

APPENDIX **K**

Civil Report including Stormwater Management Plan



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KEMPSEY DISTRICT HOSPITAL REDEVELOPMENT

SCHEMATIC DESIGN REPORT - CIVIL

Prepared for: **Health Infrastructure NSW**

By: **Enstruct Group**

Revision: **C**

April 2013

ISSUE AUTHORISATION

PROJECT: Kempsey District Hospital
Project No: 4463

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Enstruct group P/L
Level 4 – 2 Glen St
Milsons Point
Sydney NSW 2061
Australia.
Telephone (02) 8904-1444
Facsimile (02) 8904-1555

This Report is given for the benefit of:

- a) NSW Health and Health Infrastructure (ABN 89 600 377 397); and
- b) Any Tenderer (meaning any tenderer whether as an individual, and entity, a joint venture, a partnership or a consortium) to NSW Health or Health Infrastructure for the provision of works or services in any way in connection with the Project.

Executive Summary

This Schematic Design Report summarises the civil engineering elements of the proposed for Kempsey District Hospital redevelopment.

The report discusses the existing site conditions and hospital campus development proposals with specific reference to the site levels, road and pavement design and stormwater drainage.

Construction Sequencing:

The redevelopment works have been divided into two packages, an early works and a main works contract. The early works have been further sub-divided into three (3) phases as directed by Health Infrastructure and the project manager. Phases 1 and 2 of the early works are subject to a Review of Environmental Factors (REF) approval process from Health Infrastructure (HI) whilst phase 3 of the early works and the main contract works are subject to a State Significant Development (SSD) Application from the Department for Planning.

The majority of the civil engineering elements will be constructed in phase 2 of the early works which will improve site access for the main works contractor and accelerate the project programme. Details of the development sequencing for the early works are detailed in the architectural drawing set and reflected in current civil engineering drawings provided in the appendix.

Bulk Earthworks:

The bulk earthworks associated with the early works and main works have been investigated to optimise the relationship between cut and fill material volumes.

Whilst it has been possible to achieve a reasonable balance of material volumes as part of the phase 2 early works, due to the challenging topography of the site and the proposed stepped building envelope it will not be possible to balance the cut and fill for the main works.

The current design results in a net surplus of cut material which will need to be exported from the site during the construction of the works. This is considered to be economically efficient because it will offer savings in the preparation of an earthworks platform, remove the need for retaining walls within the building envelope and save time in installation.

Pavement Design:

All pavement works on the project will be of flexible construction with the exception of concrete hard-standings adjacent to areas of the services compound. This is very cost effective in areas with uneven geometry and where pavement extents are limited.

Flexible pavement construction also offers greater flexibility in vertical geometry which is required on this project due to the existing topography of the site.

Service Road:

As part of phase 2 of the early works, a one way service road will be constructed between the existing south parking area and Tozer Street. The road has been designed to allow vehicle to travel one-way from Tozer Street through to River Street.

The new intersection on Tozer Street will be designed to allow a left in movement from Tozer Street northbound whilst all larger vehicles will turn right into the site from Tozer Street northbound.

The service road has been designed to minimise the earthworks required to provide an acceptable subgrade base for the road.

A service compound will be created on the southern side of the service road. This compound will contain an LPG tank farm, an electrical substation and a medical gas compound. Parallel staff car parking bays will also be provided along the road.

Stormwater Drainage:

The stormwater management strategy for the development has been designed to meet the requirements of the Kempsey Shire Council and has been developed through ongoing discussions with both Council and the hospital infrastructure working group.

The minor storm event drainage (10 year ARI) will be drained through a new main drain passing under River Street that will be installed during phase 2 of the early works. This pipe will discharge water directly to the Macleay River.

Rainfall runoff exceeding the capacity of the in-ground drainage system will predominantly flow overland to the south of the site towards the cemetery drainage system and Tozer Street in a similar manner to the current drainage system.

The proposed alterations to the site stormwater drainage system will result in an increase in rainfall runoff being discharged to River Street as is council's preference.

No stormwater detention is required on site due to the downstream location of the site's catchment and the close proximity of the site to the Macleay River system.

Director General's Requirements:

For the hospital redevelopment there are a number of specific issues which need to be addressed as set out in the Director General's Environmental Assessment Requirements. A number of these requirements pertain to the civil engineering design and these have been addressed as follows and as described in this report:

Downstream properties to the east of the site that discharge water into existing Council drainage infrastructure will benefit from a reduction in off-site discharge from the hospital and the commensurate increase in available drainage capacity.

11. Sediment, Erosion and Dust Controls

The design has considered measures to control soil erosion and sediment transportation to mitigate the risk of sediment being washed out adversely affecting other parts of the site or areas off-site during construction. Such measures will include sediment fences, settlement ponds and shaker grates.

14. Flooding

There are no known flooding issues associated with the hospital site because of its elevated location. The proposed development will not substantially increase the percentage of impermeable areas on the site and therefore the rate of surface water runoff.

Through consultation with Kempsey Shire Council, the development will involve installation of a new main drain that will route a greater percentage of rainfall falling on the site directly to the River Macleay in an unrestricted manner. This is intended to alleviate known flow capacity issues associated with existing downstream off-site Council drainage infrastructure located east of Tozer Street.

15. Drainage

This report outlines the strategy for on-site surface water management and the discharge from site. This report has been prepared in consultation with Kempsey Shire Council and Kempsey Hospital Infrastructure Working Group.

The development will discharge water to existing council/street drainage systems and directly to the River Macleay. As requested by Kempsey Shire Council, the design will route a greater percentage of rainfall falling on the site to the River Macleay. This is not considered to adversely affect downstream areas because the discharge from site is negligible compared peak flows in the River following significant rainfall events.

A GPT will be provided to remove debris, suspended sediments and hydrocarbons and thereby improve the quality of water discharged to the River.

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1 Project Description

1.1 Overview

Kempsey District Hospital is a 66 bed facility providing level 3 services including emergency, high dependency and coronary care, general medicine, general surgery, rehabilitation, maternity, mental health, renal dialysis, and a broad range of primary health care services.

The Hospital predominantly services the Kempsey Local Government Area (approximately 29,000 residents) and is located in West Kempsey, a short distance from the Kempsey Central Business District. Figure 1 illustrates the existing hospital campus.

