3.0 Site Description

3.1 SITE IDENTIFICATION DETAILS

The following table contains the relevant land parcels and ownership details of the site:

Table 1: Relevant Land Parcels and Ownership Details.

Lot	Deposited Plan	Land Owner
101	DP1084709	K. Wallin
102	DP1084709	QR National
2	DP735456	QR National
10	DP735235	QR National
104	DP1084709	QR National
113	DP755232	QR National
1	DP155530	QR National
12	DP1075150	QR National
1	DP1062240	ARTC
311	DP583724	QR National
1	DP 128309	HWC

Lot 1 DP 1062240 identified in Table 1 is currently owned by ARTC. QR National seek to purchase part of this lot before construction would commence. A plan identifying the relevant Lot & DPs is located at Figure 2 and Appendix B.

Copies of the Certificates of Title & Deposited Plans are located at Appendix C.

3.2 SITE LOCATION & CONTEXT

The site comprises a 255ha parcel of land largely owned by QR National. The site, in its broader context, is identified in Figure 1.

The site is located approximately 16km from the Newcastle CBD and is located immediately on the west side of the New England Highway, the GNR and the Pacific Highway. The site is adjoined by lands used for rural activities and environmental conservation (including SEPP 14 Coastal Wetlands) further to the west and south. Land immediately to the south of the site is low lying with some areas filled.

The site is located in close proximity to the existing Hexham industrial area which is located on the east side of the Pacific Highway. The site is geographically well located relative to the Port of Newcastle, QR National's customer base being mines within the Hunter Valley as well as being located adjacent to the existing rail network.

Figure 1: Regional Context of the Hexham site.

