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# Redevelopment of the General Hospital of Drama Feasibility Study

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Report produced for:

**Raycap**

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# Introduction

## Introduction

Llewelyn Davies with ETL were appointed by Raycap SA to undertake a high-level feasibility study to assess the current operation and infrastructure of the General Hospital of Drama with a view to identify redevelopment opportunities to improve the service provision and strengthen the profile of the hospital.

The hospital administration has made all relevant data available to the team, which is used as a basis for this report. Furthermore, an interview was held with the CEO of the hospital on 8th October 2020.

## Study Limitations

We have used and interpreted information provided to our team by others, in a careful and balanced way to inform our proposal. It must be recognised, however, that there are potential areas of risk and uncertainty which could not be resolved within the time frame given level of detail of this study. Where appropriate these are identified in the text and assumptions made explicitly stated.

## Background

The General Hospital of Drama was established in 1959 and over the last 60 years has gone through a number of developments, both physically and organisationally. Having had an area of 9,000m<sup>2</sup> when first opened, it now stands at circa 25,300m<sup>2</sup>. The current accommodation includes 250 inpatient beds under the following classification:

- Medical
- Surgical
- Mental Health
- Cross sectional (Ambulatory)

The General Hospital of Drama transferred to the national health system in 2005. The population catchment for the Hospital is estimated at 140,000 including the patients coming from both Kavala and Serres.

The Hospital is considered well within the community and provides services that are underpinned by a strong medical and nursing workforce.

While the current infrastructure is considered adequate, there is a desire to expand services in an appropriate manner to fulfil its role as a district general hospital, consolidate its network arrangements with Kavala and Serres and other tertiary hospitals in Macedonia and compete for patients currently drifting to the private sector clinics in Drama itself.

## Annual Report 2020

1. The 2020 annual plan states that the G.N.D. is generally characterised as reliable. However, while the infrastructure is stated as adequate, the increasing attendance and the desire to expand and introduce new services, amendment to the current accommodation will be required. This is in line with the hospital's objective to continuously expand the range and quality of its services for the citizens it serves.

2. Whilst this report is focused on the physical arrangements at GHD and the recognised dysfunctional spatial arrangement of some hospital departments and equipment, there is acknowledgement in the report for the need of:

- continuous professional development of staff
- need to adopt new ways of working and
- address the number of staff vacancies currently at the hospital including the recruitment of specialist doctors.

3. An additional difficulty for the hospital is that funding is provided on a budget basis related to population base and not case mix despite the use of DRG coding at the site.

4. Additional factors affecting the future of GHD

- The continuous growth of new, modern Private Health Units in Drama despite no inpatient accommodation
- Migration of the local population to other hospital in the region due to lack of service provision at GHD

-The growing demands of patients / users and their attendants.

- The increase of special population groups (eg foreigners, refugees, prisoners, uninsured).

- The devaluation of medical and technological equipment.



