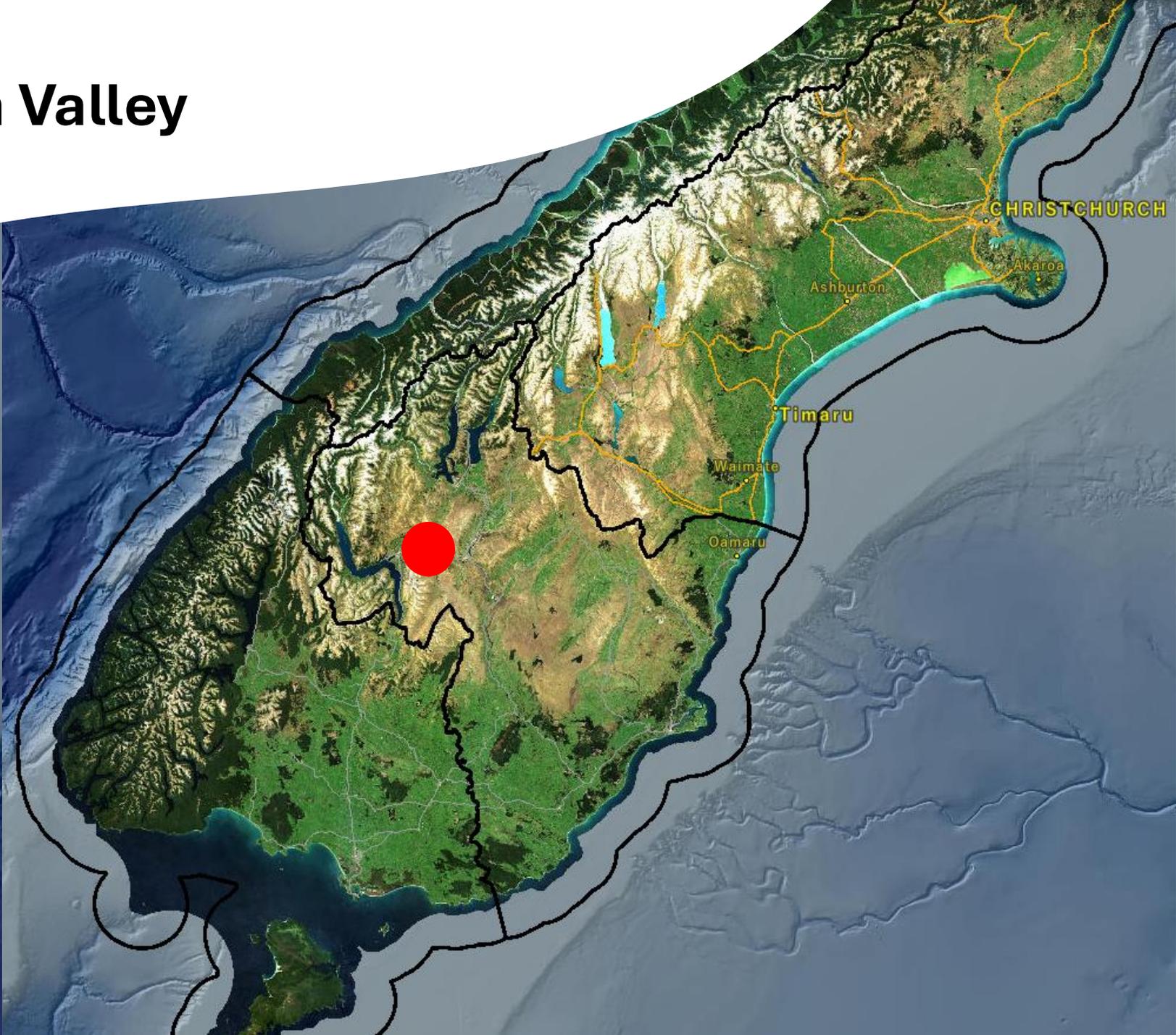


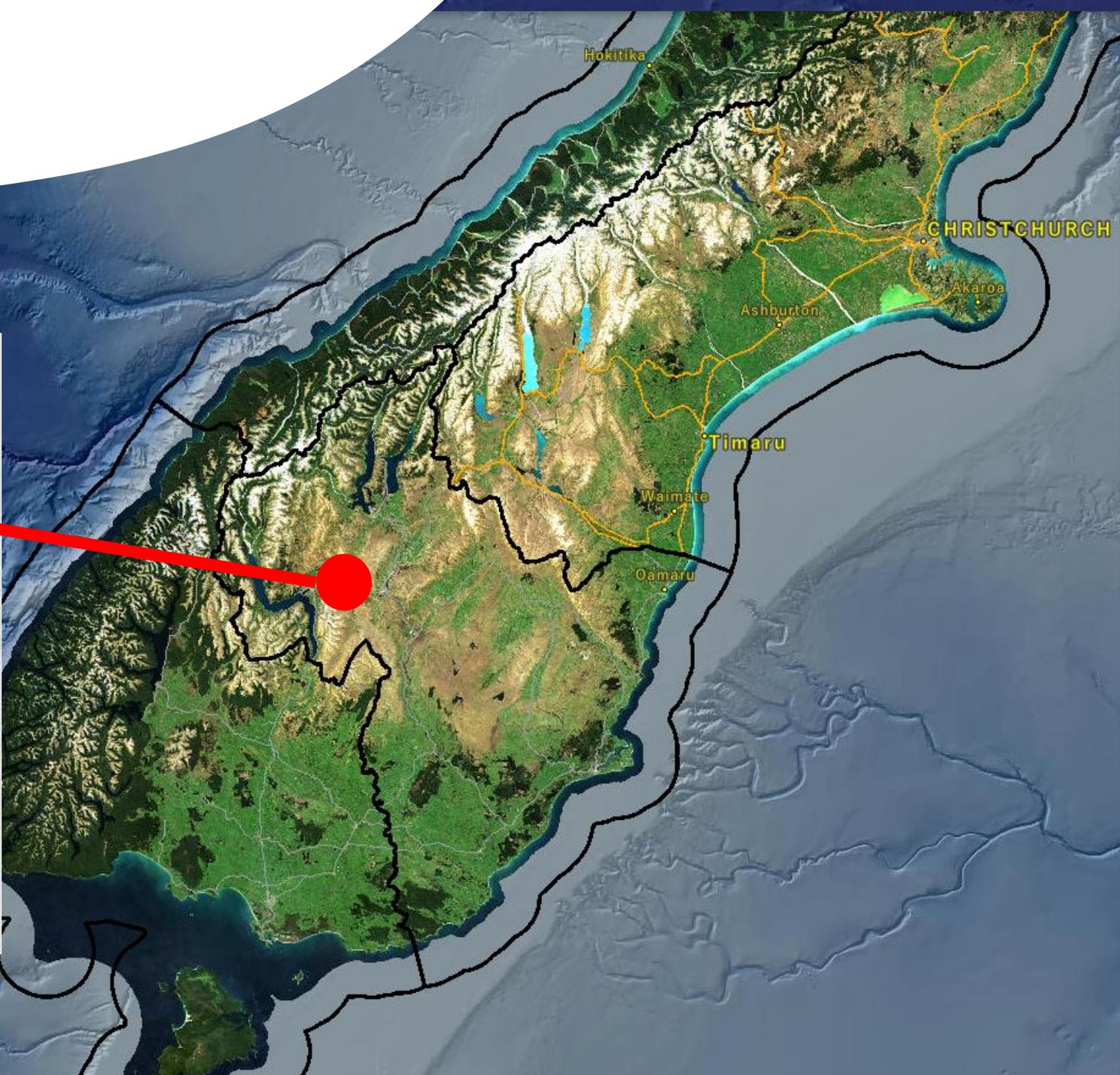
