Update of the surface water hydrology in the Te Waihora/ Lake Ellesmere Catchment

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Outline

- Current hydrological monitoring
- Modelling of lowland streams
- Modelling of the drying of the Selwyn River
- Conclusions
- Future work


Legend
Flow recorder on ECan website
Flow recorder not on website
Telemetered lake level recorder
HALSWELL RIVER
SELWYN RIVER
L2 RIVER
KAITUNA RIVER
DOYLESTON DRAIN
LAKE ELLESMERE
HARTS CREEK
LEE RIVER
LAKE ELLESMERE
0
2
4 Kilometres

Modelling of lowland streams

- 5 sites have been modelled
- These represent ~75% of the surface inflow to Te Waihora
- Sites modelled
  - Selwyn River
  - Halswell River
  - L-2 River
  - Harts Creek
  - Irwell River
- 3 scenarios are presented; current, natural and 100% use.

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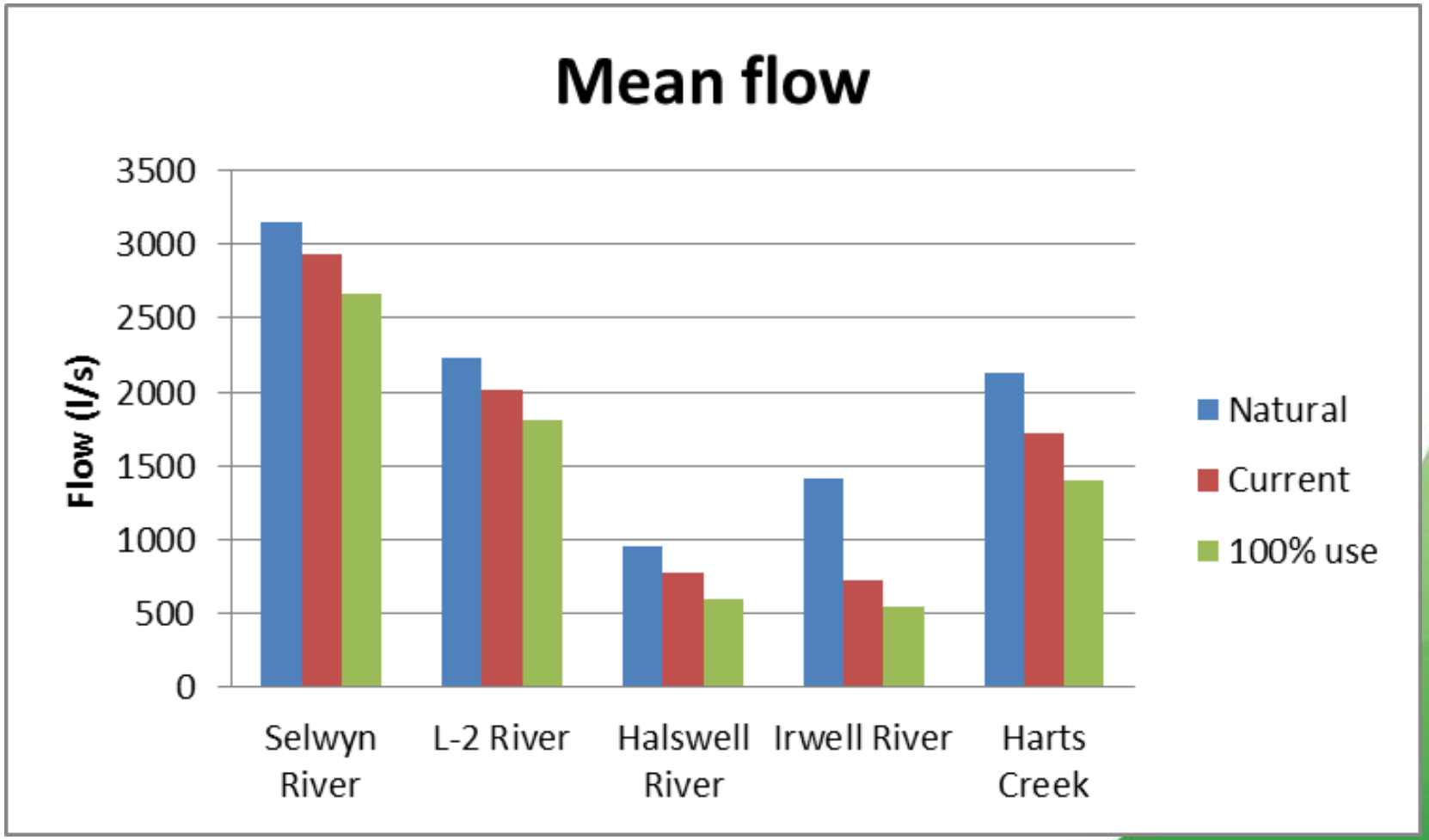
Modelled scenarios for the lowland streams



