The content of this map is conceptual only, of a general nature and does not purport to contain all information relevant to future project development associated with the Project. This map has been prepared solely for the purposes of informing environmental impact assessment pursuant to the Environmental Protection Act 1986 (WA) and Environment Protection and Biodiversity Conservation Act 1999 and is not intended for use for any other purpose. No representation or warranty is given that project development associated with any or all of the disturbance indicated on this map will actually proceed. As project development is dependent upon future events, the outcome of which is uncertain and cannot be assured, actual development may vary materially from this conceptual map.

Data Sources:
- DPwA Reserves (DPwA 2015)
- Roads (MRWA 2012) Aerial Image (BHPBIO)
- Third Party Disturbance digitised from Aerial imagery (Aug - Sept 2013) and Approval Documentations up to September 2014
- All other data supplied by BHPBIO (2012)

Yandicoogina mining area comprises Junction Central, Junction South East, Junction South West and the proposed Oxbow, Pocket and Billiard South mining areas.
Ophthalmia Dam
Karijini National Park
600,000
650,000
700,000
750,000
800,000
850,000
900,000
950,000
7,400,000
7,450,000
7,500,000
7,550,000
8,000,000
8,500,000
9,000,000
9,500,000

LEGEND

Ecohydrology Study Boundary
Karijini National Park
Ecohydrological Receptors
Ophthalmia Dam
Townships
Other Roads

BHPBIO Mining Areas (current & proposed)
Third Party Mining Areas (current & proposed)
BHPBIO Rail Corridor (current & proposed)
Great Northern Highway
Other Roads

Indicative BHP Billiton Iron Ore Disturbance Full Development Scenario
Third Party Reasonable Forseeable Disturbance
Major Drainage Lines
Minor Drainage Lines

LOCALITY

Port Hedland
Newman

ECOHYDROLOGICAL CHANGE ASSESSMENT
Location of BHP Billiton Iron Ore and Third Party Current and Proposed Mining Areas - Full Development

 fullest development

Date: 15/04/2015

Resource Planning Hydrology
BHP BILLITON IRON ORE

Checked: J Vermaak
Prepared: J Youngs
Reviewed: J Botterill

Revision: Rev J

±

Coordinate System: GDA 1994 MGA Zone 50
Projection: Transverse Mercator,  Datum: GDA 1994,  Units: Meter

BHP BILLITON IRON ORE

Liability
BHPBIO does not warrant that this map is free from errors or omissions. BHPBIO shall not be in any way liable for loss, damage or injury to the user of this map or any other person or organisation consequent upon or incidental to the existence of error or omissions on this map. This map has been compiled with data from numerous source with different levels of reliability and is considered by the authors to be fit for its intended purpose at the time of publication. However, it should be noted that the information shown may be subject to change and ultimately, map users are required to determine the suitability of use for any particular purpose. Data Sources:

DPaW Reserves (DPaW 2015); Roads (MRWA 2012) Aerial Image (BHPBIO); Third Party Disturbance digitised from Aerial imagery (Aug - Sept 2013) and Approval Documentations up to September 2014. All other data supplied by BHPBIO (2012); Yandicoogina mining area comprises Junction Central, Junction South East, Junction South West and the proposed Oxbow, Pocket and Billiard South mining areas.

The content of this map is conceptual only, of a general nature and does not purport to contain all information relevant to future project development associated with the Project. This map has been prepared solely for the purposes of informing environmental impact assessment pursuant to the Environmental Protection Act 1986 (WA) and Environment Protection and Biodiversity Conservation Act 1999 and is not intended for use for any other purpose. No representation or warranty is given that project development associated with any or all of the disturbance indicated on this map will actually proceed. As project development is dependent upon future events, the outcome of which is uncertain and cannot be assured, actual development may vary materially from this conceptual map. No representation or warranty is given that project development associated with any or all of the disturbance indicated on this map will actually proceed. As project development is dependent upon future events, the outcome of which is uncertain and cannot be assured, actual development may vary materially from this conceptual map.
LEGEND