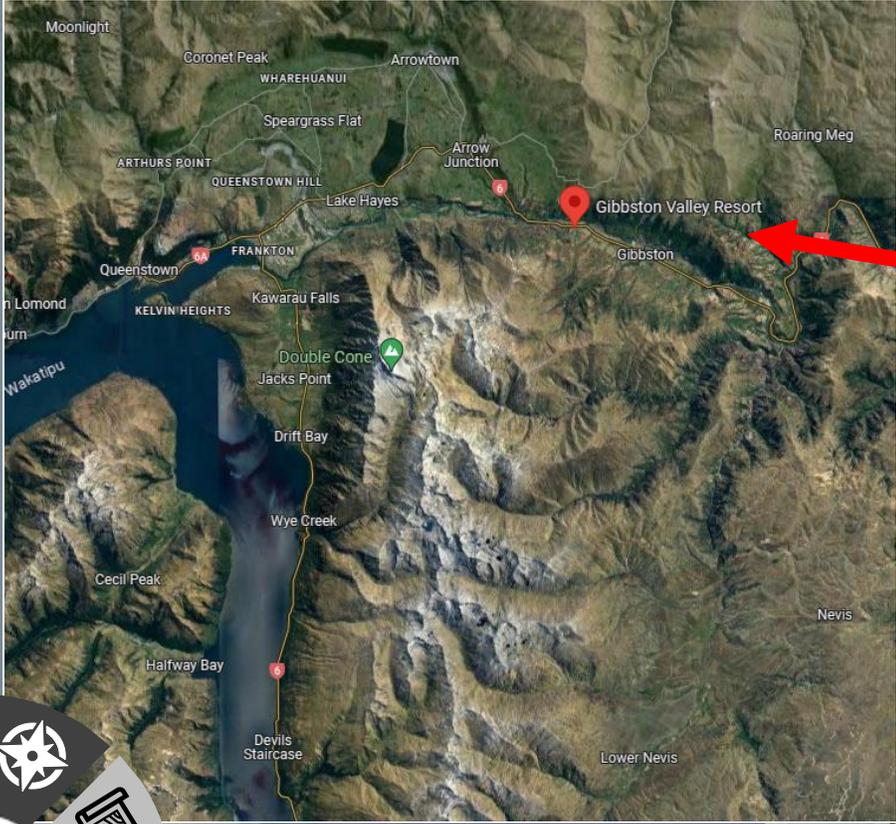
Gibbston Valley Station – Using The Hills

