

Chapter 31 References



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31.2 Source information

31.2.1 Traffic, transport and access

Table 31.1 Traffic, transport and access source information

Impact area	Key information sources	Date/how recent	Reliability	Uncertainties
IMEX and interstate train and traffic generation and Warehouse heavy vehicle traffic generation	Information provided by Deloitte.	2014	Accurate	None
Workforce/staff numbers for IMEX and IS	Moorebank IMT Staffing Requirement provided by Deloitte.	2011	Accurate	None
Workforce/staff numbers for warehouse light vehicle traffic generation	Information provided by Parsons Brinckerhoff based on RMS Guide to Traffic Generating Development 2013 Traffic Surveys	2014	Accurate	None
Construction traffic generation	Program provided by Parsons Brinckerhoff Volume of construction vehicles based on volume and quantity of material and vehicle types.	2014	Accurate	Dependent on the construction program and scheduling of activities, as well as size and type of vehicles used.
Intersection traffic counts on Moorebank Avenue	Traffic surveys conducted by Austraffic.	2010	Accurate	None
Intersection traffic counts on Moorebank Avenue and wider area road network	Traffic surveys conducted by Austraffic	2014	Accurate	None
Intersection traffic signal data (SCATS IDM Data and TCS Plans)	Roads and Maritime Services	2014	Accurate	None
Seven day classified tube counts	Traffic surveys conducted by Austraffic.	2010	Accurate	None
Road network yearly future traffic growth rates	Roads and Maritime Services	2014	Accurate	None

Impact area	Key information sources	Date/how recent	Reliability	Uncertainties
Regional road network	Bureau of Transport Statistics: Freight Movements in Sydney Sydney Freight Movement Model Sydney Light Commercial Vehicle Model Sydney Strategic Travel Model.	2006, 2010	Accurate	None
Cycle and pedestrian facilities	Liverpool City Council Bike Plan Site inspection.	2009, 2011	Accurate	None
Cycle and pedestrian facilities	Austrroads Guide to Road Design Part 3: Geometric Design	2009	Accurate	None
Crash data	Roads and Maritime Services	2014	Accurate	None
Crash reduction treatments	Roads and Maritime Services	2005	Accurate	None
SIMTA traffic	Traffic Impact Assessment – Sydney Intermodal Terminal Alliance, Hyder	2013	SIMTA EIS	None
Residential dwelling densities for Sydney	Landom Residential Density Guide	2011	Accurate	None
Container movements at Port Botany	Australian Government Bureau of Infrastructure, Transport and Regional Economics (BITRE)	2010	Accurate	None
Parking requirements	Liverpool City Council Development Control Plan (DCP)	2012	Accurate	None

31.2.2 Noise and vibration

Table 31.2 Noise and vibration source information

Impact area	Key information sources	Date/how recent	Reliability	Uncertainties
Receiver communities	Site walkover surveys, GIS land use analysis, and land use development zones.	2010 to 2012	Accurate	None
Existing noise environment	Baseline noise survey conducted by Parsons Brinckerhoff.	2010, 2011 continuous from 2012.	Accurate	None
Source levels for noise and vibration	Suppliers of IMT plant and machinery and SLR Consulting database of measured noise and vibration levels.	2011 and 2012 for suppliers and 2014 for SLR Consulting database.	Accurate	One-third octave band noise data not available for all plant.
Meteorological data	Australian Bureau of Meteorology	Data specific to all baseline noise monitoring periods. Seasonal trends in region meteorological conditions based on full year of data for 2013.	Accurate	None
Road traffic movements	Refer Table 31.1 Traffic, transport and access source information.	Refer Table 31.1 Traffic, transport and access source information.	Accurate	None specific to the assessment of noise and vibration.
Southern Sydney Freight Line	Operational Noise and Vibration Management Plan.	2011 – most recent publically available assessment	Approved by Australian Rail Track Corporation.	None
SIMTA noise	Noise Impact Assessment – Sydney Intermodal Terminal Alliance. PAE Holmes.	2013	SIMTA EIS	Provides prediction of noise at broad receiver catchments rather than specific receiver locations.