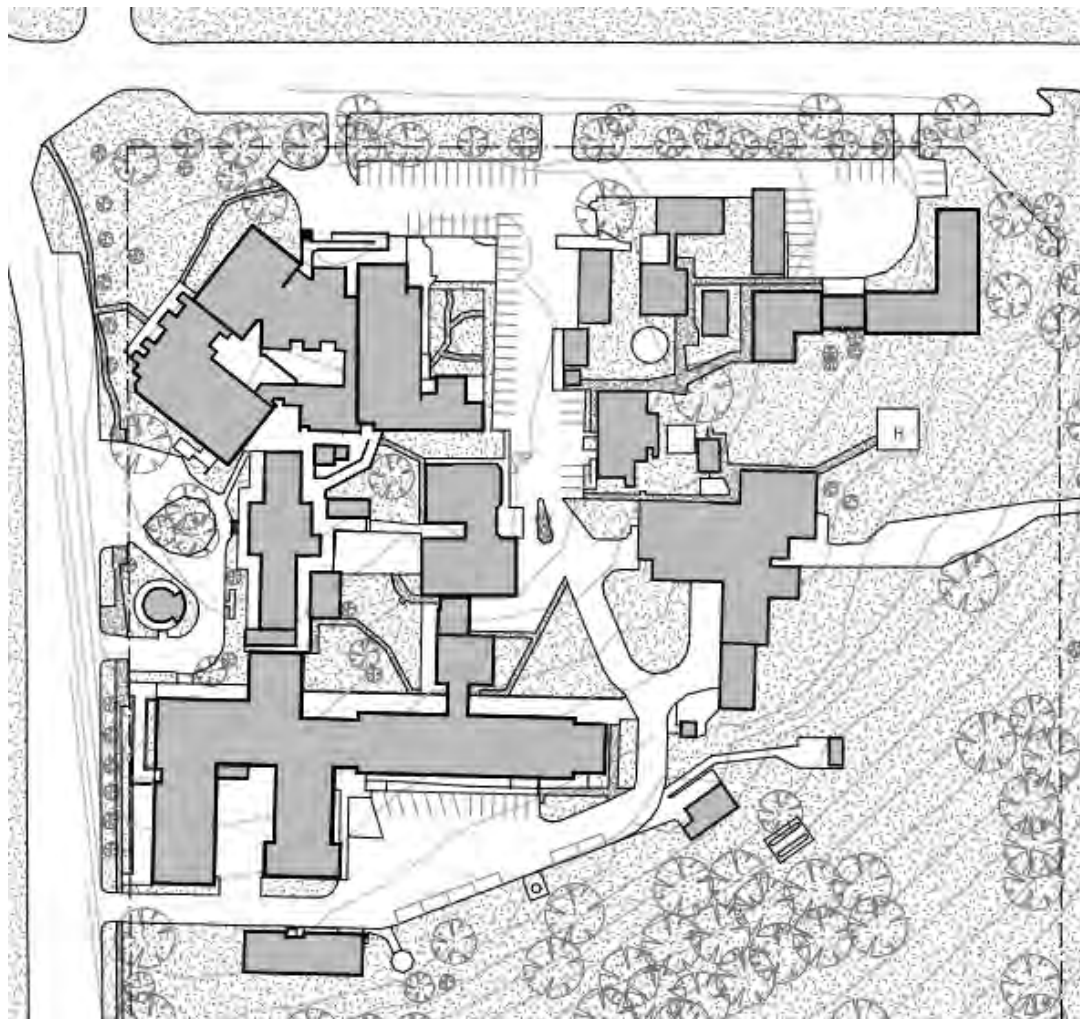


Fig 1 Kempsey Hospital site

Kempsey District Hospital is located within the Mid North Coast Local Health District, which also comprises facilities at Bellingen, Coffs Harbour, Dorrigo, Kempsey, Macksville, and Port Macquarie as illustrated in figure 2.



Fig 2 Mid North Coast Local Health District

Kempsey District Hospital is part of the Hastings Macleay Clinical Network, which also includes Port Macquarie Base Hospital and Wauchope District Memorial Hospital.

1.2 Project Background

In 2011, the NSW Government submitted an application to the Health and Hospital Fund for the Kempsey District Hospital Redevelopment.

In May 2012, the NSW Government and the Australian Government announced a major capital investment of \$80 million for the Kempsey District Hospital Redevelopment. The NSW Government will provide \$40 million and the Australian Government will provide \$40 million through the Health and Hospital Fund.

1.3 Project Overview

The Kempsey District Hospital Redevelopment represents a strategic capital investment in the health infrastructure of the Mid North Coast Local Health District and for rural services more generally across NSW. The broad objectives of the Redevelopment are to:

- Invest in increase clinical service capacity and address clinical service priority areas.
- Implement new models of care which better meet the health care needs of the community.
- Deliver culturally appropriate services which meet the needs of the high proportion of Aboriginal people in the Kempsey Local Government Area.
- Deliver new and contemporary health care facilities which support sustainable, safe, quality health care service delivery into the future.
- Support education and training of the health workforce, and workforce recruitment and retention strategies.
- Set up a strategic longer term development framework (master plan) for the site. This includes considering opportunities for future vertical expansion above the new hospital building.

1.4 Project Description

1.4.1 Service Profile

The Kempsey District Hospital Redevelopment will provide increased service capacity and contemporary models of care to meet the changing and unique health care needs of the community. The Redevelopment will provide the following:

- New main entrance and front of house services.
- New emergency department (with 2 resuscitation bays, 10 adult acute bays, 2 fast track bays, 4 paediatric bays, and associated consultation rooms and support areas).
- New 6 bed emergency medical unit.
- Establishment of an integrated community care centre.
- New medical imaging department with CT, general x-ray, ultrasound and OPG.
- New 4 space medical day procedures unit.
- New 32 bed acute inpatient unit with an additional 8 shell beds.
- New 8 bed high dependency and coronary care unit.
- New operating theatre suite with two operating theatres, one shell operating theatre, Stage 1 recovery, and 9 space day surgery unit.
- Expansion of renal dialysis services from 5 to 10 chairs, and the establishment of a renal dialysis training unit.
- Expansion of oral health from 2 to 4 chairs.
- Relocation and or expansion of several primary health care, community, and ambulatory services.