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# Part 1

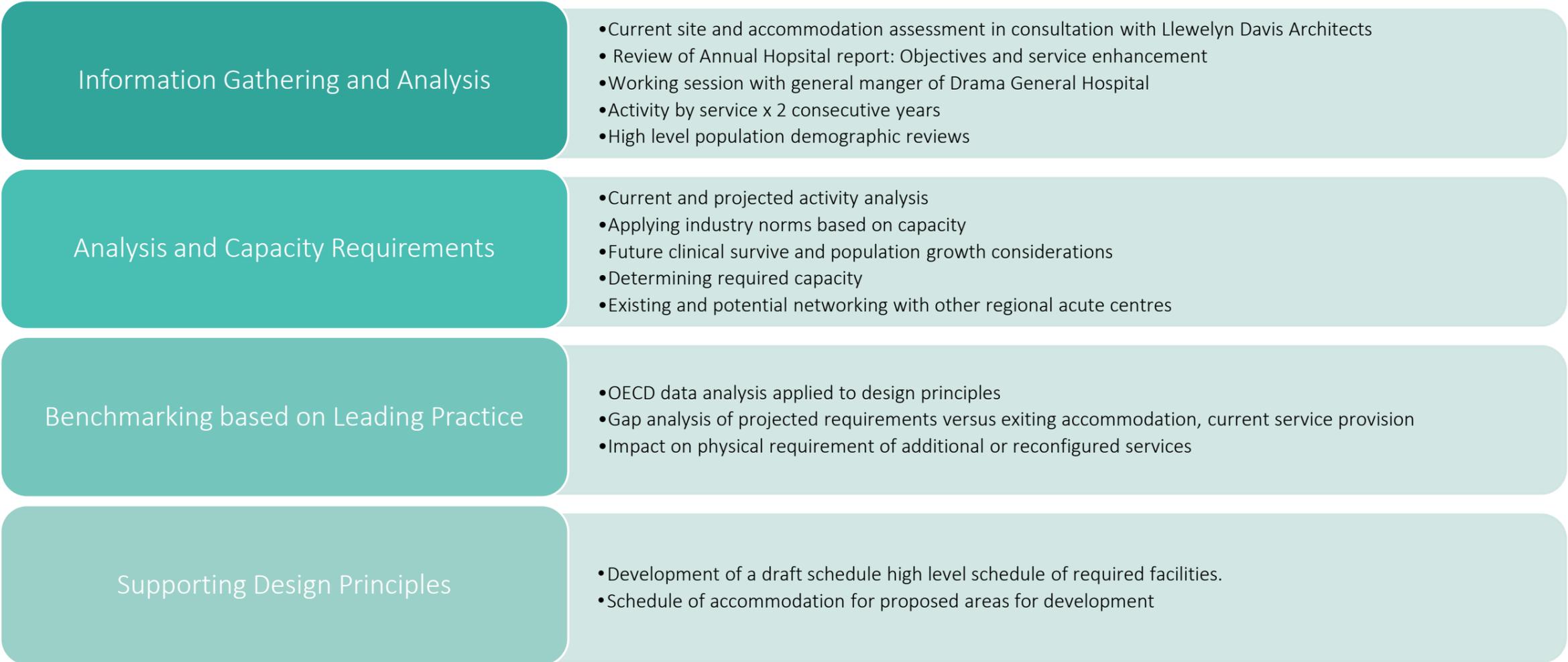
## Healthcare Planning

# 1.1 Approach & Methodology

## Approach and Methodology

### Drama General Hospital

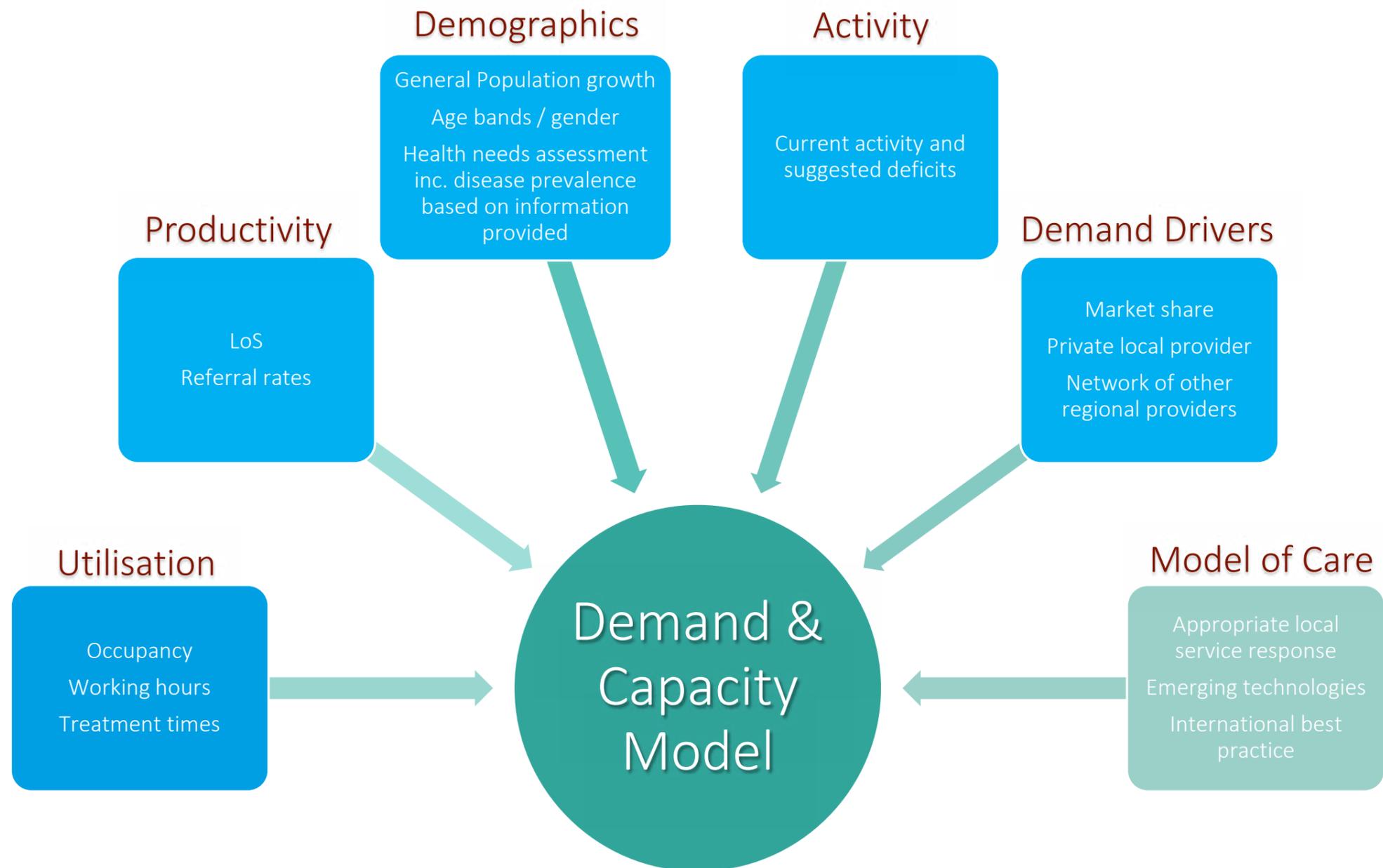
ETLs approach to the required assignment has followed a standard health planning approach albeit a high-level report it is aimed at validating the impact of the proposed developments on the existing available accommodation at the Drama General Hospital whilst supporting the strategic ambitions of the organisation. The following is a brief summary of the activities carried out over the last three weeks:



## 1.2 Demand & capacity

# Demand and Capacity Model

### Inputs



# 1.3 Activity

## Required Future Activity and Capacity Inpatients

### Activity

**Key Assumptions in determining future Inpatient activity:**

1. Base case data is the acute data provided by Drama General Hospital for the years 2018 and 2019 and 2019 used except were there was a reduced level of activity demonstrated.
2. Population growth pre-operation is 0%
3. Day case activity representative of the 2019 data set.
4. While population growth is on the decline, what was obvious in discussions is the aging population.
5. Enhanced facilities would likely increase service uptake by the local community however this is not accounted for in the table below.