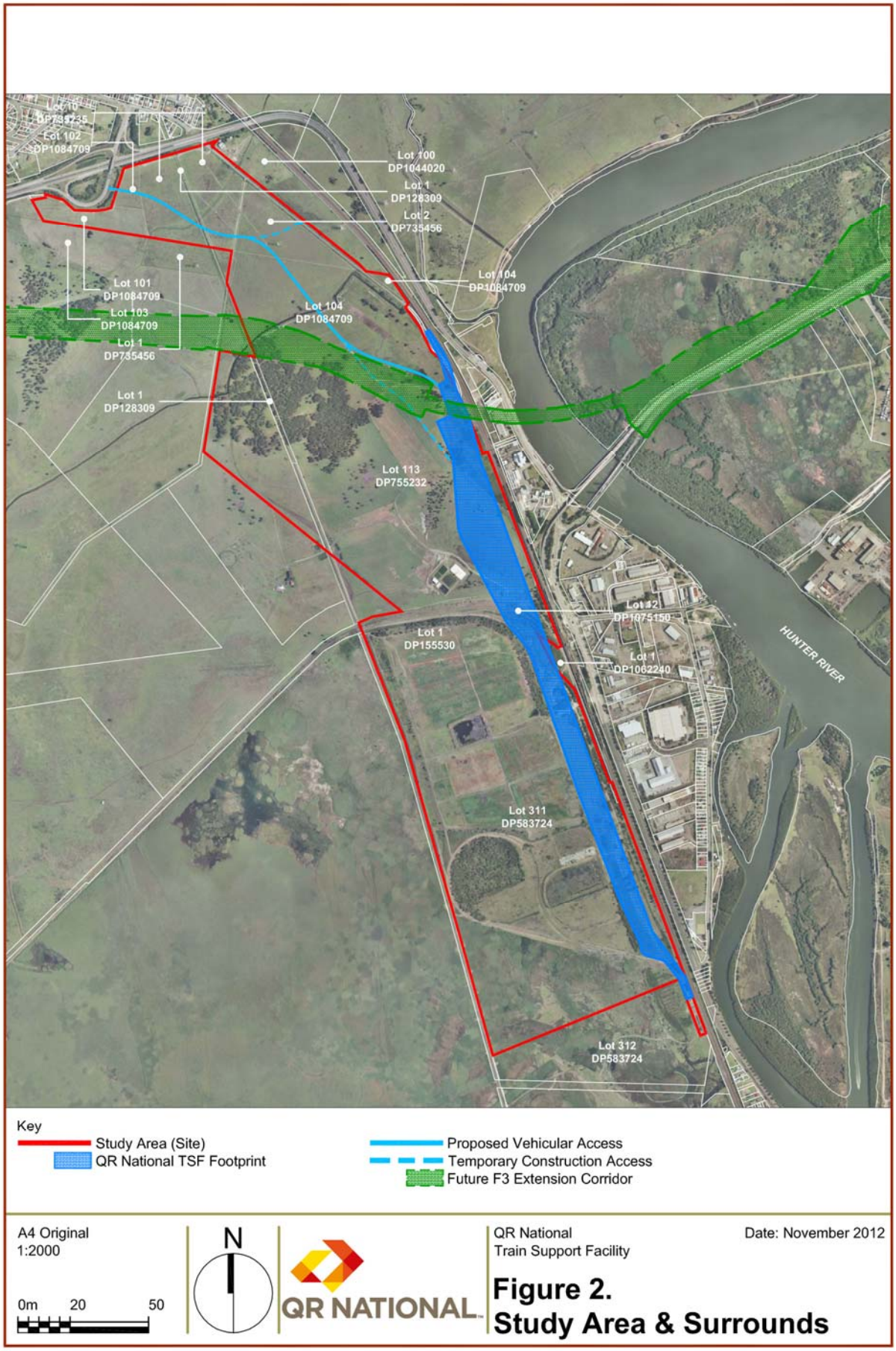


Figure 2: Study Area and Surrounds

The main QR National activities to be undertaken at the site will be separated from any key residential areas. The nearest residential areas are located north of the New England Highway at Tarro and Beresfield. A small number of dwellings are located within lands surrounding the site.

As illustrated in Figure 2, the corridor for the future F3 Freeway traverses the northern part of the site. Following discussions with RMS, road access from the Tarro Interchange to the TSF has taken into account the current design parameters of the Freeway. The F3 incorporates a flyover which will cross the TSF access road and tracks, adjoining infrastructure and the Hunter River. See Section 9.6 for further detail.

The HRR Project involves the construction of five new relief roads (tracks) on land abutting the TSF site. Figure 3 shows the location of the site for the proposed TSF and its proximity to the ARTC HRR Project. A detailed description of the proposed development and project components is contained within Section 6.

The conceptual Fassifern to Hexham rail link joins the Mainline in the vicinity of the TSF site. The TSF has been designed as to not hinder the development of this future Rail Link project. Further details are provided in Section 7.

3.3 EXISTING LAND USE & SITE IMPROVEMENTS

The existing and surrounding land uses are identified within Figure 4. The current zoning reflects the existing and previous land uses where the northern portion of the site is identified as agricultural land and the southern portion as industrial land due to past site disturbances.

Part of the site is used for grazing of cattle and part is unused industrial lands. A small part of the site contains wetlands one of which is comprised of SEPP 14 Coastal Wetlands.

