Bundock Creek & Giiibert River
on
Dam & Weir Sites
of
Preliminary Geotechnical Assessment

Gulf Region Study
North Region
Regional Infrastructure Development
Bundock Creek & Gllbert River

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Gulf Region Study

North District

Regional Infrastructure Development
The results include ground survey costs for the

Estimated total cost for the Bundock Creek, North Head and Green Hills sites is $4450. This is made up of $6000 for establishment, $3000 for fees and $8000 for engineering investigations will be necessary for engineering feasibility studies.

River. Survey would be required to determine the effect on storage capacity.

The Preswood weir appears to be bypassed by an embankment of the Gillbert.

unknown. Earthfill materials suitable for a day core may be in short supply.

This material is highly permeable and will require removal below the core of an earth-core rockfill structure. The pondrock profile below the alluvial terrace is

The right embankment at North Head damsite is an alluvial terrace about 500 m wide.

Engineering problems:

Construction of works or dams is geotechnically feasible at all of the sites that were

uninspected. Nevertheless, the sites at North Head and Preswood have significant

current state of geotechnical knowledge for each of the sites.

This report sets out the

Inspections of high priority weir and dam sites on the Gillbert River and Bundock

SUMMARY

Gulf Region Study - Preliminary Geotechnical Assessment
2.3 The Geology and Topography

The basin of the Enniskillen River valley. The present river now flows along the western margin of the basin. The reservoir area is primarily hugs that flowed down the ancestral stream of the Enniskillen River. For example, steep mountains such as Mt. Remarkable form prominent strike ridges to the east and west of the site.

Most of the reservoir area is within alluvium or colluvium overlying granite. Arenite, a foliated granite rock of late Proterozoic age, underlies the higher grade metamorphic rocks (gneisses and amphibolites) found in the south of the site. The site is underlain by the Dindo Granodiorite, a foliated granodiorite rock of late Proterozoic age.

2.2 Regional Geology

Enniskillen River into Lava Creek - a tributary of Bundock Creek. Proposed reservoir would be augmented by water diverted from a weir on the dam is 14 m high with an estimated volume of 70 000 m$^3$. The proposed reservoir is located about 17 km south of Lundy's Flat and the proposed reservoir.

2.1 General

2.0 Bundock Creek Dam Site AMDT 48KM

2.0 Introduction

This report gives an account of the results of the inspections as well as proposing engineering assessment of storage options (1999).

In this report, parts were Mr. Geoff Edes, State Water Projects (SWP), Mr. Jason Douglas. Those catchments' geotechnical inspections were carried out in late March 1999. Those pictures are a part of a study of potential water infrastructure options in the Upper Herbert River.
Reservoir area.

Both pervious and impervious earthfill materials should be available from within the stream channel.

Alternatively, sufficient aggregate may be obtained from alluvial materials within the left-bank. The quarry would be used as a source of rockfill and aggregate.

If feasibility studies show that a central spillway is the preferred option, a quarry

zone impounding deeper weathering and possibly unsuitable material for rockfill.

zone may indicate a sheeted

for the spillway is cut by a north trending fault. This may indicate a sheeted

spillway. However, the rockfill on the right bank that would be the obvious location

spillway on the right bank. A spillway on the right bank could also serve as a drainage

The zone-weathered rockfill dam will have either a central overflow spillway or a

section. The depth of weathering may be greater on the right embankment.

probably occur at relatively shallow depths on the left embankment and probably

conditions causing the weathering of the right embankment. Such conditions

rockfill. Therefore, the foundation for the central core should be non-erosion, groundable rock. These

weathering zones present at the embankment toe.

materials would either need to be removed from the embankment foundations or

that this criterion would be achieved by alluvial materials at the site. These

zone should have a shear strength equal to or greater than the rockfill. If the

For a conventional earth-core rockfill dam, the foundation material below the rockfill

Geotechnical Considerations

of the right embankment coincides with an area of weathered material.

outcrops are distinctly weathered and low to medium strength. A saddle to the east

The right embankment slopes at about 10° and is covered with open woodland. Rock

normal to the foliation.

The rock is slightly weathered and of very high strength with joints parallel and

maximum particle size of 25mm. Immediately upstream of the axis, foliated granite

The creek bed is about 50m wide and contains bars of sandy gravel with a

Valley in a northwesterly direction. Alluvial and colluvial deposits of silt and clay

The valley section is about 500m wide and the creek flows through the middle of the

Gulf Region Study - Preliminary Geotechnical Assessment
The right abutment rises gradually from the streambed (Plate 1). It is underlined by
and gravel.