Inpatient - Drama Hospital		Inpatient - Drama Hospital		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
			Adjusted Projected data	Projected data									
Activity by specialty	Actual 2018 data	V 2019											
Annual Increase			0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
<b>Pathology (Is this general)</b>													
<b>Medicine)</b>	3,573		3573	3573	3573	3573	3573	3573	3573	3573	3573	3573	3573
<b>Cardiology</b>	1438		1438	1438	1438	1438	1438	1438	1438	1438	1438	1438	1438
<b>Pediatrics</b>	871		871	871	871	871	871	871	871	871	871	871	871
<b>Respiratory</b>	946		946	946	946	946	946	946	946	946	946	946	946
<b>Acute Cardiac</b>	659		659	659	659	659	659	659	659	659	659	659	659
<b>Obstetrics</b>	1074	165	1239	1239	1239	1239	1239	1239	1239	1239	1239	1239	1239
<b>ICU</b>	118		118	118	118	118	118	118	118	118	118	118	118
<b>Orthopedics</b>	994	128	1122	1122	1122	1122	1122	1122	1122	1122	1122	1122	1122
<b>Urology</b>	1802	183	1985	1985	1985	1985	1985	1985	1985	1985	1985	1985	1985
<b>Ophthalmology</b>	134	36	170	170	170	170	170	170	170	170	170	170	170
<b>Surgery</b>	2816	221	3037	3037	3037	3037	3037	3037	3037	3037	3037	3037	3037
<b>ENT</b>	556	246	802	802	802	802	802	802	802	802	802	802	802
	14,981		15960	15960	15960	15960	15960	15960	15960	15960	15960	15960	15960