Brian Ellwood

Gibbston Valley



Gibbston Valley



Land Available - Development Sequence



LTA Location Criteria

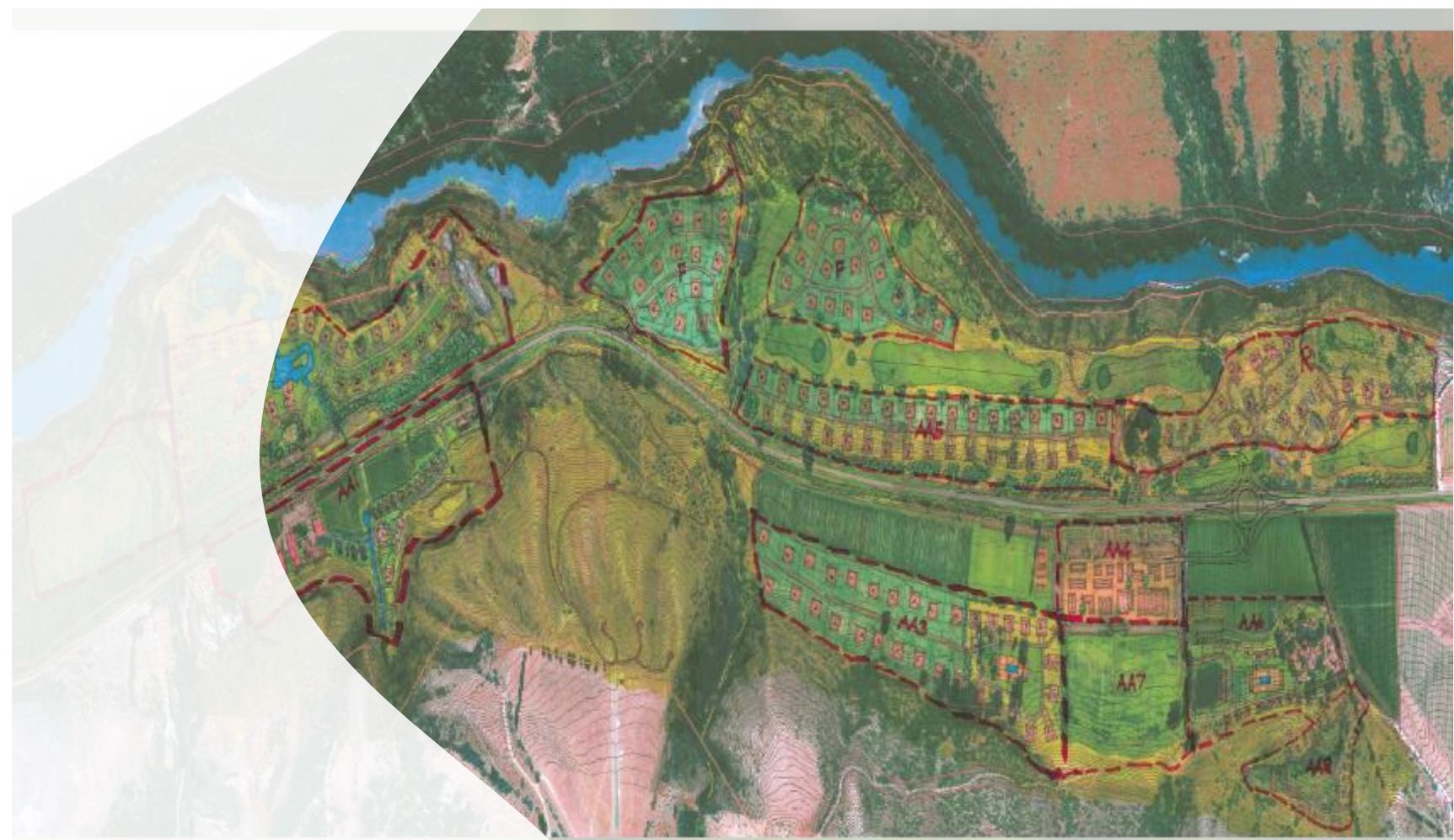
Flexible

Compatible

Areas

Staging

Onsite



LTA Location Criteria

Flexible

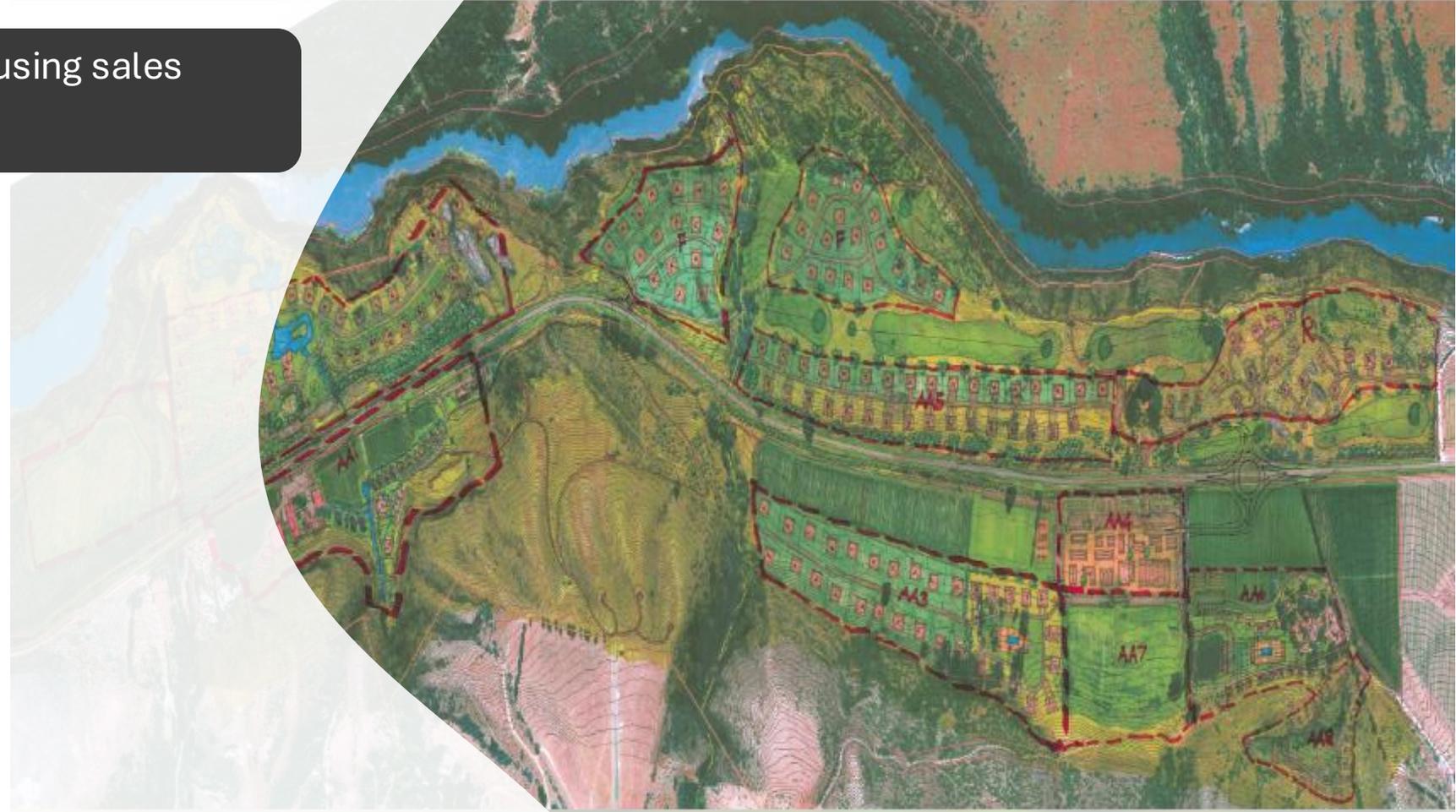
Flexibility to match housing sales
– the priority changes