In addition to this, the Redevelopment will also comprise:

- Connections between new facilities and the existing facilities to achieve good connectivity and operational efficiency across the site.
- External site works such as landscaping, pathways, roads etc.
- Reconfiguration of car parking provision for patients, visitors, and staff.
- Engineering services reconfiguration / upgrade to meet the future needs of the hospital.

2 Available Documents

The current schematic design has been based on the following available documents:

Site Survey:

Title: Plan of Lots 1-8 SEC 20A DP759080, Lots 1 & 14 SEC 23A DP 759080 & Lot 20 DP 112084 River, Tozer & Polwood Streets, Kempsey

Surveyor: M.W.Rogers & Associates
Job No: 0456DET09

Site Geotechnical Report:

Title: GEOTECHNICAL INVESTIGATION: KEMPSEY DISTRICT HOSPITAL, Kemspey

Geotech: Coffey Geotechnics
Report No: GEOTCOFH03037AA-AG Rev 2
Date: 8th March 2013

Site Environmental/Contamination Report:

Title: GEOTECHNICAL INVESTIGATION: KEMPSEY DISTRICT HOSPITAL, Kemspey

Geotech: Coffey Geotechnics
Report No: GEOTCOFH03037AA-AJ
Date: 29th January 2013

Copies of these documents are included in the appendix of this report

3 Site Existing Conditions

3.1 Survey

Site survey has been undertaken to identify both above and below ground features of the site. Copies of the survey information are included in the appendices of this report. Refer to Appendix A1 for details of new site survey.

3.2 Site Levels

The site generally slopes from the North West corner of the site to the South East. Levels fall from approximately 28.0m AHD to 11.0m AHD.

The site is generally flatter along the Northern edge of the campus and falls away steeply at the South East towards the existing cemetery.

Given the level changes through the site, substantial bulk earthworks will be required to enable the development of the new hospital buildings, service compounds, car parks and access roads. It will be important to minimise the amount of earthworks required during the design of the civil works.

3.3 Pavements

All existing pavements within the hospital campus are flexible asphaltic pavements.

Generally the pavements are in an acceptable condition with no evidence of any major areas of subgrade failure.

Evidence of service trenching works through the asphalt pavements is apparent in a number of locations and these remediation works are showing signs of wear and tear.

The pavements generally run up to the interface with building thresholds with no level difference between the external and internal levels. There are a number of exceptions to this including the administration building, the mental health and community health buildings and the kitchen.

3.4 Stormwater Drainage

The existing stormwater from the site is split in six sections, North, North West South, East, West and central as discussed below.

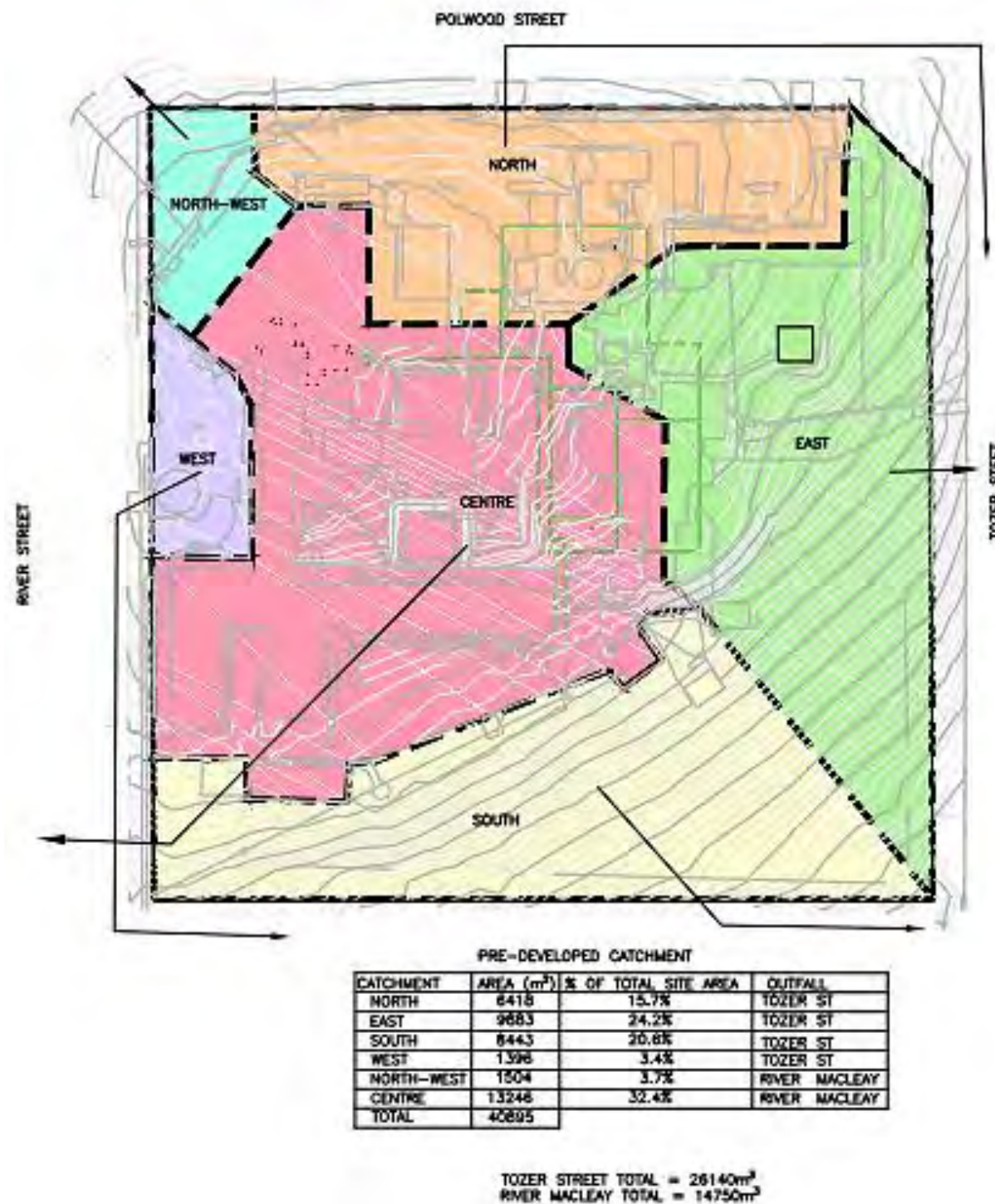


Fig 3 Drainage Catchment Areas pre-development

Existing Stormwater Drainage

3.4.1 North Stormwater Drainage

The north edge of the campus drains towards Polwood Street and consists of a mixture of in ground pipe works and overland flow discharging directly onto the street through either kerb connectors or direct connection to council stormwater drainage pits.