# 1.4 Bed days

## Required Bed Days

### Inpatients

#### Key assumptions in determining future bed days:

1. For projected bed numbers to be determined, the current average length of stay (ALoS) for each specialty was applied. The ALOS has been applied to the projected inpatient activity.
  2. The ALoS has not been adjusted downwards as:
    - It would be unreasonable for this type of facility and the age profile of patients.
  3. Estimated bed days in Year 10 of operation are 44,644.
- Enhanced service provision could see a higher acuity of patients in the future

Required bed days	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Bed Days</b>	<b>Current ALOS</b>											
Pathology (Is this general Medicine)	4.11	14688	14688	14688	14688	14688	14688	14688	14688	14688	14688	14688
Cardiology	4.98	7157	7157	7157	7157	7157	7157	7157	7157	7157	7157	7157
Pediatrics	2.02	1756	1756	1756	1756	1756	1756	1756	1756	1756	1756	1756
Respiratory	1.00	946	946	946	946	946	946	946	946	946	946	946
Acust Cardiac	2.22	1463	1463	1463	1463	1463	1463	1463	1463	1463	1463	1463
Obstetrics	2.69	3334	3334	3334	3334	3334	3334	3334	3334	3334	3334	3334
ICU	10.83	1278	1278	1278	1278	1278	1278	1278	1278	1278	1278	1278
Orthopedics	4.92	5517	5517	5517	5517	5517	5517	5517	5517	5517	5517	5517
Urology	2.65	5270	5270	5270	5270	5270	5270	5270	5270	5270	5270	5270
Ophtalmology	1.01	173	173	173	173	173	173	173	173	173	173	173
Surgery	0.43	1307	1307	1307	1307	1307	1307	1307	1307	1307	1307	1307
ENT	2.19	1755	1755	1755	1755	1755	1755	1755	1755	1755	1755	1755
<b>Total ALOS</b>	<b>3.3</b>	<b>44644</b>										

# 1.5 Inpatient beds

## Required Beds

### Inpatients

1. The projected inpatient bed requirement has been estimated by combining specific specialties e.g. surgical, medical, obstetric and Gynaecological and paediatrics.
2. Medical and Surgical bed occupancy has been calculated at 80% annual occupancy.
3. HDU beds have been calculated at 75% occupancy.
4. Gynaecology and Obstetric beds have been calculated at 75% occupancy.
5. The resulting bed requirement is 146 beds
6. This is a reduction of x on current availability
7. Day case beds total **6. However further capacity should be considered**
8. Mental health services are not currently provided are there are no plans to
9. do so at this point in time.
10. Please note: the bed requirement is based on current need
11. Additional activity, changes in the Models of Care and advances in technology could impact on this number.

Project Inpatient Bed Capacity Years			2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
<b>Internal Medicine Medical beds</b>	80%	292	75	75	75	75	75	75	75	75	75	75
<b>Surgical</b>	80%	292	48	48	48	48	48	48	48	48	48	48
<b>Surgical Obstetric and Gynae</b>	75%	273.75	12	12	12	12	12	12	12	12	12	12
<b>HDU</b>	70%	255.5	4	9	4	4	4	4	4	4	4	4
<b>Paediatrics</b>	80%	292	6	6	6	6	6	6	6	6	6	6
<b>Inpatient Beds</b>			<b>145</b>	<b>150</b>	<b>145</b>							
<b>Day Beds</b>	Bed Days		2338	2338	2338	2338	2338	2338	2338	2338	2338	2338
	Beds		6	6	6	6	6	6	6	6	6	6