- Karriji National Park
- BHPBIO Rail Corridor (current & proposed)
- Surface Water Catchments
- Great Northern Highway
- Lake Robinson
- Major Drainage Lines
- Ecological Receptors
- Minor Drainage Lines
- Ecological Assets

Source: Surface water catchments
Sub-catchment boundaries delineated based on DEM data (data source: 5m DEM/DSM captured by Fugro Aug 2013 and 30m DEM/DSM from Geoscience Australia)

Source: Major & Minor Drainage Lines
Geoscience Australia 250k Watercourse drainage hierarchy May 2006

The content of this map is conceptual only, of a general nature and does not purport to contain all information relevant to future project development associated with the Project. This map has been prepared solely for the purposes of informing environmental impact assessment pursuant to the Environmental Protection Act 1986 (WA) and Environment Protection and Biodiversity Conservation Act 1999 and is not intended for use for any other purpose. No representation or warranty is given that project development associated with any or all of the disturbance indicated on this map will actually proceed. As project development is dependent upon future events, the outcome of which is uncertain and cannot be assured, actual development may vary materially from this conceptual map.
The content of this map is conceptual only, of a general nature and does not purport to contain all information relevant to future project development associated with the Project. This map has been prepared solely for the purposes of informing environmental impact assessment pursuant to the Environmental Protection Act 1986 (WA) and Environment Protection and Biodiversity Conservation Act 1999 and is not intended for use for any other purpose. No representation or warranty is given that project development associated with any or all of the disturbance indicated on this map will actually proceed. As project development is dependent upon future events, the outcome of which is uncertain and cannot be assured, actual development may vary materially from this conceptual map.
The content of this map is conceptual only, of a general nature and does not purport to contain all information relevant to future project development associated with the Project. This map has been prepared solely for the purposes of informing environmental impact assessment pursuant to the Environmental Protection Act 1986 (WA) and Environment Protection and Biodiversity Conservation Act 1999 and is not intended for use for any other purpose. No representation or warranty is given that project development associated with any or all of the disturbance indicated on this map will actually proceed. As project development is dependent upon future events, the outcome of which is uncertain and cannot be assured, actual development may vary materially from this conceptual map.

Source: Surface water catchments
Sub-catchment boundaries delineated based on DEM data (data source: 5m DEM LIDAR captured by Fugro Aug 2013 and 30m DEM 1sec SRTM from Geoscience Australia)

Source: Major & Minor Drainage Lines
Geoscience Australia 250k Watercourse drainage hierarchy May 2006

Source: BHP Billiton Iron Ore Mining Areas
Full Development Scenario
Third Party Mining Area
Reasonably Forseeable Development

The map has been compiled with data from numerous source with different levels of reliability and is considered by the authors to be fit for its intended purpose at the time of publication. However, it should be noted that the information shown may be subject to change and ultimately, map users are required to determine the suitability of use for any particular purpose.

Data source: DPaW Reserves (DPaW 2015); Roads (MRWA 2012); Aerial Image (BHPBIO); Third Party Disturbance digitised from Aerial imagery (Aug - Sept 2013) and Approval Documentations up to September 2014. All other data supplied by BHPBIO (2012); Yandicoogina mining area comprises Junction Central, Junction South East, Junction South West and the proposed Oxbow, Pocket and Billiard South mining areas.
Ecohydrological Change Assessment Location of Mining Areas - Marillana Creek Region

Source: Surface water catchments
Sub-catchment boundaries delineated based on LiDAR data (data source: 5m LiDAR captured by Fugro Aug 2013 and 30m DEM 1secSRTM from Geoscience Australia)

Source: Great Northern Highway

Source: Major & Minor Drainage Lines
Geoscience Australia 250k Watercourse drainage hierarchy May 2006

Source: BHP Billiton Iron Ore Mining Areas
Full Development Scenario
Reasonably Forseeable Development
Third Party Mining Area
Proposed Mining Areas

BHPBIO Rail Corridor (current & proposed)

This map has been compiled with data from numerous sources with different levels of reliability and is considered by the authors to be fit for its intended purpose at the time of publication. However, it should be noted that the information shown may be subject to change and ultimately, map users are required to determine the suitability of use for any particular purpose.