The maternity building at the North West corner of the site connects to council's drainage system underground while the buildings to the east discharge by a series of kerb connectors. Water then runs east down the kerb and gutter of Polwood Street to council's in ground drainage system located at the intersection with Tozer Street.

Rainfall runoff in excess of the design capacity of the drainage system will run as overland flow towards Polwood Street and the both east and west along Polwood Street to River Street and Tozer Street respectively.

3.4.2 North West Drainage

The North West drainage catchment runoff is conveyed across the site underground and is then discharged under River Street in a north westerly direction.

3.4.3 East Stormwater Drainage

In a similar scenario to the North, stormwater drainage areas to the east of the campus will drain east towards Tozer Street. These areas are not substantially developed and mainly consist of landscaped areas and the existing helipad.

No apparent in ground drainage exist within the campus and both minor and major design storm flow will run overland to discharge from the site.

Tozer Street has an existing in ground stormwater drainage system which will pick up the discharge flows from the site. Flows in excess of the capacity of this system will run south along council's road corridor towards the creek located between the hospital site and the cemetery.

3.4.4 Central Stormwater Drainage

The buildings located to the west of the site circulation road and south of the northern boundary buildings currently drain towards the circulation road.

The minor drainage system consists of direct downpipe connections to the kerb and gutter along the main access road.

The in ground drainage running under the main access road falls with the road to the south of the site.

Discussion with the maintenance team on site suggested that a stormwater line runs under the existing site fence to the south of the morgue and then turns to run west along the boundary fence, under River Street and discharges into the River Macleay.

3.4.5 South Stormwater Drainage

The southern drainage catchment contains the vegetated embankment to the south of the hospital development. All runoff is conveyed as overland flow towards the cemetery and the Tozer Street drainage system.

3.4.6 West Stormwater Drainage

A small catchment along River Street drains directly onto River Street as overland flow. This flow then runs as overland flow within the road corridor of River Street to the low point between the hospital and cemetery where the flows run into a kerb inlet structure and discharge into the swale running through the cemetery towards Tozer Street.

3.4.7 Flood Risk

Hospital maintenance staff and flood maps indicate the existing site is not prone to flooding as a function of its elevated location within Kempsey.

Some issues were identified with the condition of the existing main drain that discharges water to the River Macleay to the south of the site. It is thought to have partially collapsed and has localised surcharging has been observed .

3.4.8 Downstream Drainage

It should be noted that although the existing in ground drainage for the site discharges to the River Macleay under River Street, all flows from the North, East, West South and the overflow from the central catchment will drain to the creek running between the hospital and the cemetery. From this point the water runs North East under Tozer Street through a large in ground drainage pipe which runs under adjacent properties and discharges into a channel to the North East of the site.

This drainage system is known to have poor flow capacity and regularly surcharges following heavy rainfall. Kempsey Shire Council has advised that they are supportive of any measures that reduce the flow directed to this drainage network.

4 Development Proposals

The following sections outline the schematic design for the civil engineering elements of the proposed works.

4.1 Construction sequencing and approvals

The delivery strategy for the project as a whole has been split into two packages; an early works and a main works contract. The early works will entail decanting, demolition of existing buildings, earthworks, retaining walls, installation of new mechanical, electrical and hydraulic services, new kerbs, roads, pavements, a services compound and parking. The early works is further sub-divided into three (3) phases which are illustrated on architectural phasing plans.

Phase 2 of the early works will involve installation of a significant proportion of the civil engineering elements and is intended to improve site access and enhanced on-site staff car parking capacity. They will facilitate completion of the new building infrastructure up front, thereby accelerating the main works construction programme as the design and approval of the main works remains ongoing.

The main contract works will principally entail construction of the new building and some smaller elements of externals works including modifications to the northern car park, building stormwater drainage and minor regrading works.

The installation sequencing and recommended approach to site operation staging is illustrated in the current architectural drawing set and is reflected in the civil engineering drawings provided in Appendix C of this report.

The approval process for phases 1 and 2 of the early works will be via a Report of Environmental Factors (REF) from Health Infrastructure (HI). Approval of phase 3 of the early work as well as all the main works will be via a State Significant Development Application from the Department for Planning.

4.2 Bulk Earthworks

4.2.1 Early Works

Phase 2 of the early works will involve regrading of existing levels in the proximity of the new service road and services compound and across the footprint of a new on-grade car park situated west of River Street. The spatial arrangement of these elements as well as proposed levels were significantly influenced by consideration of cut and fill material balance. In turn this will minimise off-site disposal of material and the associated costs and logistical considerations.

4.2.2 Main Works

The proposed new building floor levels have been set as follows:

- Lower Ground Floor RL23.68
- Ground Floor RL28.18
- Level 01 RL32.68
- Level 02 RL37.18

This arrangement along with the position of the proposed building means that the existing ground levels will be significantly different at the north and south face of the building.

The ground levels at the north side of the building vary from RL28.0 to RL 26.25, 1.9m lower than the proposed Ground Floor level. The ground levels at the southern side of the proposed building are approximately RL23.10, 0.45m higher than the Lower Ground Floor level of RL24.10.

The proposed building steps from Upper Ground to Lower Ground approximately half way along the length of the building. This will reduce the amount of fill required under the building.

Figure 4 below indicates the proposed building arrangement in relation to the existing ground level.