# 1.6 Outpatients

## Outpatient Activity and Capacity

### Outpatients

1. The projected Outpatient Departmental activity is based on the data provided by Drama General Hospital. This data is not available by specialty at this stage.
2. The occupancy matrices applied are displayed in the table opposite.
3. Based on current data, the required quantity of Outpatient consult / exam rooms for current demand is circa **19/20**. Population growth of 2.5% over a 10-year period has been applied in respect of additional services
4. No MDT activity has been identified; however an allowance has been made in the Schedule of Accommodation.
5. Total consult / exam rooms required in Year 10 of operation is **19**.

OPD Metrics	
Operating days per annum	250
Clinics per day	2
Patients per room per clinic	8
Total patient through put / room per annum	4000
Total throughput based on 90% Occupancy	3600

Rooms required per specialty per annum	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Total OPD activity	18.74	18.79	18.84	18.88	18.93	18.98	19.03	19.07	19.12	19.17

# 1.7 Emergency Department

## Required Capacity

### Emergency Department

- 1. The projected quantity of Emergency Department rooms is based on the data provided by Drama General Hospital for the Year 2018. This data does not break down by examination type.
- 2. The occupancy matrices applied are illustrated in the table opposite.
- 3. Based on current data, the required ED rooms is circa 22 (current hospital provision is X).
- 4. Future activity had been projected using growth of 7% over a ten-year period
- 5. The total provision of Treatment / Examination rooms required for Year 10 of operation is 22.

ED Metrics	
Operating days per annum	365
Patients per room per day	10
Total patient throughput / room per annum	3650
Total throughput based on 90% Occupancy	3285

Admissions by Year	DGH	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
		0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%
<b>Total Admissions</b>	67948	68424	68903	69385	69871	70360	70852	71348	71848	72351	72857

Rooms required per annum	2020	2022	2023	2024	2025	2026	2027	2028	2029
<b>Treatment Examination Room</b>	21	21	21	21	22	22	22	22	22

# 1.8 Imaging

## Imaging Activity and Required Capacity

### Imaging

1. The projected radiology activity is based on data provided by Drama General Hospital for the Year 2018. This data has been broken down by modality
2. As manograph activity is very low is this to continue?
3. A future MRI services as been included

Imaging	Activity
General	3
Ultrasound	3
Fluroscopy	-
CT	1
Mammography	-
MRI	1

	2020	2021	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	2031
	1%	1%	10%	5%	1%	1%	1%	1%	1%	1%	1%	1%	1%
General	57,959	58,249	64,074	67,278	67,614	67,952	68,292	68,633	68,977	69,322	69,668	70,016	
Ultrasound	20,085	-	22,094	-	22,204	-	22,315	-	22,427	-	22,539	-	
Bone Denisty	759	-	835	-	839	-	843	-	847	-	852	-	
Mammography	150	-	165	-	166	-	167	-	167	-	168	-	
CT	13,921	-	15,313	-	15,390	-	15,467	-	15,544	-	15,622	-	

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Rooms required per specialy per annum										
Operating hours per day										
Exams per hour										
Exams per day										
Exams per annum										
Down-time 10%										
Y1	5.37	5.39	5.93	6.23	6.26	6.29	6.32	6.35	6.39	6.42
Y2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Y3	1.86	0.00	2.05	0.00	2.06	0.00	2.07	0.00	2.08	0.00
Y4	1.29	0.00	1.42	0.00	1.42	0.00	1.43	0.00	1.44	0.00
Y5	0.01	0.00	0.02	0.00	0.02	0.00	0.02	0.00	0.02	0.00
Y6	0.07	0.00	0.08	0.00	0.08	0.00	0.08	0.00	0.08	0.00
Y7	8.60	5.39	9.49	6.23	9.83	6.29	9.92	6.35	10.00	6.42