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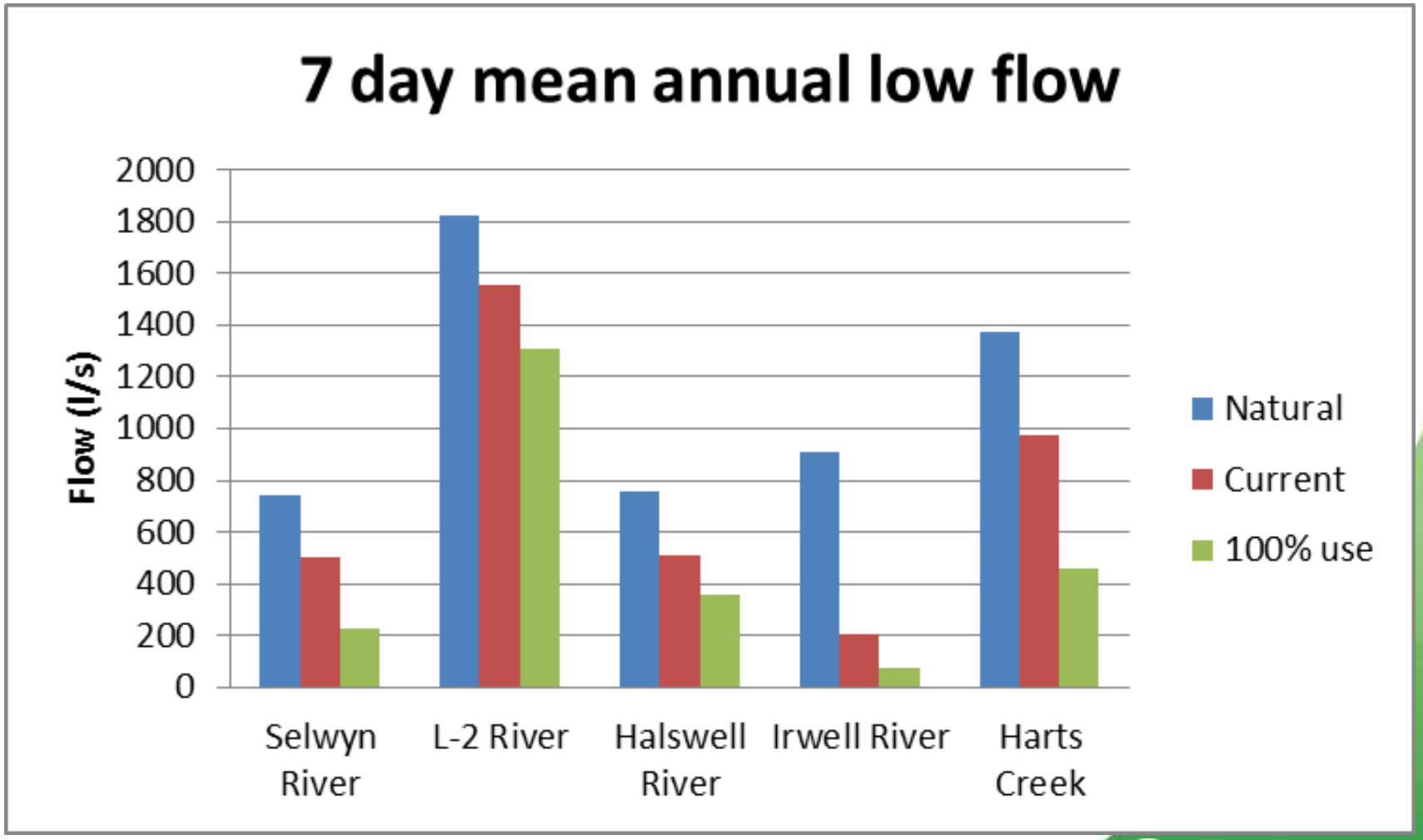
Effects on Low flows