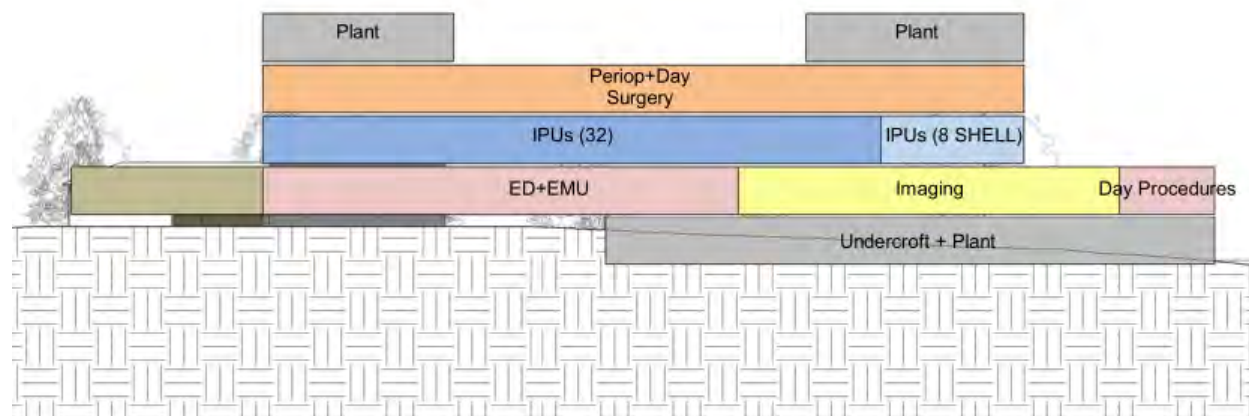


Fig 4 Cross section through the proposed new building

The earthworks associated with the new building will provide a combination of a level, ground bearing platform supporting the lower ground floor plate with a batter slope up to the upper ground floor. This will reduce the earthworks filling associated with the upper ground floor and the need for a more closely specified and controlled material and laying/compaction regime. This will also remove the requirement for retaining structures. The upper ground floor slab will be suspended above the battered slope and will be supported by piled foundations.

This arrangement will however generate a surplus of cut material generated from the creation of a level platform at the lower ground floor level. Wherever possible, this material will be disposed of on site in either soft landscaping or below the proposed ambulance delivery bay. Where this material is geotechnically unsuitable or it is otherwise impractical to use the material on site it will be disposed off-site.

4.2.3 Volumetrics Analysis

An analysis of the cut/fill balance for the site has been undertaken for both the early works and main works as illustrated in Fig 5 and presented in table 1 below.

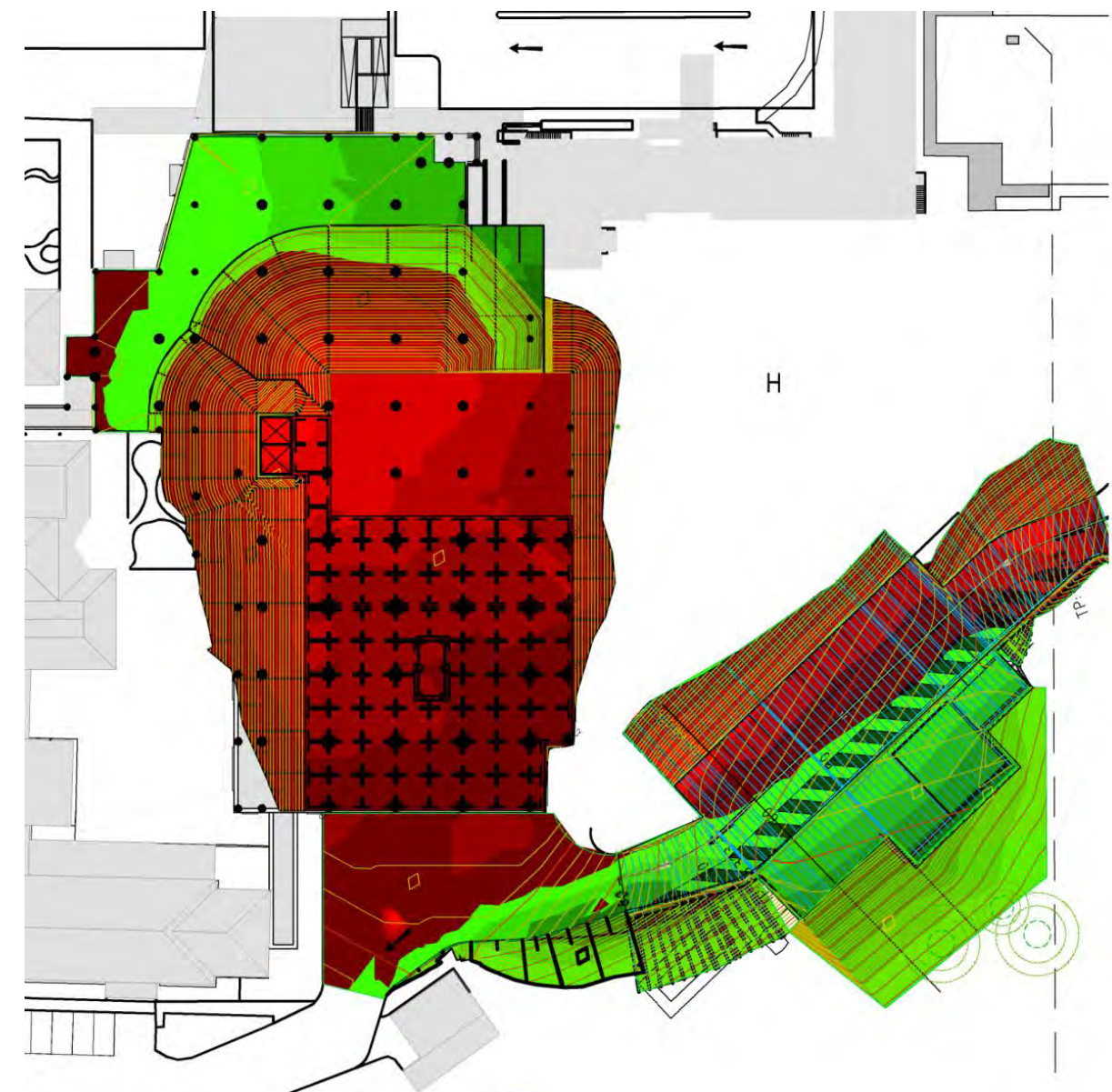


Fig 5 Earthworks cut/fill model illustrating areas of cut in red and areas of fill in green

Area	Volume Cut (m ³)	Volume Fill (m ³)	Balance (m ³)
Early works	2,900	2,300	600 Cut
Main building works	5,000	550	4,450 Cut

Earthworks volumetrics analysis results

Figures presented in this table are correct as of the published date of this report and are subject to change as the design develops. Wherever practical excess cut material will be disposed of on-site.