31.2.3 Biodiversity

Table 31.3 Biodiversity source information

Impact area	Key information sources	Date/how recent	Reliability	Uncertainties
Biodiversity	Office of Environment and Heritage 2012a, <i>Bionet Atlas of NSW Wildlife website</i> .	2010 and repeated in 2012 & 2014	Moderately accurate. Location records from a variety of sources including non-experts.	Possibility of incorrect identification for some species and observers. Location accuracy also likely to be variable.
	Tozer M 2003, 'The native vegetation of the Cumberland Plain, western Sydney: systematic classification and field identification of communities', <i>Cunninghamia</i> , Vol. 8, no. 1, pp. 1–75.	2003	Tozer's broad scale vegetation mapping is based on aerial photography, geological maps and limited field verification and hence inaccuracies at fine scale are possible. Vegetation quadrat and transect surveys conducted to check and update vegetation mapping.	Access difficulties due to dense weed thickets meant that some areas were not traversed. Existing mapping and extrapolation from survey locations was used to map these areas.
	Office of Environment and Heritage 2012b, <i>threatened species, populations and ecological communities of NSW online database</i> .	2010 and repeated in 2012 & 2014	The database used as a basis for determining the likelihood of occurrence of threatened species. It is accurate but not comprehensive. Additional data sources including books, regional biodiversity reports and journal articles were examined to provide additional information. Field surveys were conducted to search for the actual presence of species.	Precise ecological requirements are not known for all species.
	URS 2004, <i>Flora Survey and Assessment for Moorebank Defence Site</i> . Lesry K Environmental Consultants 2003, <i>Fauna biodiversity study of part of the Moorebank Defence Area: Site Development Options</i> .	2004	These studies covered the project site (with the exception of lands to the west of the Georges River). The field survey results, though informative, were quite old and not detailed enough to fulfil all requirements for the project. Additional field surveys were conducted to provide the required level of detail.	Possible changes in species presence and distribution over intervening time.

Impact area	Key information sources	Date/how recent	Reliability	Uncertainties
	Hyder 2013, <i>SIMTA Moorebank Intermodal Facility – Flora and Fauna Assessment</i> .	2013	This study covered the approximate location of the southern railway access option over the Georges River. The field survey results were considered detailed enough to inform the aquatic biodiversity impact assessment for the project. Additional habitat assessment and literature review was conducted to provide additional detail.	Minimal
	Department of Environment and Climate Change 2007, <i>Terrestrial Vertebrate Fauna of the Greater Southern Sydney Region: Volume 2 Fauna of Conservation Concern and Priority Pest Species</i>	2007	Moderately reliable information source; based on extensive surveys and habitat modelling; however, now moderately old data.	Possible changes in species presence and distribution over intervening time

31.2.4 Hazard and risk

Table 31.4 Hazard and risk source information

Impact area	Key information sources	Date/how recent	Reliability	Uncertainties
Hazard and risk	Indicative design to identify approximate locations of dangerous goods' locations, together with direct communication within the EIS Project Team to determine maximum likely quantities of hazardous materials to be present on the site.	Indicative layout plans 2014. Advice provided at time of commencing report in October 2011 and subsequently updated in 2014.	Expected to be reasonably reliable. Storage quantities appear reasonable.	Assessment is not particularly sensitive to changes in storage quantities over a significant range of values due to the significant separation distances available.

31.2.5 Contamination and soils

Table 31.5 Contamination and soils source information

Impact area	Key information sources	Date/how recent	Reliability	Uncertainties
Site history	Aerial photographs, local government records, historical land titles site' dangerous goods register.	2011 to 2012 (aerial photos date back to 1930)	Accurate	Aerial photograph review based on interpretation of the reviewer. Where resolution is low, some features may not be visible.
Potential contaminants	Site history, site walkover, previous environmental reports and soil and groundwater field and analytical data (as reported in the Phase 2 Environmental Site Assessment and unexploded ordnance (UXO) survey).	2011 (previous reports data back to 1994)	Accurate	None
Acid sulphate soils	CSIRO Australian Soil Resource Information System 2012, Acid Sulfate Soils Management Advisory Committee (ASSMAC) Assessment Guidelines (1998)	2011 and 2012	Accurate	None
Areas requiring remediation	Site walkover, Phase 1 ESA, soil and groundwater field and analytical data from Phase 2 ESA	2011	Accurate	Limited to extent of Phase 2 ESA, some areas were not accessible at the time of previous investigations (access restrictions, heavily vegetated area etc.).