Compatible

Areas

Staging

Onsite



LTA Location Criteria

Flexible

Flexibility to match housing sales
– the priority changes

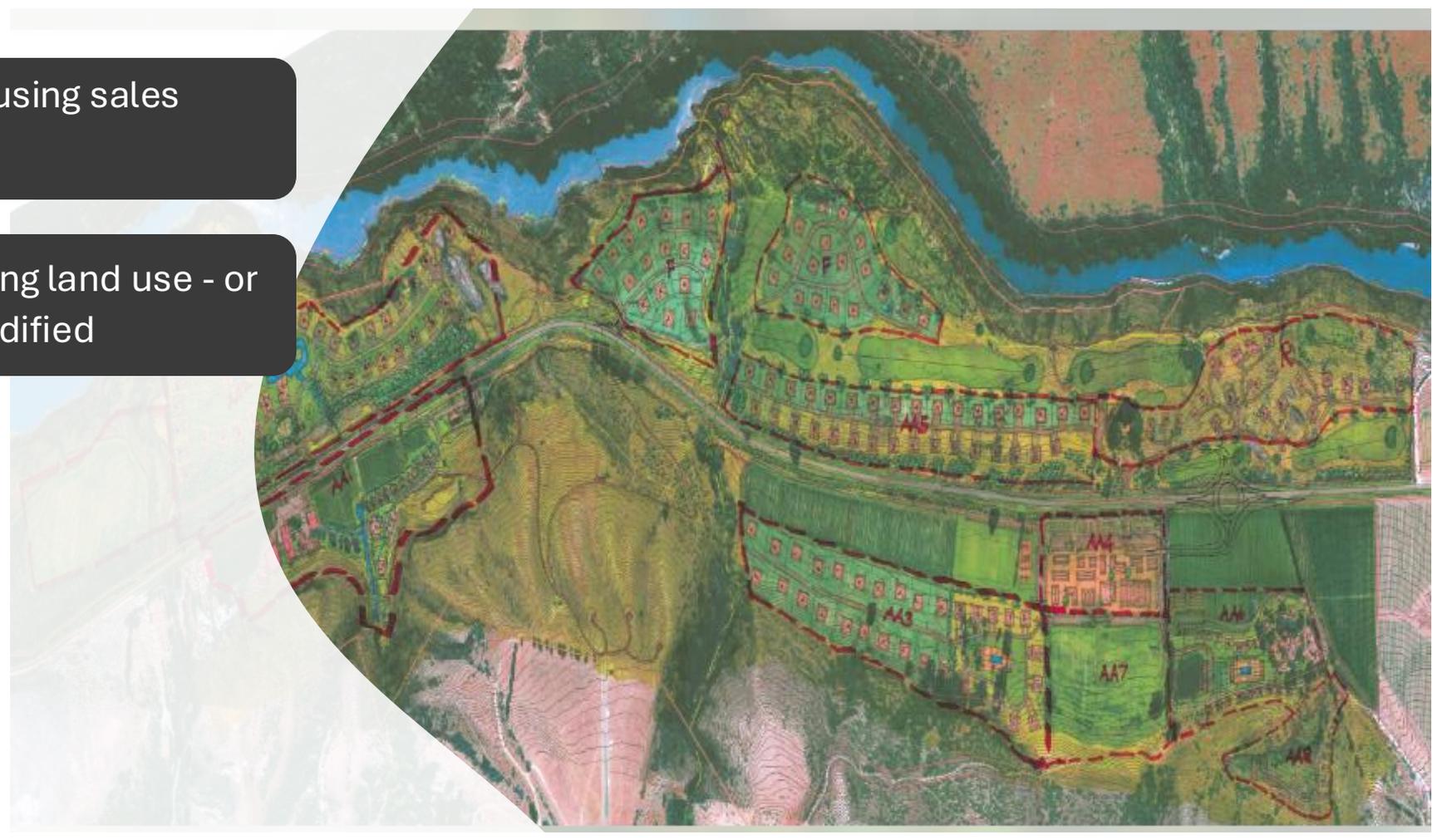
Compatible

Compatible with existing land use - or
can the existing be modified

Areas

Staging

Onsite



LTA Location Criteria

Flexible

Flexibility to match housing sales
– the priority changes

Compatible

Compatible with existing land use - or
can the existing be modified

Areas

Separate area for development zone vs
combined treatment area

Staging

Onsite



LTA Location Criteria

Flexible

Flexibility to match housing sales
– the priority changes

Compatible

Compatible with existing land use - or
can the existing be modified

Areas

Separate area for development zone vs
combined treatment area

Staging

Infrastructure staging

Onsite