4.3 Pavements

With the exception of concrete hard-standings adjacent to areas of the services compound, all new pavements within the development will be flexible. The design of these pavements is based on recommendations provided in the geotechnical investigation.

The vertical and horizontal geometry of all proposed pavements has been designed to comply with all current design standards and appropriate local authority standards.

Care has been taken to ensure that the pavement vertical geometry is such as to safely and effectively convey all rainfall runoff towards the proposed stormwater drainage inlet structures.

The majority of new pavement construction is included within phase 2 of the early works contract and is subject to approval under the REF. There are some minor elements of new pavement construction and reinstatement works to the northern car park which will be undertaken as part of the main contract works.

Drawings indicating the extent and details for the pavements have been included in Appendix C of this report.

4.4 Service Road

Currently, service vehicles can enter the site through the southern gate on River Street and drive in a forward direction through the site exiting onto Polwood Street. However, the new building location will preclude this through movement.

Consequently, a new one way service road is proposed on an east-west alignment through the site to the south of the new building to allow vehicles to enter the site from Tozer Street and pass through the campus in a forward direction exiting onto River Street.

The new intersection on Tozer Street will be designed to allow a left in movement from Tozer Street northbound whilst all larger vehicles will turn right into the site from Tozer Street.

This road will be used as the principal means of access for vehicles servicing the adjacent service compound and various loading docks to the proposed and existing campus buildings. The access road will also facilitate waste collection as well as providing access to the southern staff car park and some new parallel parking spaces alongside the service road.

Construction of the entire new service road will be undertaken as part of phase 2 of the early works to facilitate access to the building and is subject to approval under the REF.

4.5 Stormwater

4.5.1 Development Stormwater Management Strategy

Rainfall falling within the site will be collected into roof drainage systems and will run off over sealed pavements. Water will then enter the drainage system through a series of surface and kerb inlet pits. This flow will be conveyed downstream through a new in-ground pipe network consisting of concrete pipes and concrete pits which will be routed around existing and proposed structural foundations.

The proposed stormwater drainage system has been sized to safely convey all flows resulting from design rainfall events up to and including the 10 year annual rainfall intensity (ARI) within the new underground pipe system.

Rainfall events in excess of this will generate additional flows which will be conveyed overland within the road corridor and in turn to drainage infrastructure external to the campus including council managed highway kerb and gutter, in ground pipes and discharge directly to the River Macleay.

Ultimately all flows from the site will be discharged to the River Macleay and a new Ø675mm diameter arterial pipe will convey a greater percentage of rainfall falling on the hospital campus area below River Street and directly to the river. The revised distribution of rainfall catchments is illustrated in figure 5.

No stormwater detention is required for this system given that the catchment will discharge directly into the river water body. This discharge is likely to have a negligible impact on peak flows within the river Macleay following significant rainfall given the size of the river catchment area when compared to the size of the hospital campus.

This strategy is intended to alleviate the known flow capacity issues associated with existing downstream off-site Council drainage infrastructure East of Tozer Street. This replacement drain will also rectify the known issues with the existing on-site pipe. This strategy has been developed in consultation with Kempsey Shire Council and has their support.

Drawings showing the extents of new drainage installation are included in Appendix C1 of this report.