31.2.6 Hydrology, groundwater and water quality

Table 31.6 Hydrology, groundwater and water quality source information

Impact area	Key information sources	Date/how recent	Reliability	Uncertainties
Existing Defence site	Existing drainage drawings	2009	Detailed survey of all drainage infrastructure considered reliable. Additional surveys to confirm size and location of drainage structure not undertaken.	Condition of buried drainage unknown. Additional surveys and condition assessments required at detailed design stage.

Impact area	Key information sources	Date/how recent	Reliability	Uncertainties
Existing Defence site	Aerial photography	2011	Considered sufficient for concept design purposes and no tested require necessary.	Changes in current land use since concept design issue.
Existing Amiens site	M5 tender design drawings	2000	Detailed existing land survey considered accurate for purpose of accessing water body volumes. Additional surveys to confirm size and location of drainage structure were not undertaken.	Condition of inlet and outlet flow controls unknown. Updated surveys of land and condition assessments required for further design integration.
Existing Amiens site	Statement of environmental effects – Subdivision of the Amiens Business Park, Bapaume Road, Moorebank.	2000	Description of current land use considered reliable for purpose of concept design.	None
Hydraulic model	MIKE11 model provided by Liverpool City Council as part of the Georges River Study.	1999	Approved by Liverpool CC for use in this Project.	Not possible to verify the original model. Changes to river morphology and manmade structures since 1999. Changes in peak hydrological techniques and data since 1999.
Flood model	Bridge structure details (e.g. piers, deck, abutments)	2014	As per structural concept design.	Possible changes to design of bridge since model submitted.
Proposed drainage infrastructure	Pavement design Infrastructure design Services design	2012	As per design teams.	Possible changes to other design since submission.
Water quality assessments	ANZECC Guidelines	2000	Highly reliable	None

Impact area	Key information sources	Date/how recent	Reliability	Uncertainties
Water quality assessments	Parsons Brinckerhoff Environmental Site Assessment	Fieldworks 2013. Report 2014	Laboratories used for water samples are NATA accredited. Equipment used was serviced and calibrated as per the manufacturer requirements. Equipment was calibrated at the beginning of each day of fieldwork and during the day (as required).	None in lab samples. Limited in measurements taken with water quality probe.
Flooding, hydrology and water quality	Bureau of Meteorology	2004 and 2007	Climate Data Online provides access to a range of statistics, historical weather observations, climatology maps, and other Australian climate data.	None
Existing water quality	NSW Office of Water	2004	Unknown but considered reliable. Direct data request from NOW.	Some uncertainties exist in parameters outside of reasonable expected results (e.g. pH levels of 3.12 are highly acidic and questionable).
Existing water quality	NSW Office of Environment and Heritage (CERAT database)	2007	Unknown. Online database accessible via NSW OEH website.	Some uncertainties exist in some parameters outside of reasonable expected results (e.g. pH levels of 4.84 are acidic and questionable).
Existing water quality	NSW Office of Environment and Heritage	2010	Unknown. Direct data request from NSW OEH contact.	None. NATA accredited lab.
Existing water quality	Georges River Combined Council Committee (GRCCC)	2011	Unknown. Data obtained from GRCCC report card available via website.	Unknown.