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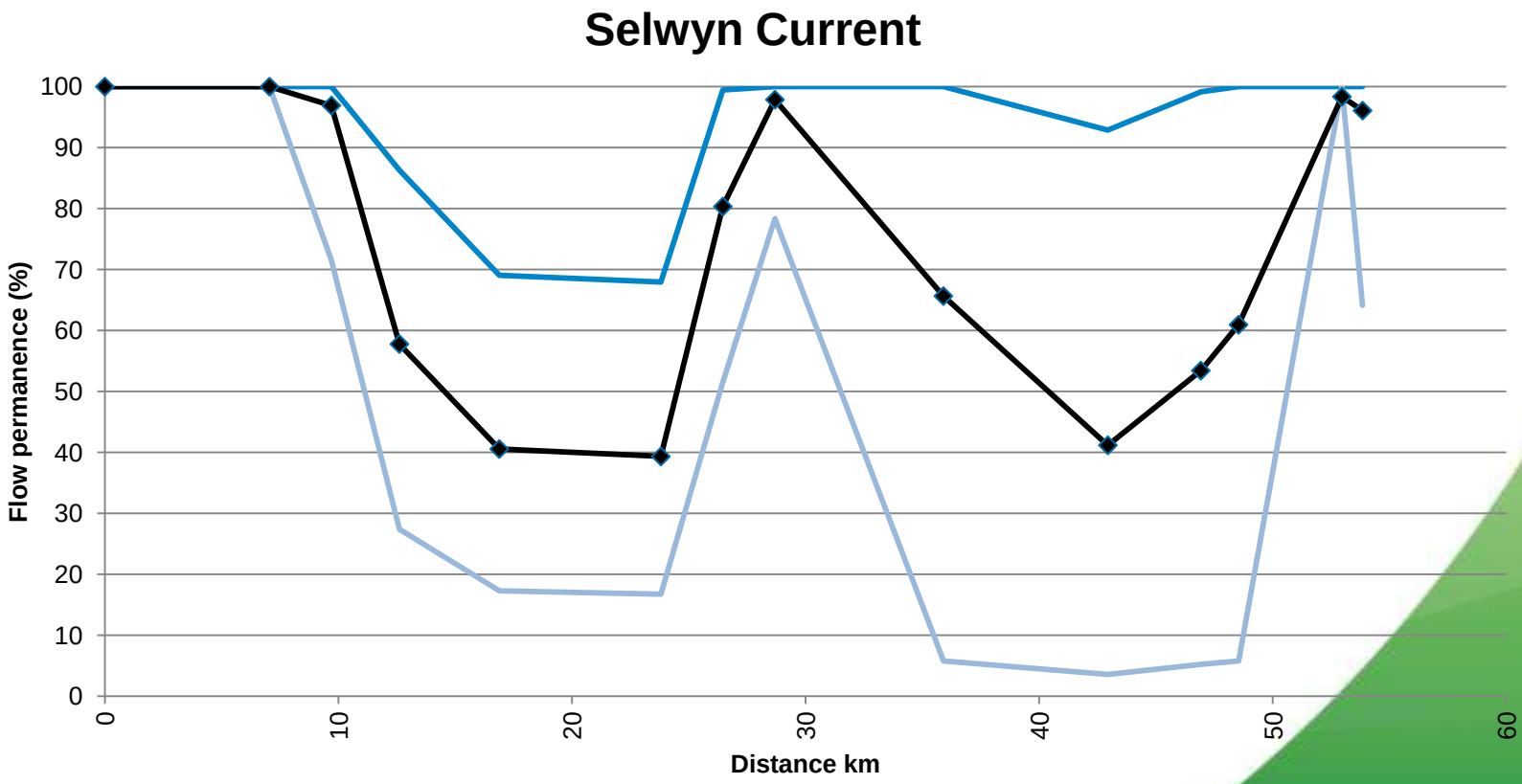
Flow permanence in the Selwyn River