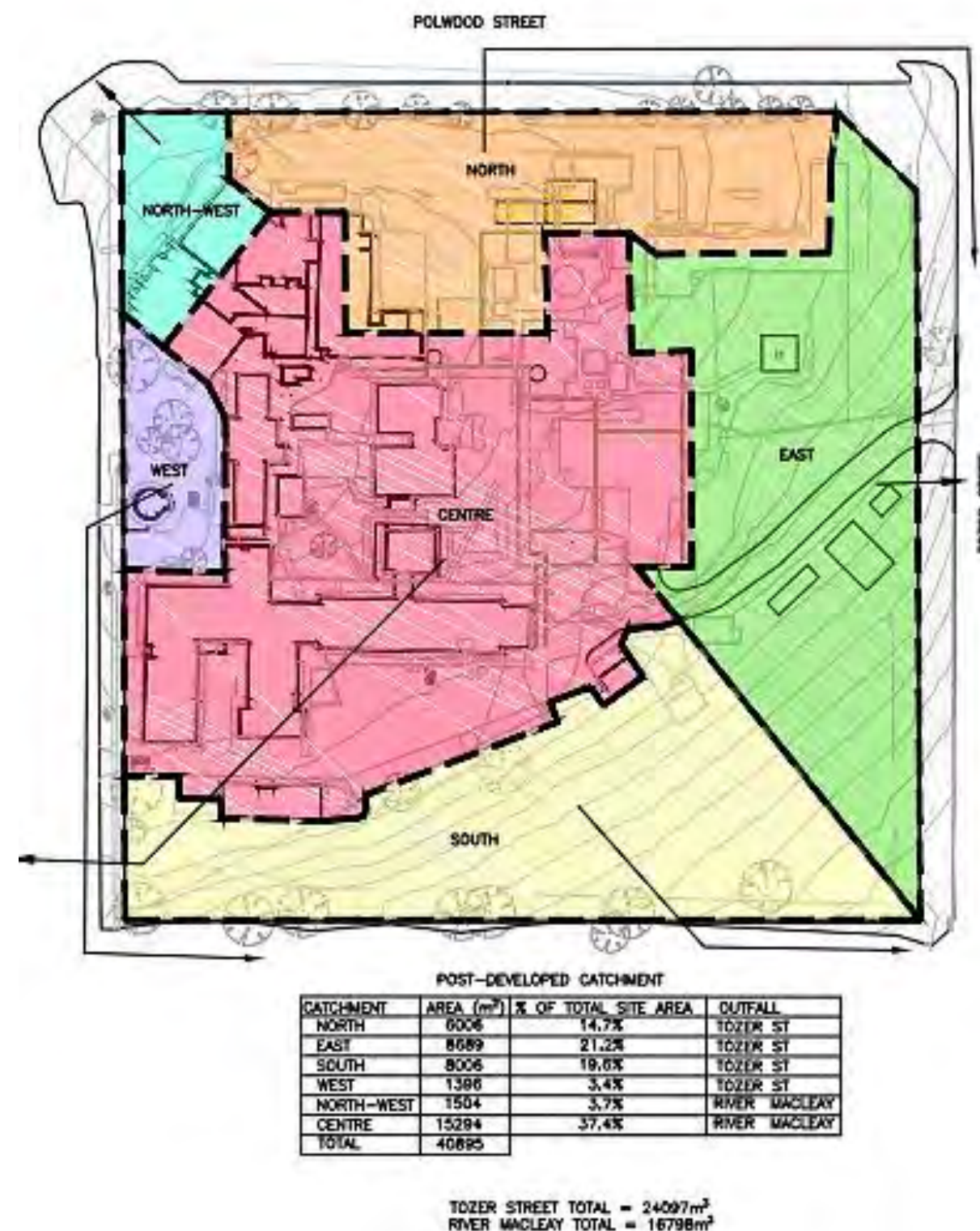


Fig 5 Proposed Stormwater catchments

4.5.2 Early Works

The majority of the principle drainage pipes and pits for the development will be installed during phase 2 of the early works as part of the infrastructure package. This will include the new Ø675mm drain, River Street crossing and new outfall structure to the River Macleay. These works are subject to approval under the REF.

4.5.3 Main Works

Following the early works, limited elements of the stormwater drainage pipe network will be connected upstream and installed to the flanks of the building concurrently with the structural foundations. These pipes and pits will primarily serve new downpipes to the new building roof drainage system.

4.5.4 Potential Future Expansion

Early masterplan development drawings indicate possible future expansion of the hospital facilities through construction of a building and car park in the South West area of the campus.

This expansion would necessitate realignment of the access road and further earthworks regrading which has been considered in the design of the drainage pipe routing so as to avoid re-diversion of the newly installed pipe and minimise disruption. Additionally, future expansion of the hospital is likely to increase the area of hard paved/roof and thereby increase the rate of surface water run-off. To cater for this potential future increase in flow rate the main pipe to be installed during the current development, has been sized based on the future catchment areas.

4.6 Surface Water Quality and Greenstar credits

As part of the installation of the new drainage system, a gross pollutant trap will be installed to remove debris, suspended sediments and hydrocarbons. This unit is intended to improve the quality of discharge to the River Macleay but will not be specified to achieve the highest level of water treatment and therefore secure greenstar credits. This decision has been made owing to the prohibitive installation and maintenance costs associated with GPT units capable of removing dissolved nutrients/minerals such as phosphorus and nitrogen.

4.7 Consultation with Stakeholders

As part of the design development process, regular contact has been made with the wider design team, hospital staff and user groups, Kempsey Shire Council and other key stakeholders. Below is a list of the key meetings which have taken place during the project:

Date	Stakeholder	Issues discussed
08/11/12	Kempsey Shire Council/ KDH Infrastructure Working Group	Discussion on storm water strategy, issues with existing drainage, agreed strategy for discharge.
13/12/12	KDH Infrastructure Working Group	Prepared stormwater management presentation delivered to group by Architect. Discussion on options for service road alignment.
24/01/13	Kempsey Shire Council/ KDH Infrastructure Working Group	Discussions with council on parking provision and service road alignment, junctions with Tozer street and access strategy.

4.8 Sediment and Erosion Control

The design has considered measures to control soil erosion and sediment transportation to mitigate the risk of sediment being washout adversely affecting other parts of the site or areas off-site during construction. Such measures will include sediment fences, settlement ponds and shaker grates. These are illustrated in the current civil engineering design drawings as provided in the Appendix.

Appendix A1 – Existing Site Survey

(REFER TO APPENDIX B, VOLUME 1 OF THE ENVIRONMENTAL IMPACT STATEMENT)

Appendix B1 – Geotechnical and Environmental Investigation Reports

(REFER TO APPENDIX M AND APPENDIX N , VOLUME 2 OF THE ENVIRONMENTAL IMPACT STATEMENT)

Appendix C1 – Current Civil Design Plans

1. SHADING INDICATES THE EXTENT OF EARTHWORKS MODELING, ALL OTHER AREAS ARE ASSUMED TO REMAIN AT EXISTING LEVELS.
2. ESTIMATED EARTHWORKS QUANTITIES ARE MEASURED FROM EXISTING LEVELS TO PROPOSED FORMATION LEVELS (I.E. UNDERSIDE OF SUB-BASE/CAPPING)
3. ALL EARTHWORKS QUANTITIES ARE BASED ON CURRENT DESIGN LEVEL, INFORMATION AND PAVEMENT DESIGN THICKNESSES
4. NO ALLOWANCE HAS BEEN MADE FOR EARTH-WORKS BULKING
5. THE OPPORTUNITY TO USE SITE-WON CUT MATERIAL AS AN EARTHWORKS FILL MATERIAL IS SUBJECT TO GEOTECHNICAL AND ENVIRONMENTAL SUITABILITY AND SHALL BE MANAGED BY THE CONTRACTOR



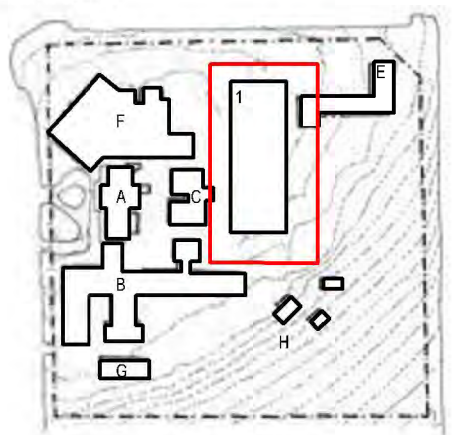
JOHNSTAFF

PROJECT
KEMPSEY DISTRICT HOSPITAL

INSTRUCT PROJECT NUMBER

4463

DRAWING KEY



TRUE NORTH

PROJECT NORTH

GRAPHIC SCALE (mm)