31.2.7 Local air quality

Table 31.7 Local air quality source information

Impact area	Key information sources	Date/how recent	Reliability	Uncertainties
Receiver communities	Site walkover surveys, GIS land use analysis, and land use development zones.	2010 to 2012	Accurate	None
Existing air quality environment	NO _x , PM ₁₀ , PM _{2.5} , SO ₂ , CO and ozone data from Office of Environment & Heritage (OEH) air quality monitoring stations (Liverpool and Chullora stations).	2009 to 2013	Accurate	None
	NO _x , PM ₁₀ , dust deposition, benzene, toluene, xylene, ethylbenzene (BTEX) and ozone monitoring at Moorebank IMT air quality monitoring sites by Parsons Brinckerhoff.	August to March 2014	Accurate	None.
Meteorological data	OEH Liverpool automatic weather station (AWS) – hourly meteorological data	2011 to 2013	Accurate	None
	Australian Bureau of Meteorology (BoM) Bankstown Airport AWS (climate data).	1968 to 2013	Accurate	None
	BoM Holsworthy Control Range AWS (hourly meteorological data to confirm representivity of OEH Liverpool data).	2009 to 2013	Accurate	None
Locomotive emissions	Emissions performance information for in-service locomotives from OEH (2012). <i>Locomotive Emissions Project</i> presentation prepared by ENVIRON on behalf of OEH.	2012	Accurate	None
	United States Environment Protection Authority, 2009, <i>Emission factor for Locomotives – Technical Highlights</i> .	2009	Accurate	None
	Lilley W B 1996, <i>Quantification and Dispersion Modelling of Diesel Locomotive Emissions</i> . Thesis.	1996	Indicative of older, uncontrolled locomotive emissions.	Indicative of older, uncontrolled locomotive emissions.
On-road diesel truck emissions	Office of Environment and Heritage (OEH) 2012, <i>2008 Calendar Year Air Emissions Inventory for the Greater Metropolitan Region in NSW</i> .	2012	Accurate	None

Impact area	Key information sources	Date/how recent	Reliability	Uncertainties
Mobile equipment emissions	US-EPA (2010). Exhaust Emission Factors for Non-Road Engine Modelling - Spark Ignition.	2010	Accurate	None
SIMTA air emissions	Indicative SIMTA Warehousing Scenario provided by Parsons Brinckerhoff. Emission estimations consistent with sources used in Project emission calculations.	2014	Indicative of future use at SIMTA site.	Future use of SIMTA site is unknown.

31.2.8 Regional air quality

Table 31.8 Regional air quality source information

Impact area	Key information sources	Date/how recent	Reliability	Uncertainties
Air (Regional Air Assessment)	Traffic data and projections from traffic specialist (Parsons Brinckerhoff).	Current at time of assessment	To test this, Todoroski Air Sciences independently developed an approximate traffic model. The estimated traffic data were within ~ 10% of the data provided by Parsons Brinckerhoff for use in the Air assessment.	It is uncertain exactly what the traffic in 2033 will be, but based on understood conventions and technology, the projected numbers are as accurate an estimate as can be reasonably made.
	NSW EPA air emissions inventory.	Current at time of assessment – 2008 inventory, (released in late 2012)	Reliable; based on EPA estimated emissions.	Uncertainties exist with any emissions inventory. The NSW Inventory can generally be regarded as more certain relative to similar inventories in most other jurisdictions as it uses the latest estimation technique, and significant site and source specific data.
	NSW EPA NEPM monitoring data.	Current at time of assessment.	Undergoes EPA validation, considered to be the most reliable, publicly released data available.	Minor uncertainty related to precision of the monitoring equipment.

31.2.9 Greenhouse gases

Table 31.9 Greenhouse gas source information

Impact area	Key information sources	Date/how recent	Reliability	Uncertainties
Greenhouse gas assessment and accounting process	<i>National Greenhouse Account (NGA) Factors</i> July 2012 (Department of Climate Change and Energy Efficiency, 2012)	2012	Reliable	None
Greenhouse gas assessment	Technical analysis of Project undertaken by Parsons Brinckerhoff	2014	Reliable	Potential for some uncertainties as Project is only in concept phase.

31.2.10 Aboriginal heritage

Table 31.10 Aboriginal heritage source information

Impact area	Key information sources	Date/how recent	Reliability	Uncertainties
Aboriginal Cultural Heritage	Desktop research	2010–2012	Moderate to high; in field ground-truthing	nil
	Predictive modelling	2010–2012	Moderate	Model is predictive
	Field survey	2010 & 2013	High; Archaeological subsurface testing	nil
	Archaeological subsurface testing	2012	High, peer reviewed	Not all areas able to be tested
	Field survey	2014	Moderate	Glenfield Landfill unable to be accessed and areas not tested