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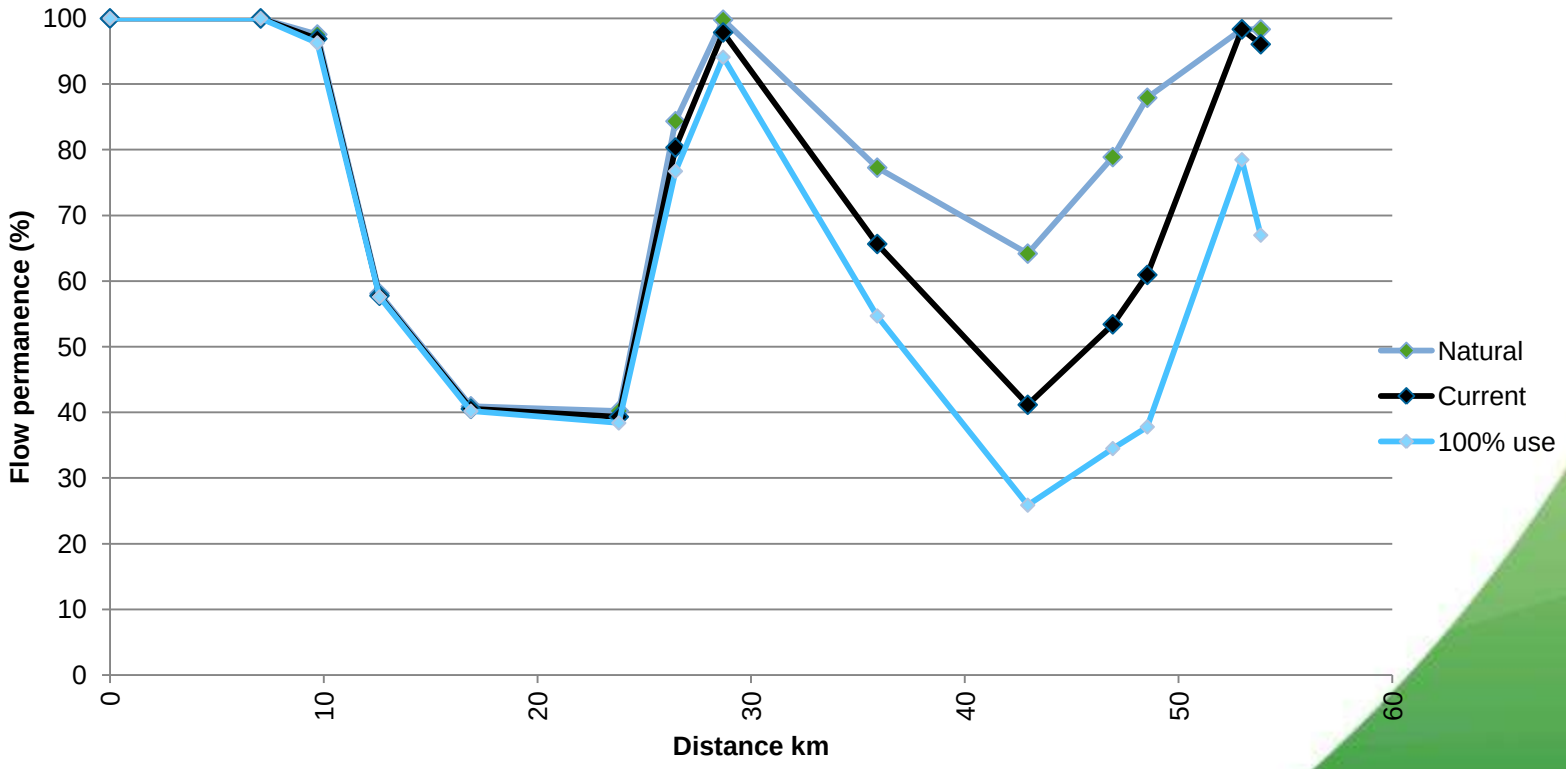
Effect of abstraction on flow permanence



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Conclusions from surface water modelling

- Current levels of abstraction have effected flows in the tributaries of Te Waihora
- Current use is estimated to be 40-50% of consented abstraction
- Even with no further allocation flows can be reduced by current consent holders using more of their allocation.
- The effect of cumulative groundwater abstraction is large compared to surface water abstraction on some lowland streams and must be accounted for in the management of these.

