5.0 Alternative Sites

QR National commissioned Engenicom to undertake a final Location Constraints Analysis review to confirm the preferred location in the Hunter Valley for the TSF. Some 54 sites were considered as part of the investigations with seven sites examined in detail.

The Hexham site is identified as the preferred location in these investigations. Further to the review of suitable sites a number of design investigations were also undertaken to achieve an optimal TSF layout at Hexham that met the QR National operational requirements, maximised economic benefit and minimised environmental impacts. An overview of the alternative sites is included below.

5.1 OPTION 1 – HEXHAM (Preferred)

The Hexham option has a frontage of 3.30kms adjoining the GNR at Hexham. This option has minimal site grading as the topography is relatively level however flooding is an issue. The site zoning is only partly compatible with the proposed facility.

Road access for the construction phase is difficult however the adjacent ARTC HRR Project provides opportunities for shared access.

This option facilitates operational flexibility in terms of the number of paths available from the coal terminals, its frontage to dedicated coal lines and proximity to the Newcastle coal terminals. QR National owns the area identified as the study area. Part of Lot 1 DP1062240 will be purchased from ARTC by QR National.

Advantages:

- The locality has had a long association with industrial activity (industrial zone) associated with coal processing and rail transport facilities;
- Excellent accessibility to the routes between the coal mines and the Port of Newcastle coal loading terminals;
- The site adjoins a 3km straight length of the Mainline;
- Flat topography and little vegetation cover;
- Separation from the main residential areas of Tarro and Hexham minimising potential issues associated with noise, dust and vibration;
- Close proximity to the Newcastle and Hunter Valley area workforce; and
- Direct access to the New England Highway for fuel deliveries.

Disadvantages:

- Will result in the partial loss of a SEPP 14 Coastal Wetlands area;
- Site is located within the Hunter River floodway area;
- Significant access works necessary to the Tarro Interchange;
- Potential Aboriginal cultural heritage issues to be addressed in the locality of the access road;
- Construction challenges including:
    - Major interface with the ARTC's HRR Project;
    - Potential for flooding of the site and the high water table;
    - Existing infrastructure including gas mains will require mitigation works; and
    - Soft ground and tidal conditions – poor bearing capacity of soil base.

5.2 OPTION 2 - RUTHERFORD

The Rutherford option has a frontage of 4.71km along the Down Main at Rutherford. This option has topography described as undulating and there are no issues with flooding. Currently zoning is not compatible with the proposed usage but the possibility of a rezoning exists in the future. A large number of road access options exist for the option especially via links with the future Hunter expressway. There are 18 landholders and 20 lots requiring acquisition.

Traffic volumes may require an upgrade at the New England Highway and Wollombi Road Intersection. Access of the New England Highway via Station Land utilises the existing turning lane, limiting impact on highway traffic. Access from the Hunter expressway along old North Road will also utilise the proposed turn-off thus avoiding any impact on traffic.

Advantages:

- Has the longest track frontage of the sites considered which improves access;
- Relatively close proximity to workforce; and
- Simple construction from a geotechnical perspective.

Disadvantages

- Timing issues associated with property acquisition and environmental approvals may not allow for implementation in line with the required project timeframes;
- Grades may make shunting difficult;
- Significant works necessary if Local Government access requirements are to be satisfied; and
- Does not provide QR National with the same amount of operational flexibility in the Live Run as Hexham;

5.3 OPTION 3 - ALLANDALE

The Allandale option has a frontage of 3.10km along the Down Main at Allandale. This option has topography which can be best described as hilly and there may be some issues associated with flash flooding due to a major gully running through the site. Site zoning is currently not compatible with the proposed usage but the possibility of a re-zoning exists in the future.

A large number of road access options exist, especially via links with the future Hunter Expressway. This option requires QR National's trains leaving the terminals for the facility to utilise planned paths. There are 14 landholders and 15 lots requiring acquisition. Constructability is flagged as being a major issue for this option due to the hilly topography.

Advantages:

- Relatively close proximity to workforce; and
- Simple construction from a geotechnical perspective.

Disadvantages:

- Major earthworks required;
- Does not provide QR National with the same amount of operational flexibility as Hexham;
- Timing issues associated with property acquisition and environmental approvals may not allow for implementation in line with the required project timeframes; and
- Grades may make shunting difficult.

5.4 OPTION 4 - BELFORD EAST

The Belford East option has a frontage of 3.33km along the Down Main at Belford. This option has topography which can best be described as undulating and there may be some issues associated with flash flooding due to a major gully running through the site. Site zoning is currently not fully compatible with the proposed usage but the possibility of a re-zoning exists in the future.

Only one road access option was identified from the New England Highway via Pothana Lane and a rail overbridge (recently upgraded). This option requires QR National trains leaving the terminals for the facility to utilise planned paths. There are two landholders and five lots requiring acquisition. Operability is flagged as a major issue for this option due to topography and the existing Mainline vertical and horizontal alignments.

Advantages

- Simple construction from a geotechnical perspective; and
- Relatively simple road access when compared with other options.

Disadvantages

- Major earthworks required;
- Does not provide QR National with the same amount of operational flexibility as Hexham;
- Timing issues associated with property acquisition and environmental approvals may not allow for implementation in line with the required project timeframes;
- Grades may make shunting difficult;
- Mainline track curvature makes the connection to the Mainline difficult; and
- Not in close proximity to workforce.

5.5 OPTION 5 - BELFORD WEST

The Belford West option has a frontage of 3.42km along the Down Main at Belford. This option has topography which best be described as undulating and there appears to be no issue with flooding. Site zoning is currently not fully compatible with the proposed usage but the possibility of a re-zoning exists in the future.