The stream section consists of fresh meta-dolomite overlain by a thin veneer of sand
and silts.

The geology of the dam sites are shown on Figure 2.

3.3 The Geology and Topography

Bedding is sub-horizontal and massive.
Jurassic age. This unit forms spectacular mesa and "gorge" country in the region.
The Etchinger Group is unconformably overlain by the Hampstead Sandstone of
amphibolite facies.
Represe ase of an abandoned basin and geologic highs that have been metamorphosed up to
become phyllitic and schistose in character. The Dead Horse metasediment member
siltstone. Metamorphic grade increases towards the east causing the rocks to
siltstone. The Robertson River Formation is composed of cleaved shale and
member. The Robertson River Formation is composed of cleaved shale and
member. The Robertson River Formation is composed of cleaved shale and
dolomite. These are the Robertson River Formation and the Dead Horse metasediment
there are two formations within the Etchinger Group that are adjacent to the
oldest rocks in the region belonging to the Etchinger Group of Pre-Cambrian age.

3.2 Regional Geology

The damsite of the site is considered unsuitable. According to criteria of the damsite of the site is considered unsuitable. Accordingly
the abutments of the left bank or in the river as a central overflow type.
place on either the left bank or in the river for additional volume of 670 000 m³. A spillway could be
referred to as an earth-cored embankment having a height of about 12 m high
The damsite is located on the Gilbert River about 7 km upstream of "North Head".

3.1 General

NORTH HEAD DAMSITE AMDP 398KM
The Rocklands are underlain by the Gilbert River Sandstone of Cretaceous age that unconformably overlies the older rock types.

Geologically, the Rocklands belong to the Cumberland Range Volcanics. Presumably, the Rocklands are underlain by the Preswood Formation, an intrusion that is believed to be the Cumberland Range Volcanics of Carboniferous age. The sites adjacent to "Green Hills" are underlain by dacitic or andesitic intrusives.

4.2 Regional Geology

Rockhills. The proposed weirs are 7 m high at each of the sites.

Preswood. There is only one potential site at the lower end of AMTD 279km near AMTD 338km and AMTD 339km near "Green Hills" and AMTD 321km near middle of the bested area to selectively control flows for run-off and/or abstraction.

Gilbert River. Regulating structures are required near the upper end and near the area of potentially beneficial soils occurring below "Preswood" adjacent to the rockhills.

4.1 General

4.0 Gilbert River Regulating Weirs

Reservoir area.

Sand for fill zones and concrete is available from the streambed within the reservoir.

Sand in short supply.

Excavated material at the surface of alluvial terraces are either sand and clayey soils may be in short supply.

Earthfill materials suitable for the earth core may be difficult to locate in the reservoir.

Excavation of earthfill materials would be available from the spillway excavation of the adjoining area. Materials at the surface of alluvial terraces are either sand and clayey soils may also be suitable for this purpose.

Rockfill construction materials would be available from the spillway excavation of the adjacent area. Materials at the surface of alluvial terraces are either sand and clayey soils may also be suitable for this purpose.

Central diversion option may minimise river diversion problems during construction.

Either the spillway options would be feasible. The left bank spillway option would be feasible through the right bank to an unknown depth.

3.4 Geotechnical Considerations

Gulf Region Study - Preliminary Geological Assessment
Observation of diarrhetic water indicated that very little clay or silt was present was washed from the sample in the diaphragm process. Nevertheless, these samples were taken under saultured conditions, most the material in the samples of clean sand and gravel taken from pervision holes was comprised of clean sand and gravel size sandstones were the thickness of clean sand ranges from 6 to 12 ft. Particles size sandstones were vitrified clayey sand and cemented sand underlie the bed section and the left bank. Diluting sodium acetate solution of the bridge (RLD) 1989 shows that clean sand and gravel size sandstones oil the right embayment slopes gradualy from the riverbed at about 2 to 6 ft. Sandstone outcrops on this bank. It is distinctly weathered and of low to medium strength.

This site is immediately upsteam of the Gulf Development Road Bridge.

4.6 Rockfield's Wellness 2.79Km

Although the site is suitable for a roller compacted concrete structure the capacity of the structure may be limited. Geotechnical maps and inspection from the ground surface of the embankments of porphyry micaceous that slopes about 5 - 10°

4.5 Presswood Wellness 3.21Km

This site was not inspected on the ground but is similar in terms of rock types and the topography to the Green Hills site described above.