Future work…

- Scenario modelling, integrating water quantity and quality within the Te Waihora catchment.

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Questions?

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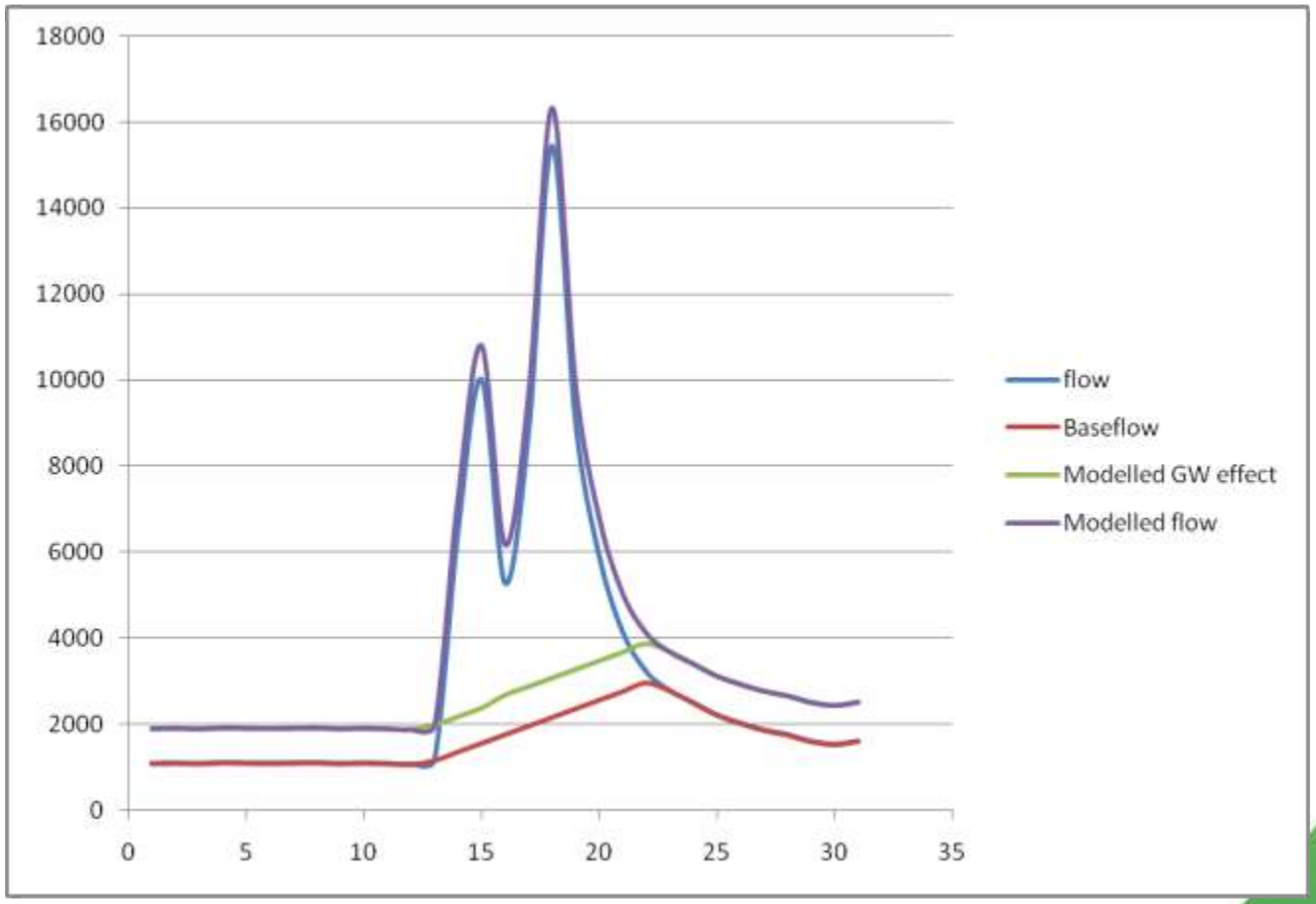
Basics of the stream modelling



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