LTA Location Criteria

Flexible

Flexibility to match housing sales
– the priority changes

Compatible

Compatible with existing land use - or
can the existing be modified

Areas

Separate area for development zone vs
combined treatment area

Staging

Infrastructure staging

Onsite

Onsite for larger lots vs
community scheme



Site Selection Process

Flexible

Compatible

Land Use

Boundary

Surface



Site Selection Process

Flexible

Flexibility – one option considered three LTA's

Compatible

Land Use

Boundary

Surface



Site Selection Process

Flexible

Flexibility – one option considered three LTA's

Compatible

Complementary to recreational development

Land Use

Boundary

Surface



Site Selection Process

Flexible

Flexibility – one option considered three LTA's

Compatible

Complementary to recreational development

Land Use

Other land uses – concerts cycling and camping

Boundary

Surface



Site Selection Process

Flexible Flexibility – one option considered three LTA's

Compatible Complementary to recreational development

Land Use Other land uses – concerts cycling and camping

Boundary Boundary setbacks

Surface



Site Selection Process

Flexible

Flexibility – one option considered three LTA's

Compatible

Complementary to recreational development

Land Use

Other land uses – concerts cycling and camping

Boundary

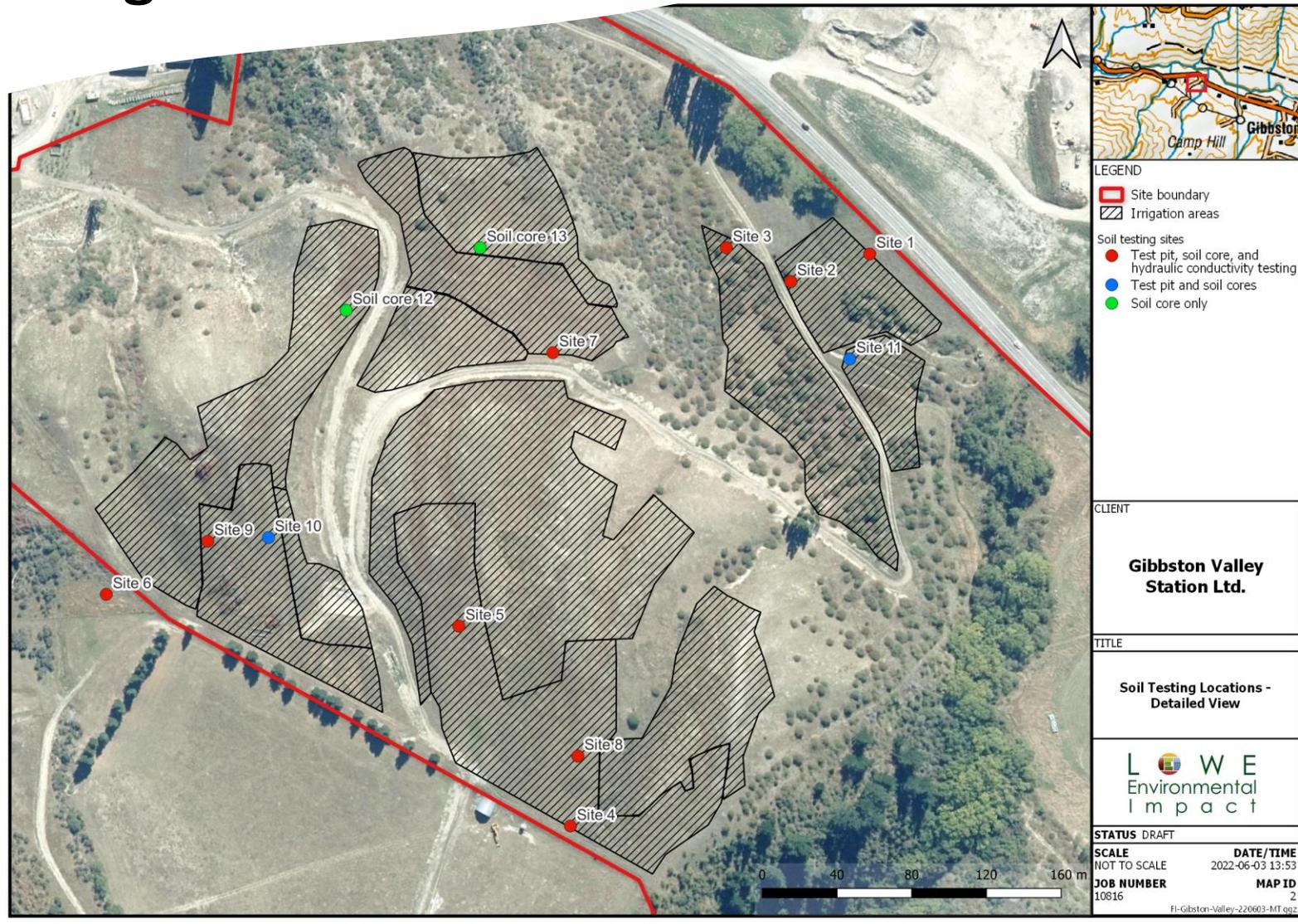
Boundary setbacks

Surface

Surface waterways



Investigation – Soil Testing



Slope and Soil investigations are used to inform hydraulic loading

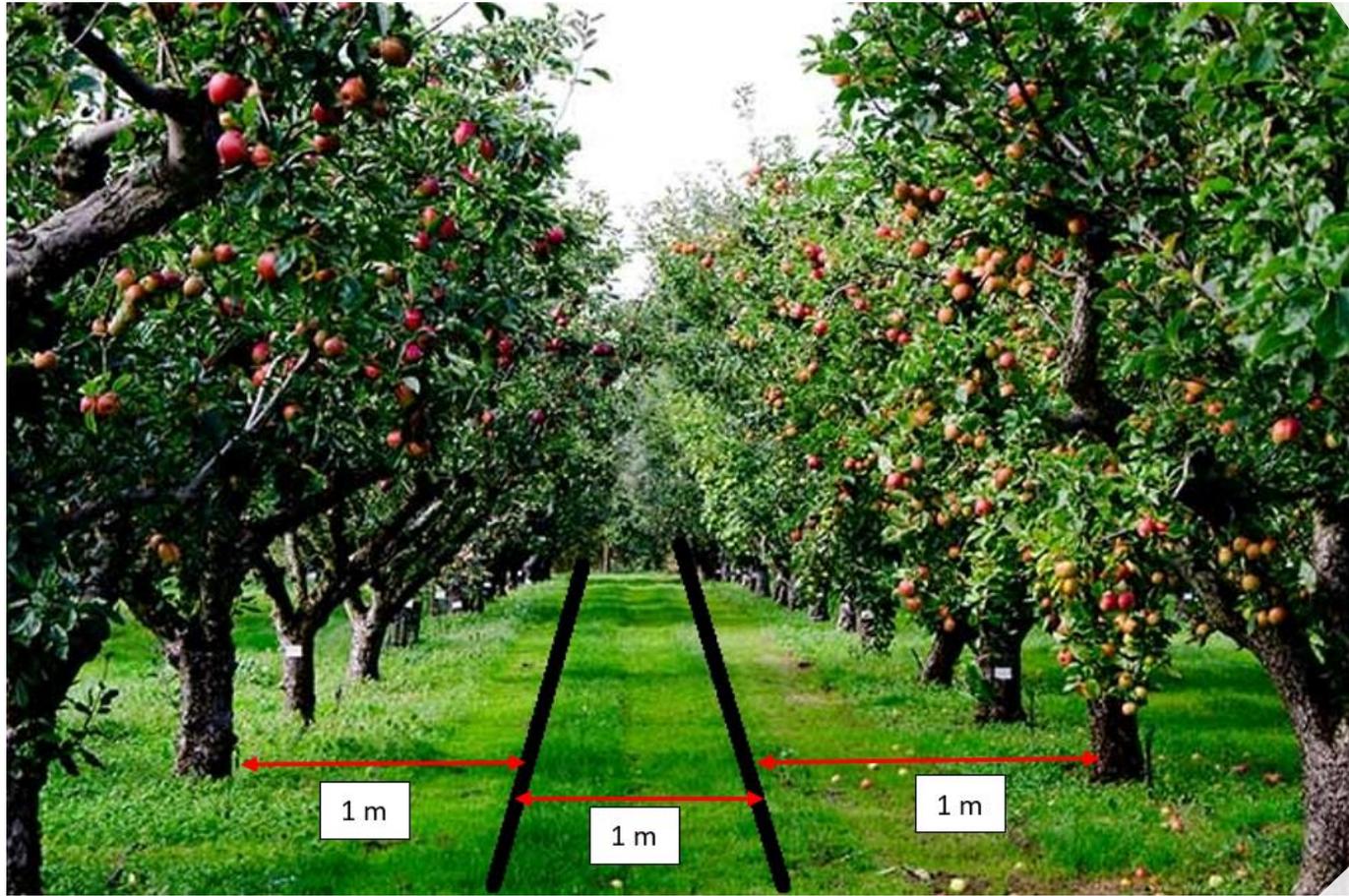
- Saturated hydraulic conductivity (K sat)
- K-40 (unsat)
- Test pits
- Slope