Data source:
DPaW Reserves (DPaW 2015); Roads (MRWA 2012); Aerial Image (BHPBIO); Third Party Disturbance digitised from Aerial imagery (Aug - Sept 2013) and Approval Documentations up to September 2014. All other data supplied by BHPBIO (2012); Yandicoogina mining area comprises Junction Central, Junction South East, Junction South West and the proposed Oxbow, Pocket and Billiard South mining areas.

The content of this map is conceptual only, of a general nature and does not purport to contain all information relevant to future project development associated with the Project. This map has been prepared solely for the purposes of informing environmental impact assessment pursuant to the Environmental Protection Act 1986 (WA) and Environment Protection and Biodiversity Conservation Act 1999 and is not intended for use for any other purpose. No representation or warranty is given that project development associated with any or all of the disturbance indicated on this map will actually proceed. As project development is dependent upon future events, the outcome of which is uncertain and cannot be assured, actual development may vary materially from this conceptual map.

Liability
BHPBIO does not warrant that this map is free from errors or omissions. BHPBIO shall not be in any way liable for loss, damage or injury to the user of this map or any other person or organisation consequent upon or incidental to the existence of error or omissions on this map.
The generic mine type provides an indication of the degree of the hydraulic connectivity of the current and proposed orebodies with the regional groundwater system. The hydraulic connectivity is an important consideration for assessing the scale of dewatering, the drawdown extent and its influence on ecohydrological receptors. The generic mine types were developed for each of the orebodies considering the ore type, extent of below water table mining and the geological setting in relation to regional aquifers.

Notes:

The content of this map is conceptual only, of a general nature and does not purport to contain all information relevant to future project development associated with the Project. This map has been prepared solely for the purposes of robust environmental project assessment processes for the Environmental Protection Act 1986 (WA) and Environmental Planning and Assessment Act 2000 (NSW). The data and information presented in this map are based on the best available data at the date of publication. As project development is dependent upon future events, the outcome of which is uncertain and cannot be assured, actual development may vary materially from this conceptual map.

Resource Planning Hydrology
BHP BILLITON IRON ORE

Legends:
- Ecohydrology Study Boundary
- Karijini National Park
- Ecological Receptors
- Ophthalmia Dam
- Generic Mine Types (GMTs)
  - Fully Connected
  - Partially Connected
  - Connected
  - Isolated
  - Channel Iron Deposit - Connected
  - Channel Iron Deposit - Not Connected
  - Above Water Table

Location of Generic Mine Types - BHP Billiton Iron Ore

Localities:
- Port Hedland
- Newman

Resource Planning Hydrology
BHP BILLITON IRON ORE

Legend:
- Ecohydrology Study Boundary
- Karijini National Park
- Ecological Receptors
- Ophthalmia Dam
- Generic Mine Types (GMTs)
  - Fully Connected
  - Partially Connected
  - Connected
  - Isolated
  - Channel Iron Deposit - Connected
  - Channel Iron Deposit - Not Connected
  - Above Water Table

Notes:

The generic mine type provides an indication of the degree of the hydraulic connectivity of the current and proposed orebodies with the regional groundwater system. The hydraulic connectivity is an important consideration for assessing the scale of dewatering, the drawdown extent and its influence on ecohydrological receptors. The generic mine types were developed for each of the orebodies considering the ore type, extent of below water table mining and the geological setting in relation to regional aquifers.

Notes:

The content of this map is conceptual only, of a general nature and does not purport to contain all information relevant to future project development associated with the Project. This map has been prepared solely for the purposes of robust environmental project assessment processes for the Environmental Protection Act 1986 (WA) and Environmental Planning and Assessment Act 2000 (NSW). The data and information presented in this map are based on the best available data at the date of publication. As project development is dependent upon future events, the outcome of which is uncertain and cannot be assured, actual development may vary materially from this conceptual map.