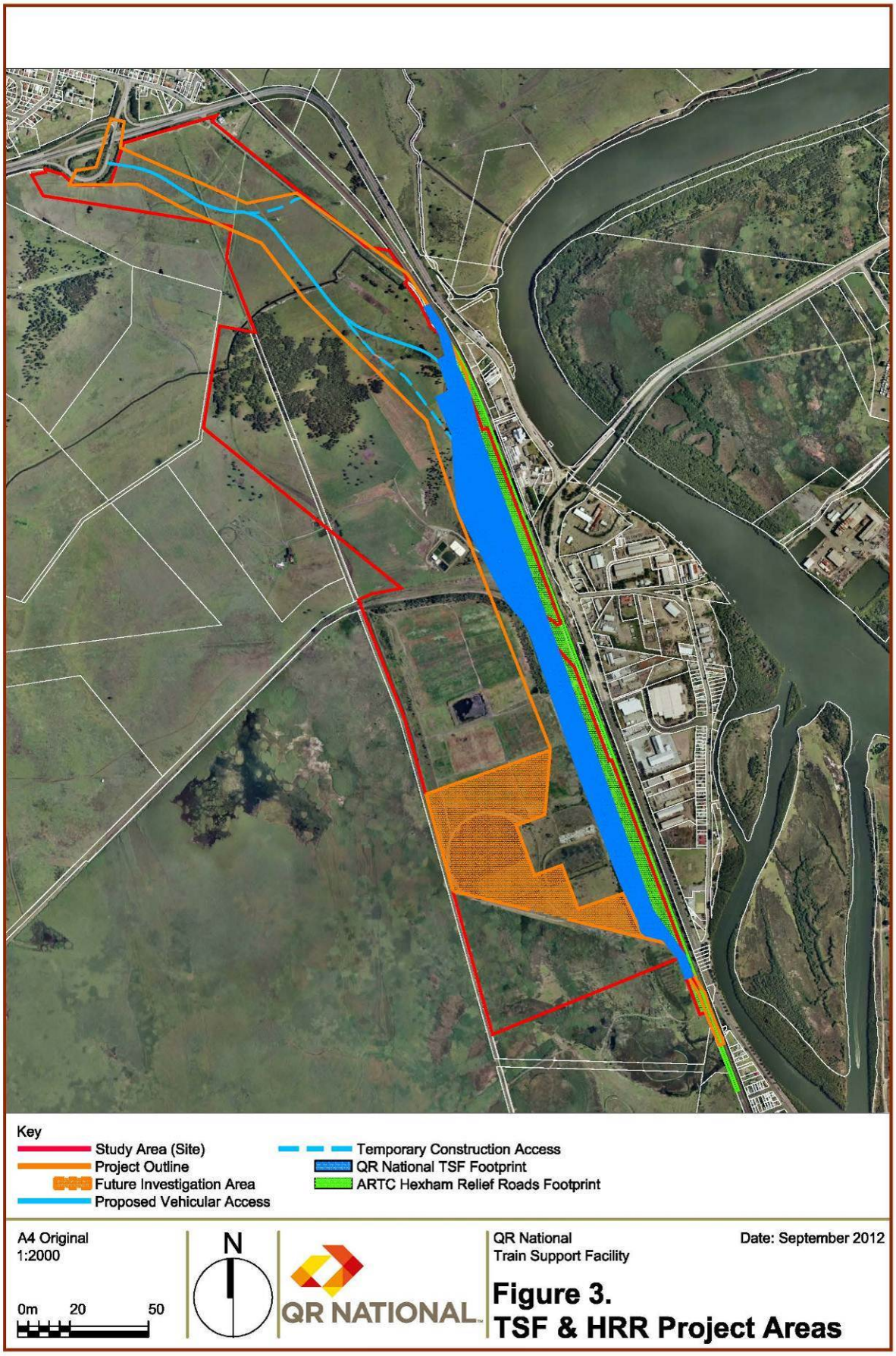


Figure 3: The Proposed QR National TSF & ARTC HRR Project Areas

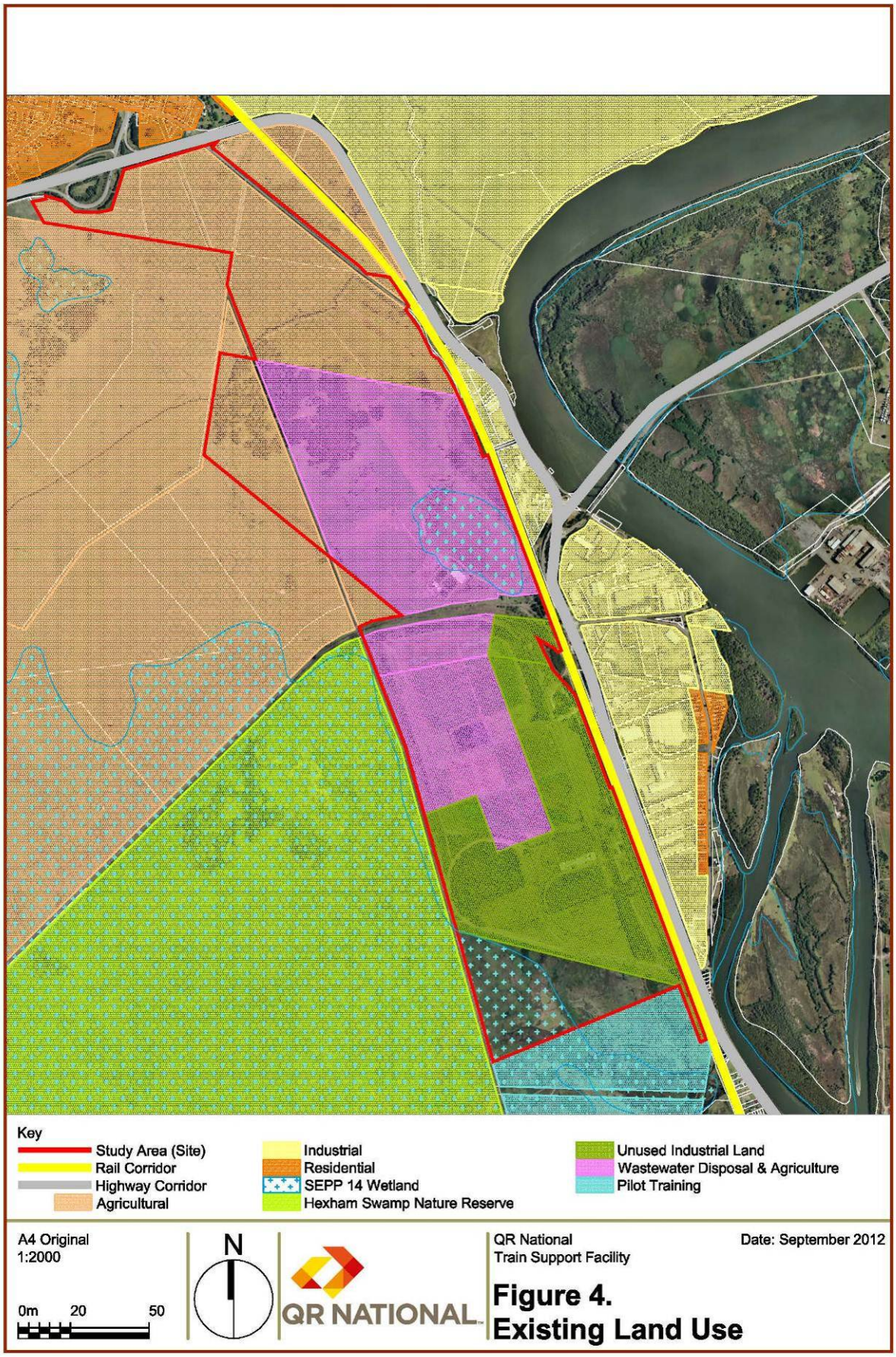


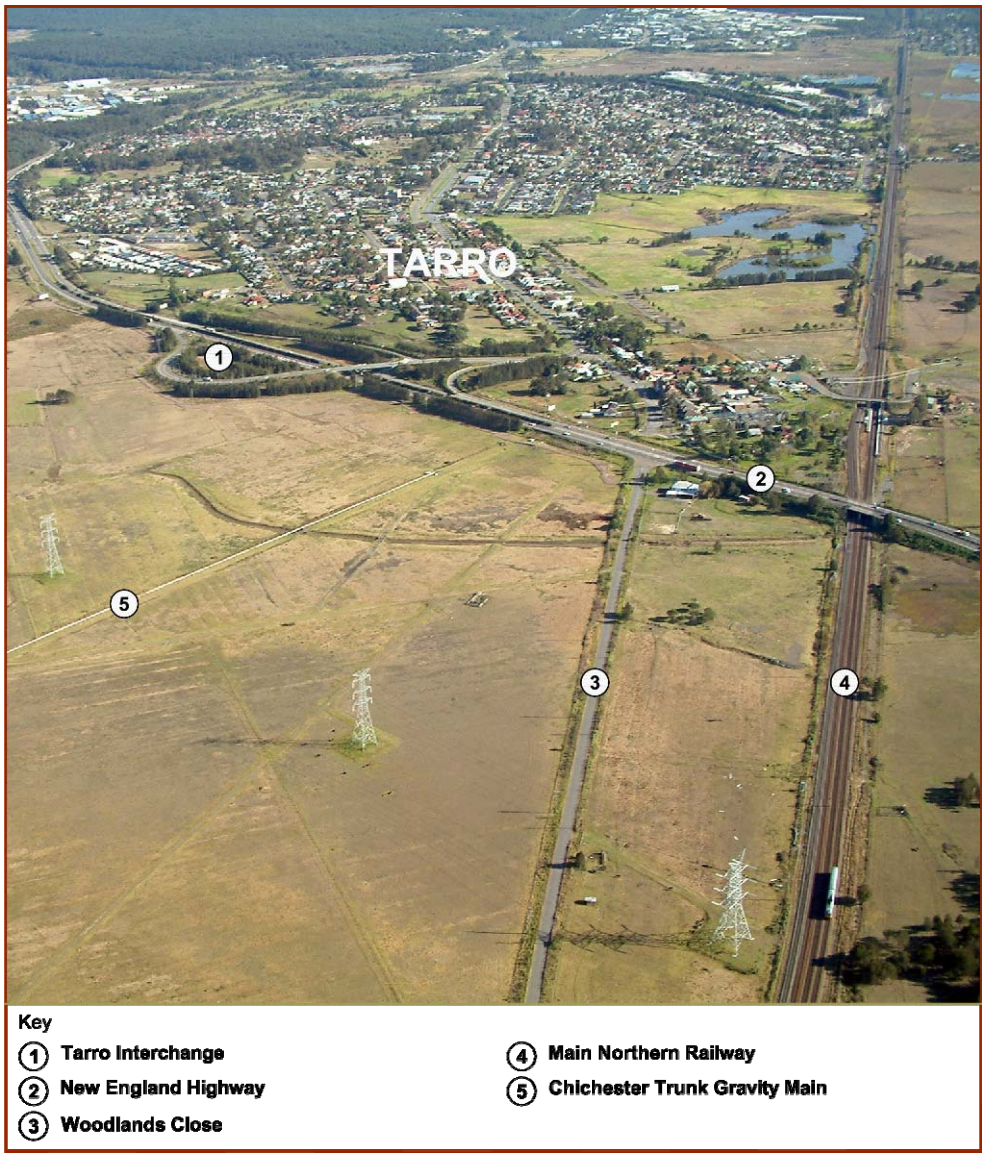
Figure 4: Existing Land Use

The southern part of the site contains in the order of 1.5 million tonnes of coal tailings and 1.8 million tonnes of chitter both commonly referred to as coal reject. This material remains from the previous operations on the site for coal storage washing and loading and unloading. The former use of the site is outlined in Section 3.4 under Site History.