SCALE 1:250



1:250 @ A1

STATUS

DO NOT SCALE

FOR IN

FOR INFORMATION ONLY

DRAWING

MAIN WORKS

PROPOSED EARTHWORKS

DRAWING NUMBER

5027-ENS-CV-DWG-
SA3-300

UE

CUT AND FILL DEPTH BANDS

Number	Color	Minimum Elevation (m)	Maximum Elevation (m)	2D Area (m²)
1		-4,500	-4,000	9.4
2		-4,000	-3,500	26.4
3		-3,500	-3,000	59.1
4		-3,000	-2,500	86.5
5		-2,500	-2,000	305.1
6		-2,000	-1,500	548.1
7		-1,500	-1,000	591.0
8		-1,000	-500	551.1
9		-500	0.000	619.2
10		0.000	0.500	465.4
11		0.500	1.000	273.5
12		1.000	1.500	317.7
13		1.500	2.000	71.9
14		2.000	2.500	63.8
15		2.500	3.000	2.8

VOLUMES

AREA	CUT(m3)	FILL (m3)	NET (m3)
BUILDING	5000	550	4450 EXCESS

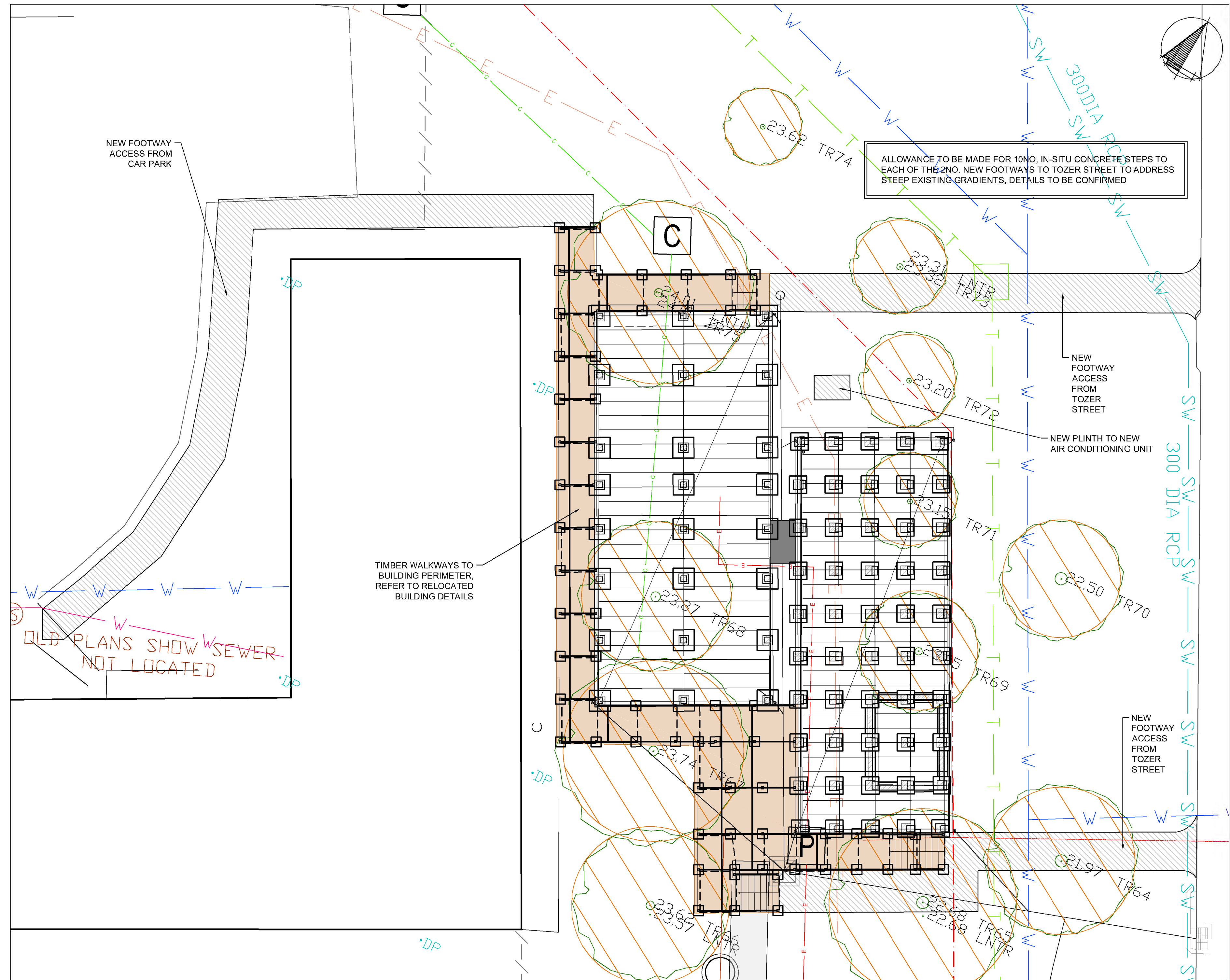
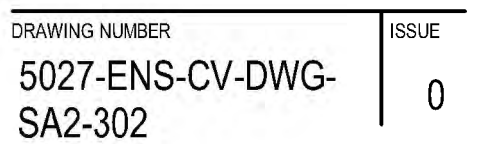
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NOTE:

- NEW FOOTINGS TO EXISTING DEMOUNTABLES ARE SHOWN INDICATIVELY. SURVEY EXISTING SUPPORT LOCATIONS ON SITE AND ENSURE THAT NEW SUPPORTS ARE RE-INSTATED TO MATCH EXISTING LOCATIONS.
- BEARERS AND JOISTS TO BE CONTINUOUS OVER AT LEAST 1 SUPPORT.
- TIMBER DECKING IS TO BE 140x25 F7 TREATED PINE.
- ALL BOLTS, SCREWS etc. TO BE HOT DIPPED GALVANISED.
- ALL TIMBER CONNECTIONS TO BE IN ACCORDANCE WITH AS1720 AND AS1684 PARTS 1, 2 &4.



DRAWING KEY



DRUGS AND ALCOHOL

NOTE
FOR PAVEMENT AND CONCRETE
SLAB DETAILS REFER TO CIVIL
DETAILS DRAWINGS