Only one road access option was identified from the New England Highway via Hermitage Road overbridge which has been upgraded as part of ARTC's Maitland to Minimbah 3rd Road Project. This option requires QR National trains leaving the terminals for the facility to utilise planned paths. There are nine landholders and 25 lots requiring acquisition. Operability is flagged as a major issue for this option due to topography and the existing Mainline vertical and horizontal alignments.

Advantages

- Simple construction from a geotechnical perspective.

Disadvantages

- Major earthworks required;
- Does not provide QR National with the same amount of operational flexibility in Hexham;
- Timing issues associated with property acquisition and environmental approvals may not allow for implementation in line with the required project timeframes;
- Grades may make shunting difficult;
- Mainline track curvature makes connection the Mainline difficult; and
- Not in close proximity to workforce.

5.6 OPTION 6 - WHITTINGHAM

The Whittingham option has a frontage of 3.00km along the Down Main at Whittingham. This option has topography which can be best described as flat and there may be some issues associated with flooding due the sites location on the Hunter River floodplain. Site zoning is currently not fully compatible with the proposed usage but the possibility of a re-zoning exists in the future.

Road access was identified as being from New England Highway via Range Road overbridge. This option requires QR National trains leaving the terminal for the facility to utilise the planned paths. There are six landholders with seven lots requiring acquisition. There is the possibility of a major structure across Muddies Creek being required.

Advantages

- Good road access; and
- Flat grade assists with shunting.

Disadvantages

- Major visual intrusion;
- Major structure requires to span Muddies Creek;
- Possible indigenous heritage issues around Muddies Creek;
- Construction on a floodplain may be problematic;
- Not within close proximity to workforce;
- Smallest track frontage of the options considered;
- In close proximity to Minimbah Bank (Whittingham Junction) which is the ruling grade for the network;
- Does not provide QR National with the same amount of operational flexibility in Hexham; and
- Timing issues associated with property acquisition and environmental approvals may not allow for implementation in line with the required project timeframes.

5.7 OPTION 7 - SINGLETON

The Singleton option has a frontage of 3.08km along the Down Main at Singleton. This option has topography which can be best described as flat and there may be some issues associated with flooding due the sites location on the Hunter River floodplain. Site zoning is currently not fully compatible with the proposed usage but the possibility of a re-zoning exists in the future.

Road access was identified as being from New England Highway via Golden Highway and Putty road. There may be some issues associated with route through a nearby residential area. This option requires QR National trains leaving the terminals for the facility to utilise planned paths. There are five landholders and 13 lots requiring acquisition. Environmental impact is flagged as a major issue with this option due to the nearby location of residential housing.

Advantages

- Flat grade assists with shunting.

Disadvantages

- Construction on a floodplain may be problematic.
- Not within close proximity to workforce.
- In close proximity to Minimbah Bank (Whittingham Junction) which is the ruling grade for the network;
- Does not provide QR National with same amount of operational flexibility in Hexham.
- Timing issues associated with property acquisition and environmental approvals may not allow for implementation in line with the required project timeframes.

5.8 OPTION – NOT PROCEEDING

The impact of not proceeding would result in ongoing congestion and disruption to Port activities associated with the maintenance, refuelling, provisioning and inspection activities of above rail operators such as QR National. This would limit the ability for QR National to meet growth/business targets. This would not contribute to the achievement of the 2011 – 2012 Hunter Valley Corridor Capacity Strategy, which seeks to improve the passage of coal trains through the Kooragang Coal Handling Facility. Overall, this would have a detrimental impact on the productivity of the Newcastle Terminals.

Not proceeding will result in an ideally located site that has been demonstrated to be suitable to facilitate the proposed TSF not being developed. This would eventually require a TSF to be developed on an alternate site in another location. Additionally, by not proceeding, the opportunity to maintain, service and provision trains away from the KCT would not be realised and would limit the servicing capabilities to a maximum of one train per day (as is the current situation).

5.9 ASSESSMENT CRITERIA

QR National used criteria that included strategic locality, accessibility; topography and logistical concerns as well as environmental, servicing and operational considerations to score the sites' suitability in order to select a preferred option. Following this, the Hexham option (the proposed TSF) was selected as the preferred option based on the following:

- The locality has had a long association with industrial activity associated with coal processing and rail transport facilities;
- Excellent accessibility to the routes between the coal mines and the Newcastle Terminals;
- The site adjoins a 3km straight length of the Mainline;
- Flat topography and little vegetation cover;
- Separation from the main residential areas of Tarro and Hexham minimising potential issues associated with noise, dust and vibration;

- Close proximity to the Newcastle area workforce; and
- Direct access to the New England Highway for fuel deliveries.

Additionally, of importance to the selection of the Hexham site are the environmental and economic considerations. These are outlined below.

5.9.1 Environment

- The proposed TSF location and design minimises impact on SEPP 14 Coastal Wetlands and EEC's;
- The impact has been limited to degraded SEPP 14;
- The design incorporates a limited footprint allowing for onsite offsets to be conserved in perpetuity;
- The design is located in a position to minimise any impacts or have no impacts on the Hexham Swamp Nature Reserve or the Hexham Swamp rehabilitation project; and
- The TSF footprint is located outside of existing coal tailings and located on land which was historically used for industrial, coal and rail use.

5.9.2 Economic

- Ideal design for the TSF to be located parallel to the Mainline to maximise entry and exit speed limiting any impacts to the Mainline operation;
- The design has been developed as to not limit future potential development of the site with regards to the freight hub and possible future rail links; and
- There are existing commercial arrangements for the current use of the site and the TSF footprint has been designed to coexist with these arrangements and thus allowing Brancourts operation to remain in-situ. Brancourts employ approximately 30 people.