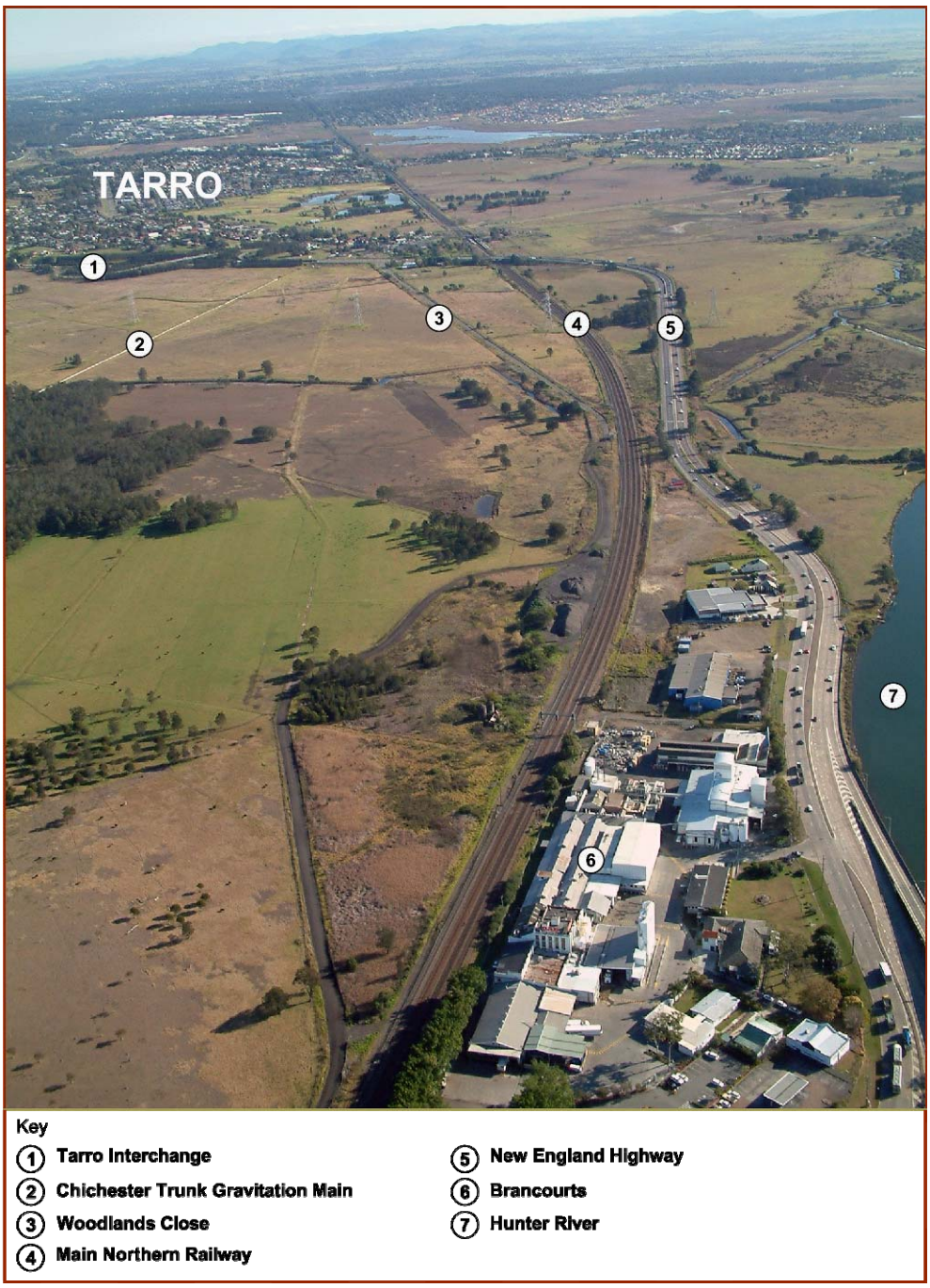
Existing structures associated with the former use of the site have generally been removed, however a former bath house and control box/lunchroom remain. Some concrete footings associated with previous uses can be found on site.

The Brancourts' facility is located adjacent the site on the Pacific Highway and comprises a factory for the production of dairy products. Brancourts operates a waste water treatment facility within the site. Parts of the site are irrigated with treated waste water for agricultural purposes. This process is the subject of a licence from the Environment Protection Authority (EPA).