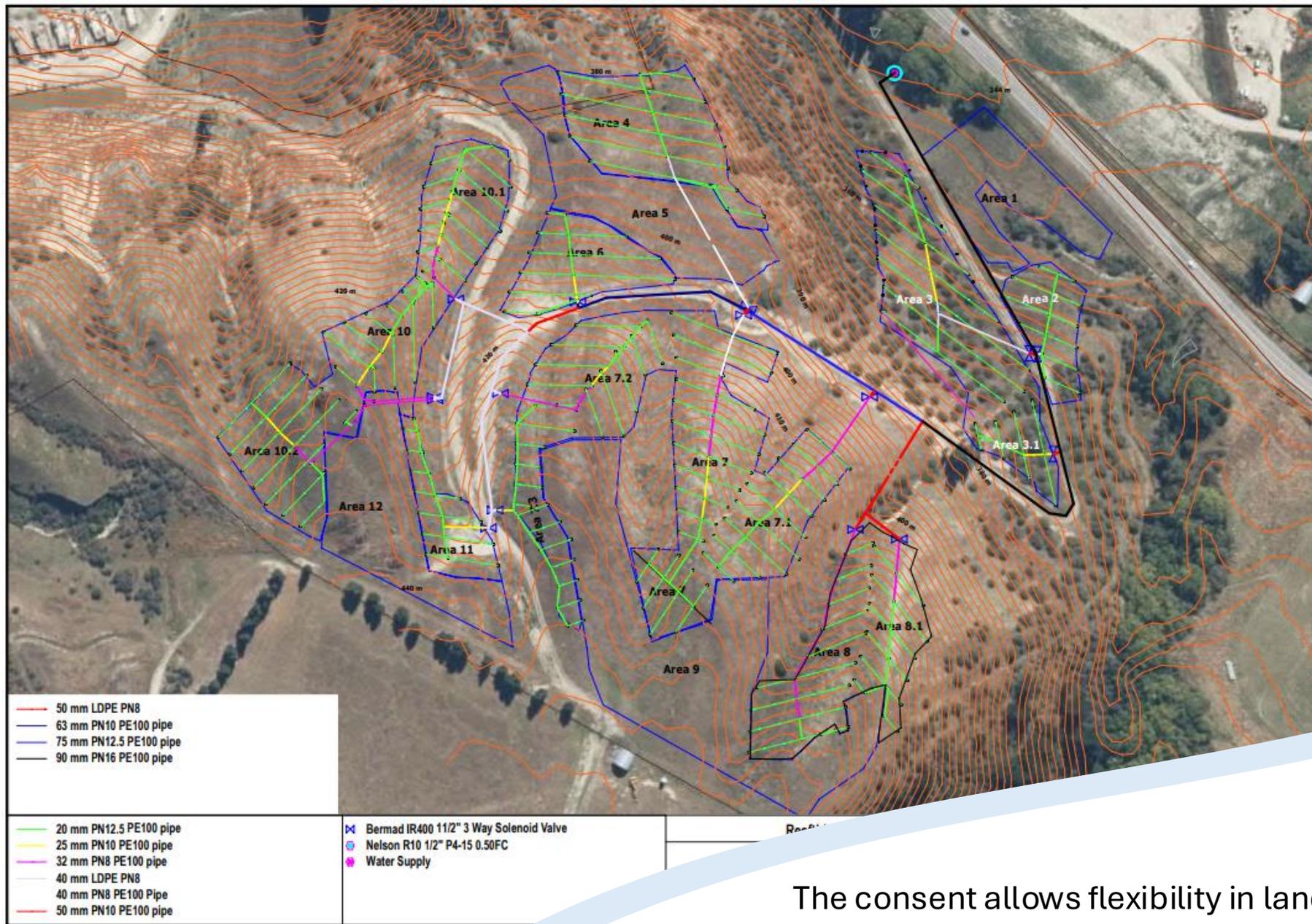


Irrigation Options

The application method
matched to site physical
constraints

Slope, Weather & Flow

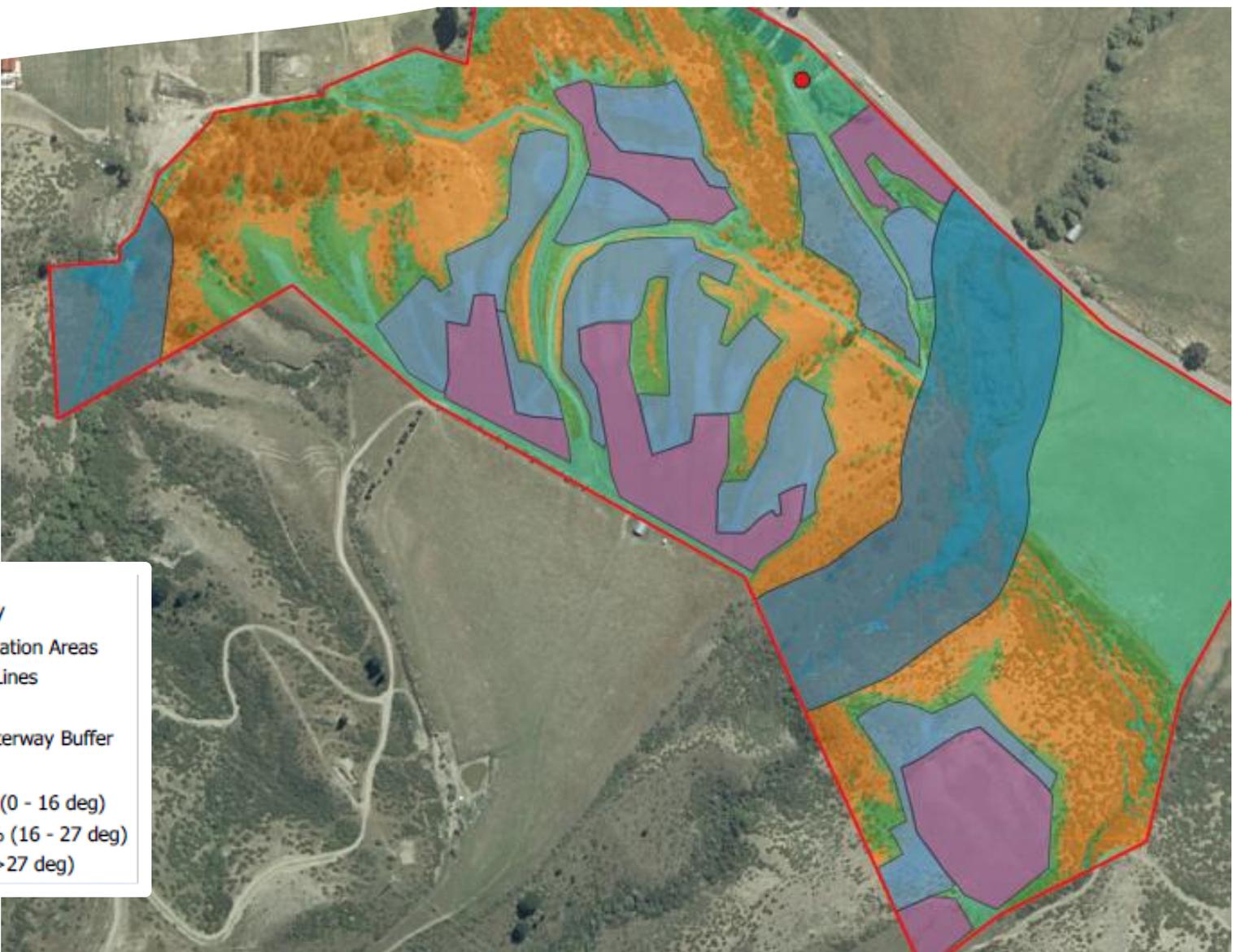




The consent allows flexibility in landuse, irrigation type and accounts for the seasonal variability in wastewater treatment plant performance