4.4 Wellness 3.33Km

The construction materials could be obtained from the overburrium and a quarry in the area. The site appears ideal for either a roller compacted or mass concrete structure.

4.3 Green Hills Wellness 3.38Km

The banks slope at about 10° from the river bed. Slightly weathered and extremely high strength. Soil cover is absent or very thin. Ripflowitic ignimbrite outcrops on both banks of the river (Figure 3). The rock is
The axis on the right bank but could affect the proposed structure on the left bank.

The most significant defects in the rock pavement are stress relief joints sub-parallel to the ground surface.

5.3 Geology and Topography

Rocks developed a steep cleavage sub-parallel to bedding during this event. The compression event that resulted in the production of numerous faults, slickensides, and other deformational events. The most significant was a major affected by several deformational events. The formation has been dated at 10,000 years, but possibly extending several kilometers. In addition, the formation consists of several members, each with a different environment. The basement rocks in the area belong to the Hodgkinson Formation of Devonian age.

5.2 Regional Geology

Dam as an infiltrate. The maximum height of the dam is 26m above bed level.

A concrete faced rockfill dam has been proposed with a roller compacted concrete spillway road.

Bellevue and immediate upstream of the confluence of Ok Bridge on the Mungana.

A damsite has been proposed on the Mitchell River about 12km south-east-north-east of Mitchell.

5.0 PINNACLES DAMSITE, MITCHELL RIVER AMD 410KM

Upstream and downstream ends of the weir:

For the concrete structure, only two rows of sheet piles would be required. At the dyke in the day and layer of installed in a trench excavated in the sandstone. The site would be suitable for either a sheet piling wall or a concrete weir founded on competent sand and sandstone. For the concrete weir, sheet piles would be.

The average grain size of the samples is about 4 mm and the maximum particle size is about 40 mm.
6.0 GEOTECHNICAL INVESTIGATIONS

Steel piling or loose alluvial deposits only will be required.

Boulders with concrete.

Inspection of the site should be carried out by the foreman and ground level. The site should be thoroughly examined to determine the depth of sand and gravel deposits. The presence of sand and gravel deposits appears to be relatively abundant.

For a roller-compacted concrete dam the foundation needs to be non-erodible and non-slippery.

5.4 Geotechnical Assessment

If dips steeply downstream (63° towards 205° M.), the sheeted zone observed on the island may be caused by the sheeted zone observed on the island. The sheeted zone is shown by the upstream face of the sheeted zone and the downstream face of the sheeted zone. The sheeted zone is shown by the downstream face and the upstream face of the sheeted zone. The sheeted zone is shown by the downstream face.

Other deposits affecting the sheeted zone include: steepened sheeted, parallel to the ground surface.

Difficult access conditions prevented a detailed inspection of the sheeted zone but it may contain sheeted sheeted. Difficult access conditions prevented a detailed inspection of the sheeted zone but it may contain sheeted.
References

Gulf Region Study: Cribber River Bed

Regional Infrastructure Development (1998)

7.0 References

$44 500

TOTAL

Expenses (Vehicle and equipment hire, travelling)

$8 000

$30 500

Fees (geological mapping, seismic and ground survey, establishment/disestablishment)

$6000

Estimated fees are as follows:

Flinders site is too remote to accurately estimate costs.

Groundwater drilling are adequate in the case of the Rocklands Site and the proposed for the Rocklands West site. The Flinders site service have been using a backhoe would also be carried out at Bundock Creek and North Head Sites.
Leh Bank
The Pinnacles Dam site

PLATE 2

Towards right embayment
View from left embayment
North Head Dam site

PLATE 1
PLACE 4 - The Pinnaclcs Damside - massive chert outcrop right bank

PLACE 3 - midstream Island - massive chert - Sheared zone in the - The Pinnaclcs Damside
Legend:
- C: Rhyolitic ignimbrite
- A: Alluvium, dissected
- A1: Alluvium, terrace deposits
- A2: Alluvium, active stream deposits

Legend for the map:
- C: Rhyolitic ignimbrite
- A: Alluvium, dissected
- A1: Alluvium, terrace deposits
- A2: Alluvium, active stream deposits

Base map reference:
1:25,000 (approx)
AMT 335km, 333km
Creech Hills Reserve
Plate 3