On the following pages are photographs of the site and surrounds.



Photograph 1: View of the northern part of the site as viewed from the south



Photograph 2: The Site as viewed from the south

Key

1. Hexham Industrial Area
2. Maitland Road
3. Main Northern Railway
4. Hunter River
5. Brancourts Waste Treatment Facility
6. Former Richmond Vale Railway
7. Chichester Trunk Gravitation Main
8. Former Balloon Loop
9. Port of Newcastle

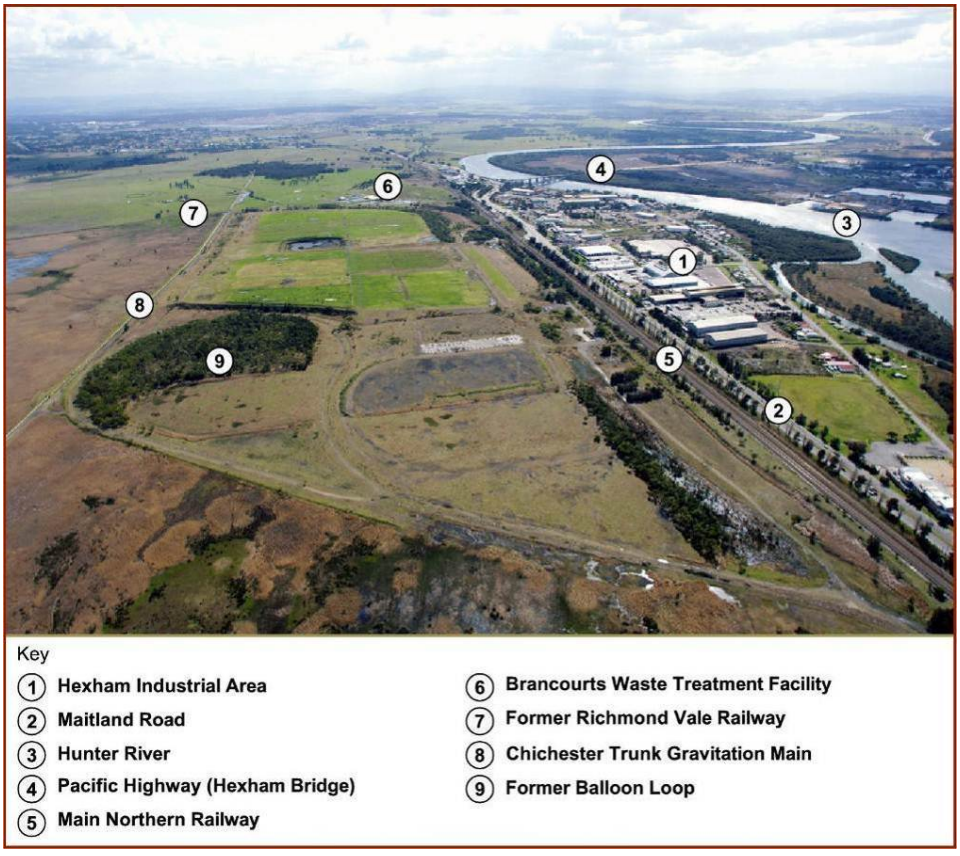
Photograph 3: Southern Portion of the site as viewed from the north

Key

1. Hexham Industrial Area
2. Maitland Road
3. Hunter River
4. Pacific Highway (Hexham Bridge)
5. Brancourts Waste Treatment Facility
6. Former Bath House & Control Box
7. Former Richmond Vale Railway
8. Chichester Trunk Gravitation Main
9. Former Balloon Loop
10. Main Northern Railway

Photograph 4: Southern part of the site as viewed from the east

Photograph 5: Southern part of the site as viewed from the west



Photograph 6: Southern part of the site as viewed from the south

Photograph 7: Former bathhouse and control box/lunchroom

Photograph 8: Brancourts' waste water treatment facility

3.4 SITE HISTORY

The following provides a general summary of the history of the site since European settlement. A detailed overview of the site history is contained in the Heritage Impact Assessment prepared by EJE and attached as Appendix D. Reference should also be made to Section 9.13 of this EA which contains specific environmental impacts associated with current and proposed land use activities. The northern part of the site has a history of agricultural use while the southern part of the site is predominantly associated with rail activity and coal storage, preparation and loading and unloading.

1830's - The subject site was mostly used for agricultural and dairying purposes.

1850's - The site was first utilised for storage and loading of coal.

1857 - John Eales constructed a railway to carry coal from the Mines at Minmi to loading at Hexham.

1859 - JA Brown purchases the site and will become Australia's largest coal producer.