Stage Development – Consented Irrigation Map



 Boundary

Potential Irrigation Areas

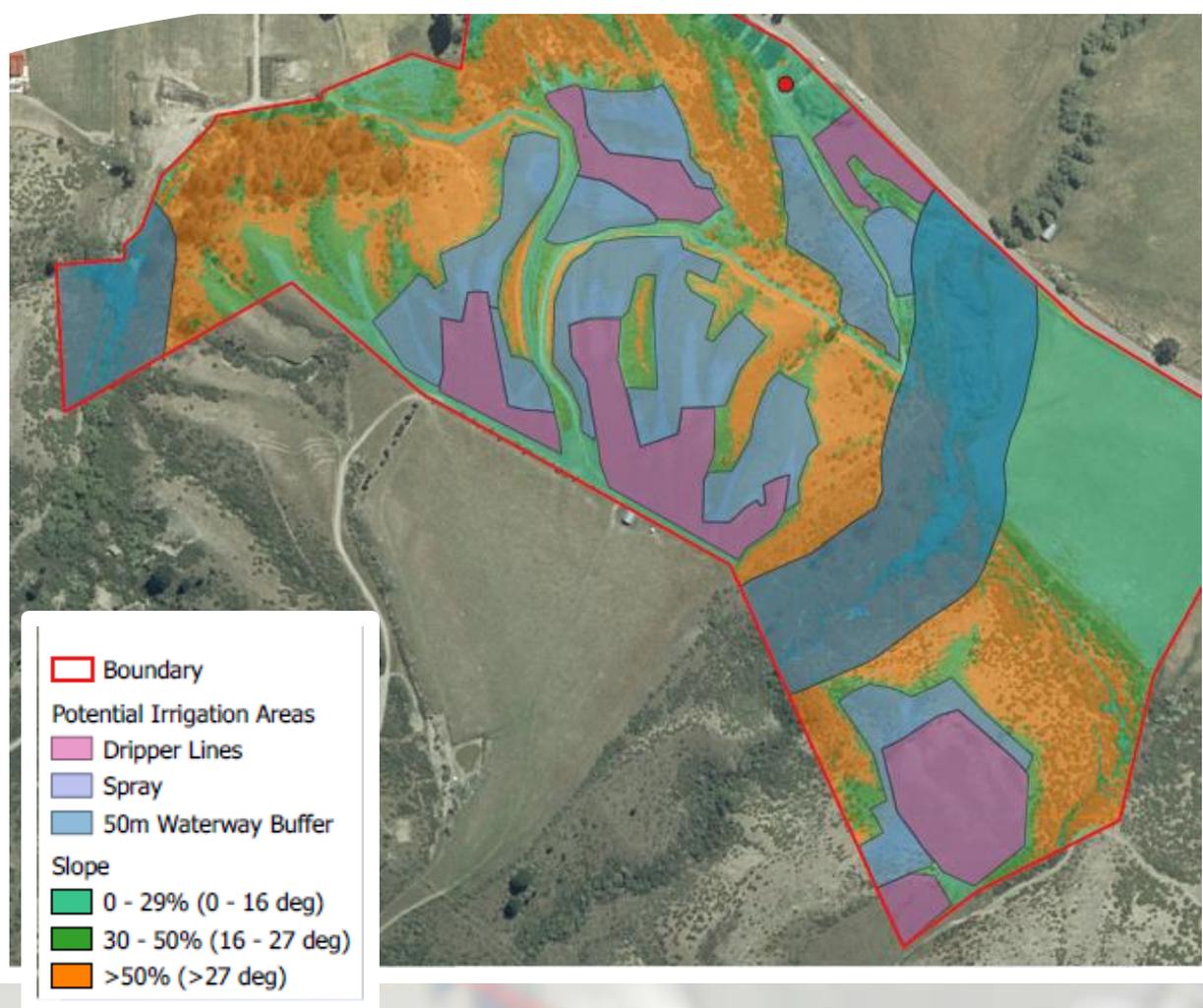
-  Dripper Lines
-  Spray
-  50m Waterway Buffer

Slope

-  0 - 29% (0 - 16 deg)
-  30 - 50% (16 - 27 deg)
-  >50% (>27 deg)



Stage Development – Consented Irrigation Map



Discharge quality – Rolling 12 month means

- a) BOD 20 milligrams per litre;
- b) TSS 30 milligrams per litre;
- c) Total nitrogen 25 milligrams per litre;
- d) Total phosphorus; 10 milligrams per litre
- e) Escherichia coli 10,000 cfu per 100 millilitres (rolling 12-month geometric mean)

Average irrigation rate: **3mm/day**
Peak wet weather rate: **4 mm/day**
Irrigation depth: **12mm**



Summary

Staging

Match

Quality

Compatible

Land



Summary

Staging Integrated to allow staging

Match

Quality

Compatible

Land



Summary

Staging Integrated to allow staging

Match Irrigation type matched to slopes. Loading matched to landuse

Quality

Compatible

Land



Summary

Staging Integrated to allow staging

Match Irrigation type matched to slopes. Loading matched to landuse

Quality WWTP quality allows for seasonal variation

Compatible

Land



Summary

Staging Integrated to allow staging

Match Irrigation type matched to slopes. Loading matched to landuse

Quality WWTP quality allows for seasonal variation

Compatible WWTP and LTA developed compatible with the staged resort development

Land



Summary

Staging Integrated to allow staging

Match Irrigation type matched to slopes. Loading matched to landuse

Quality WWTP quality allows for seasonal variation

Compatible WWTP and LTA developed compatible with the staged resort development

Land Maximise beneficial use of the land. Avoiding conflicting landuse and effects on the environment



L W E Environmental I m p a c t

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