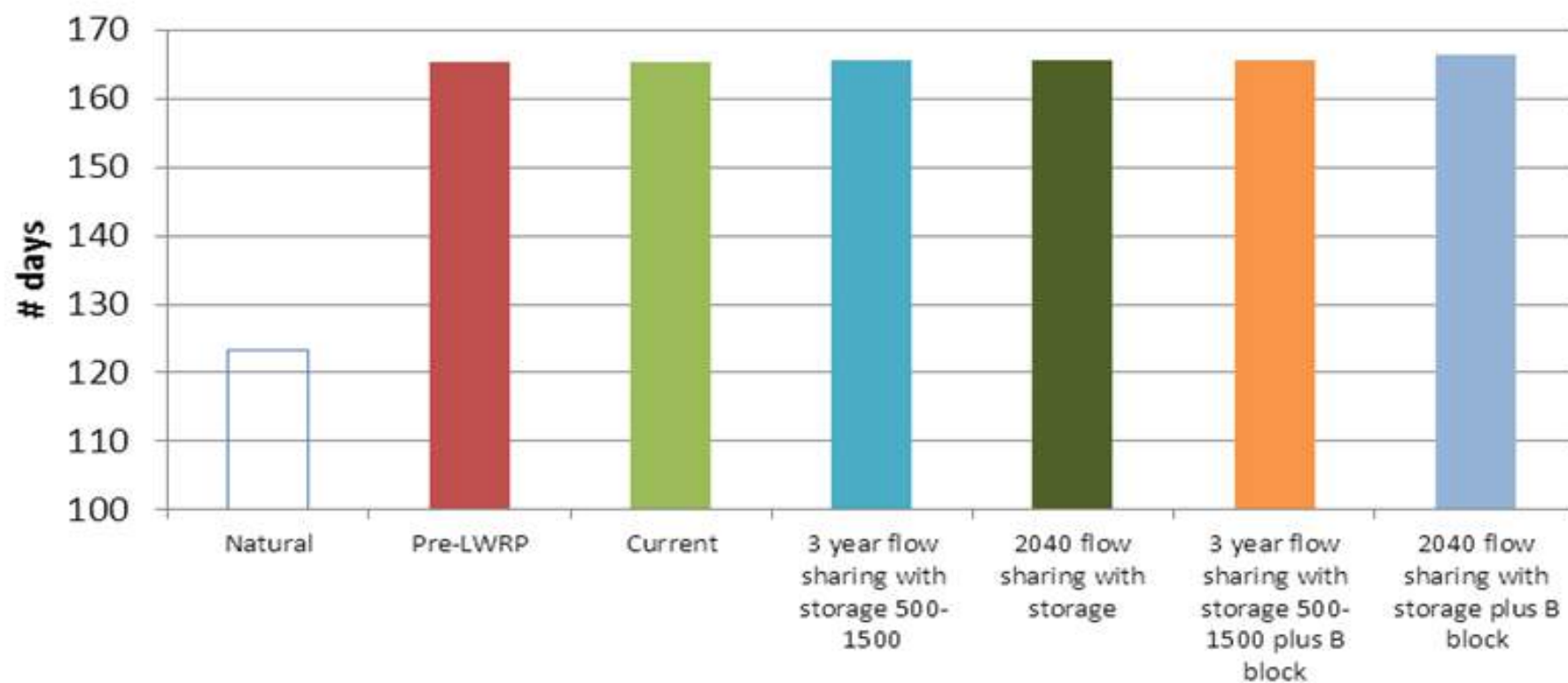
**b) consec days  $Q < \text{MALF}$**



a) days between freshes



### b) days between floods



# Further research and modelling needed

- Gauging is needed in the reach where most birds nest
- The length of dry riverbed under varying conditions needs to be determined
- Habitat suitability curves at a range of flows is needed for the key bird species
- Monitoring of nesting success
- Further hydrological modelling is underway but this needs to take into account that bird nesting is upstream from SH1 and u/s Ohapi is in the recharge reach

# Conclusions

- low flows and number of dry days have been exacerbated by water takes
- The modelled scenarios of river flow do little to improve conditions for birds as they have not been based on gauging where the birds nest
- Increased dry days and low flows have impacted on nesting
- Minimum flow restrictions need to be increased to at least 7dayMALF at upstream Ohapi – 1500 li/s and sooner than 2040
- Protection of flushing flows is needed without abstraction to storage causing flat lining of flow
- The Orari is probably one of the most depleted of the foot hills rivers but the same issues are likely to be present elsewhere.