1927 - Part of the site becomes the headquarters for the Hunter Valley Co-Operative Dairy Company to become known as the Oak.

1930's - Coal preparation was commenced on site and this included the construction of a coal washery in 1955. Photograph 9 identifies the extent of coal operations on the south part of the site in 1977. The site maintained this scale of operation up until its closure in 1987.

1955 - Oak Milk Bar was opened.

1987 - Last Coal delivery to the site and coal washery ceases operation.

1997 - Newcastle Rail Terminals purchased the site with plans to use the site to help alleviate coal transportation problems to the Port of Newcastle.

2001 - Investigations undertaken regarding the establishment of a coal terminal at the Hexham site.

2003 - Coal tailings site rezoned to 4(b) Port and Industry under *Newcastle City Council Local Environmental Plan 2003* (Newcastle LEP2003).

2005 - Investigations undertaken to determine if coal tailings could be used in power stations.

2006 - QR National purchases the site.

2006 - Minister for Planning gives notice of receipt of a project application and designates the Hexham Redevelopment site as a potential State Significant Site.

2007 - Minister for Planning gives notice of receipt of a project application and amends SEPP (Major Projects) 2005 to include the Hexham Redevelopment site as a potential State Significant Site.

2008 - State Significant Site Study Requirements and DGRs were released for the Hexham Redevelopment Project.

2010 - Revised State Significant Site Study Requirements and DGRs were issued for the Hexham Redevelopment Project.

2011 - Coal tailings site rezoned to IN3 Heavy Industry under Newcastle City Council draft LEP 2011.

2011 - ARTC submit a project application for the HRR Project.

Photograph 9: Former coal operations 1977

3.5 TOPOGRAPHY

The natural topography of the site and surrounding locality is flat low lying land with elevations ranging between 0.2m AHD and 1.5m AHD. A significant portion of the southern part of the site still contains coal rejects from the site's previous use and this part of the site has elevations of up to 13m AHD. No reject will need to be moved offsite as a result of the proposed TSF.

A site survey showing the existing levels across the site is identified in Figure 5 below. The additional site survey information is contained within Appendix E. The extent of coal rejects can be identified from the levels on the southern part of the site.

A3 Original

0m 50 100 200

Scale 1: 5000 (A3)

KEY

- Study Area (Site)
- QR National TSF Footprint
- Cadastre
- Proposed Vehicular Access
- Temporary Construction Access

N

QR NATIONAL

QR National
Train Support Facility

Date: November 2012

Figure 5. Sheet 1 of 2.
Existing Site Survey Plan

A3 Original

0m 50 100

Scale 1: 5000 (A3)

KEY

- Study Area (Site)
- QR National TSF Footprint
- Cadastre
- Proposed Vehicular Access
- Temporary Construction Access

N

QR NATIONAL

QR National
Train Support Facility

Date: November 2012

Figure 5. Sheet 2 of 2
Existing Site Survey Plan

3.6 FLOODING

The Lower Hunter River has a long history of flooding with many reported instances of floodwaters overtopping the natural banks of the River and inundating the adjoining floodplain.

The site is located on the southern floodplain of the Hunter River at Hexham. At the 10% design storm event level, Hunter River floods overtop the New England Highway into the site. Run off from the Hexham Swamp catchment is considered only a minor flooding issue because overflows have outfall to Ironbark Creek to the south. There is a set of eight flood gates located on Ironbark Creek, near the confluence with the Hunter River South Arm. These gates control flows in and out of Hexham Swamp through Ironbark Creek for lower order flood events, but are overtopped for events above the 5% AEP.

The northern part of the site will not be developed other than to provide an access road to the proposed TSF from Tarro Interchange. The southern part of the site is to be developed for the TSF and ARTC HRR Project. Flood modelling by BMT WBM has established that the peak 100 year recurrence flood level is predicted to vary from 3.7mAHD at the northern end of the site to 3.5mAHD at the southern end of the site. BMT WBM categorise the site to be high hazard flood storage area.

The entire area of the existing development site, with the exception of a high portion of land at the south-western side, is predicted to be inundated during the 100 year Average Recurrence Interval (ARI) flood at depths in the order of 1 to 2 metres. The highest depths of floodwater on the site during the 100 year ARI flood are between 2 and 3 metres and occur in the north-east corner of the site within a slightly lowered drainage path just west of the bend in the River.

3.7 DRAINAGE

The existing drainage in the northern part of the site is to the north-west while the existing drainage for the south part of the site is to the south. Ultimately all water falling on the site will flow to the surrounding wetlands and Purgatory Creek. The Stormwater Management Plan (SWMP) prepared by Worley Parsons describes in greater detail the existing drainage regime and is attached as Appendix L.