31.2.11 European heritage

Table 31.11 European heritage source information

Impact area	Key information sources	Date/how recent	Reliability	Uncertainties
European Cultural Heritage	Desktop research	2010–2012	Moderate to high; in field ground-truthing	nil
	Predictive modelling	2010–2012	Moderate	Model is predictive
	Field survey	2010 & 2013	High; Archaeological subsurface testing	nil
	Archaeological subsurface testing	2012	High; peer reviewed	nil
	EMA study	2010	High	Scope of the study did not account for the Moorebank IMT impacts
	MUR study	2013	High	The future of the CUST Hut and STRARCH Hangar unresolved
	Field survey	2014	Moderate	Glenfield Landfill unable to be accessed

31.2.12 Visual and urban design

Table 31.12 Visual and urban design source information

Impact area	Key information sources	Date/how recent	Reliability	Uncertainties
Visual impact assessment process	Roads and Maritime Services (RMS) <i>Guidelines for Landscape Character and Visual Impact Assessment</i> (LCVIA)	2009	Reliable	None
Potential visual impacts of the Project	Site surveys and analysis and technical analysis of concept Project design undertaken by Clouston Associates for Parsons Brinckerhoff.	2012	Reliable	Potential for minor uncertainties as Project is in concept phase.
Light spill	Site surveys and analysis and technical analysis of concept Project design undertaken by AECOM for Parsons Brinckerhoff.	2012	Reliable	Potential for minor uncertainties as Project is in concept phase.

31.2.13 Property and infrastructure

Table 31.13 Property and infrastructure source information

Impact area	Key information sources	Date/how recent	Reliability	Uncertainties
Land use zoning, existing land uses and ownership information	Government planning documents and spatial analysis/mapping	Current as of 2014	Reliable	None.
Location of key infrastructure and services	Indicative design undertaken and technical analysis by Parsons Brinckerhoff	Current as of 2014	Reliable	None.

31.2.14 Social and economic impacts

Table 31.14 Social and economic source information

Impact area	Key information sources	Date/how recent	Reliability	Uncertainties
Statistics	Australian Bureau of Statistics	2011	Reliable	None
Potential environmental, economic and health issues relevant to the assessment of social impacts	Technical reports completed by various specialists for EIS.	2012	Reliable	Potential for inherent uncertainties in assessment due to the Project being at a concept stage.
Workforce/staff numbers	Moorebank IMT Staffing Requirement provided by Deloitte.	2011	Accurate	None

31.2.15 Human health risks and impacts

Table 31.15 Human health risks and impacts source information

Impact area	Key information sources	Date/how recent	Reliability	Uncertainties
Health impact assessment	Technical reports completed by various specialists for EIS.	2012	Reliable	Potential for inherent uncertainties in assessment due to the Project being at a concept stage.
	Assessment completed in accordance with best practice guidelines (e.g. by enHealth 2001, 2004 and Harris et al 2007).	2001, 2004 and 2007	Reliable	None
Human health risk assessment	Local Air Quality Impact Assessment prepared by Parsons Brinckerhoff.	2012	Reliable	Potential for inherent uncertainties in assessment due to the Project being at a concept stage.
	Exposure-response relationships for health effects associated with exposures to particulates from peer-reviewed publications.	2002-2010 (current)	Moderate to High (key relationships adopted previously discussed with NSW Health to ensure most current and robust values used).	Uncertainties in relation to the relationships have been identified and addressed in the HHRA report.

31.2.16 Waste and resource management

Table 31.16 Social and economic source information

Impact area	Key information sources	Date/how recent	Reliability	Uncertainties
Waste management streams and estimates	Technical analysis undertaken by Parsons Brinckerhoff	2014	Reliable	Project is still at concept phase with limitations in information availability and thus the level of detail possible for analysis.

31.2.17 Cumulative impacts

Table 31.17 Cumulative impacts source information

Impact area	Key information sources	Date/how recent	Reliability	Uncertainties
Potential impacts of Moorebank IMT Project	Technical reports completed by various specialists for EIS.	2014	Reliable	Potential for inherent uncertainties in assessment due to the Project being at a concept stage.
Potential impacts of SIMTA IMT project	SIMTA <i>Draft Commonwealth Environmental Impact Statement</i> (Hyder Consulting 2013). SIMTA <i>Environmental Assessment Part 3A Concept Application</i> (Urbis 2013).	2013	Assumed to be reliable as will be the basis for regulatory approval	Similar to the Moorebank IMT, the assessment has been undertaken at the concept level with the potential for some uncertainties or limitations in information availability.