Prior to European settlement of the Hexham area, the site formed part of the Hexham Swamp Estuarine wetlands. Over the past 150 years, anthropogenic alterations on both a local and regional scale have significantly altered the local and regional hydrodynamic regimes. The site has been impacted by coal stockpiling, infilling of wetlands, construction of tailings ponds and drainage swales and irrigation of waste water effluent. The resulting landform is considered highly disturbed.

It is recognised that the site and adjacent areas are located in an ecologically important environment in particular Hexham Swamp is recognised as a regionally important system. In addition to the ecological aspects, Hexham Swamp is also important for storage during major flooding events. The swamp is inundated by flows from the Hunter River during floods generally around the 10 year ARI.

The Hexham Swamp is also recognised as containing a number of EECs which have been taken into account in the preparation of the CEMP and EMP for the site.

The stormwater management objective for the site is to minimise the disturbance to the local and regional hydrologic regimes during low recurrence interval rainfall events. This will be achieved by identifying areas of the proposed development which could potentially produce significant surface water contamination. In addition stormwater controls are to be placed on the remainder of the site to minimise the impact on receiving waters and communities. Monitoring and contingency measures are to be established to allow for the containment of an accidental spill or major leak.

3.8 UTILITIES

Details of the major services and infrastructure and proposed measures for the provision of services are set out in the Services Investigation Report prepared by Worley Parsons (Appendix M). With regard to the principal services; the site is not sewered, water service and power is available adjacent to the site. An overview of the main elements are discussed below and illustrated in Figure 11 in Section 6.4.4.

Gas Mains:

A high pressure trunk gas transmission main, operated by Jemena, intersects the TSF site. The main is a 500mm diameter steel pipe operating at a pressure of 7MPa. It provides gas to Newcastle and the Hunter Valley. Potential impacts and protection measures, which may include a concrete cover slab supported on piles, will be addressed in consultation with Jemena during detailed design. Approval is sought within this EA for protection works of the 500mm gas main.

A secondary gas main, 350mm in diameter, runs along the western edge of Woodlands Close. This conveys gas to the Hunter Valley. The temporary construction compound abuts this main while the access road to the TSF is located to the west of the gas main.

Trunk Gravity Main Pipeline:

The Chichester Trunk Gravity Main (CTGM) pipeline operated by the HWC generally follows the western and southern boundaries of the TSF project area. The CTGM consists of a single 900mm pipeline, in 2011 the original above ground pipeline was removed and replaced with a new below ground structure.

The CTGM delivers water from the Dungog Treatment Plant to the Maitland and Cessnock systems as well as the Newcastle system. A 200mm branch line from CTGM supplies Hexham and crosses the TSF site south of the Brancourts' waste water treatment plant running parallel to the Jemena 500mm gas pipeline. As part of the detailed design, potential impacts on the pipeline would be addressed. If works are required, these would be undertaken as part of the proposed TSF in consultation with HWC. QR National is currently seeking approval from HWC with regard to water usage at the site.

Brancourts' Waste Water Treatment Plant and Effluent Pipeline:

The Brancourts' waste water treatment facility is located near the southern boundary of Lot 113. A pipeline runs north east from the plant to the Brancourts' dairy facility located on the eastern side of the New England Highway. The treatment plant will be unaffected by the TSF. The capacity of the pipeline to withstand construction and operational loads would be reviewed as part of the design and protection measures provided. The protection works for Brancourts are also sought under this approval.

Electricity Transmission Lines:

A high voltage electricity transmission line is located within the northern boundary of the project area. The TSF and access road will have no impact on this transmission line. Construction of the access road from the Tarro Interchange will require adjustment to a 33kV overhead line to provide adequate clearance under the line for vehicular traffic. This would be undertaken by Ausgrid under separate approval.

Optus Fibre Optic Cable:

As part of works to provide site access from the Tarro Interchange, protective works to the existing Optus fibre optic cable will be required to provide sufficient cover within the proposed road works. These works are to be carried out under a separate approval from Optus.

3.9 EASEMENTS

The site contains a significant number of easements, including rights of way, water supply, gas and transmission line. Easements are shown on the Site Survey included at Appendix E.

3.10 SITE AND CONTEXT ANALYSIS

The site is well located for QR National to access the existing rail network and relative to the Port of Newcastle and importantly QR National customer base in the Hunter Valley.

The character of the area is mixed with existing industry to the east and agricultural pursuits to the north and west together with wetlands to the south and west. The site is separated from any significant residential areas.

The site exhibits a number of constraints, in particular; flooding, access, geotechnical, contamination, and environmental. It will be necessary for these issues to be appropriately managed as part of the development. These issues are discussed at Section 9 of this EA.