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## Part 2

# Analysis of requirements

## 2.1 Background - analysis of requirements

# Key requirements identified in the 2020 Annual Plan

## Cross cutting

	Cross cutting
Current situation	<ul style="list-style-type: none"> <li>• An Independent Emergency Department with 5 medical staff positions, of which only 2 are covered</li> <li>• There is administrative and operational autonomy and inability to cover a monthly on-call schedule - due to lack of administrative staff there is no coverage of the secretariat during the night shift</li> <li>• The spatial development of IT departments is non-functional, does not facilitate the service incoming and mainly not enough space to develop the machinery supplied</li> </ul>
Proposal	<ul style="list-style-type: none"> <li>• For the staffing of the said Department to be given additional incentives to expand</li> <li>• Training of staff in the management of the flow of incoming patients according to specific international emergency triage scales</li> <li>• Recruitment of two employees (auxiliary staff of category DE) for the staffing of the secretariat</li> <li>• Extension - spatial rearrangement (feasibility study, viability study, construction study, building permit)</li> <li>• Full operation of Short-Term Care (5 beds)</li> <li>• ISOBOX supply for the isolation of suspects for Covid 19 etc.</li> </ul>
Outcome	<ul style="list-style-type: none"> <li>• Providing immediate and specialized care in the right place and at the right time</li> <li>• Rationalization in the individual development of the medical equipment that is available or will be available</li> <li>• Reduction of waiting time (from short term care beds)</li> </ul>

## 2.2 Background - analysis of requirements

# Key requirements identified in the 2020 Annual Plan

## Renal Dialysis Unit (MTN)

	Renal Dialysis Unit (MTN)
Current situation	<ul style="list-style-type: none"><li>• MTN is on the 1st floor of the old hospital, this is a small space which is not appropriate, there is limited space for the beds</li><li>• Electromechanical installations of the water treatment plant need to be replaced</li><li>• Doctors' offices are not enough (3 at 9 m<sup>2</sup>), the director's office is on another floor and patient waiting and nursing rest is too small.</li></ul>
Objectives	<p>(for the new nephrology department)</p> <ul style="list-style-type: none"><li>• Maintaining a low rate of peritoneal infections in patients</li><li>• Ensuring good quality consumables / financial offer</li><li>• Recording of infections or complications of vascular access</li><li>• Maintaining good quality treated water</li><li>• Informative meetings with relatives of patient</li><li>• Psychological support actions for dialysis patients</li></ul>
Proposal	<ul style="list-style-type: none"><li>• Transfer the MTN to the second floor (where admin offices are located currently)</li><li>• Use the current MTN space for 15 stations for haemodialysis, with doctors' offices, waiting for haemodialysis patients and attendants, water treatment facilities, storage of patient files, nursing attire personnel, guarded and temperature-controlled storage of sanitary material-water-salt-consumable materials)</li></ul>
Outcome	<ul style="list-style-type: none"><li>• More functional development</li><li>• The inpatients nephrology beds to be co located with haemodialysis stations</li></ul>

## 2.3 Background - analysis of requirements

# Key requirements identified in the 2020 Annual Plan

## General Medicine (Pathology)

	General Medicine (Pathology)
Current situation	<ul style="list-style-type: none"><li>• 54 beds to 6 specialist doctors (two of whom do not provide continuous service), and 12 trainees</li><li>• On-call programs do not cover needs (breaks, licenses, etc)</li><li>• No safe medical environment</li><li>• Busy environment with tensions due to fatigue (especially during the Covid-19 pandemic)</li><li>• Overflow results in patients accommodated in beds in another clinic</li></ul>
Objectives	<ul style="list-style-type: none"><li>• Continuation of the operation of the outpatient diabetes clinic</li><li>• Characterisation of 2 chambers as isolation (conversion to negative pressure chambers (long term))</li><li>• Development of two MAF beds (short-term) with zero cost</li><li>• Development of interdepartmental training opportunities</li></ul>
Proposal	<ul style="list-style-type: none"><li>• Integrated Nephrology Unit: 8 nephrology inpatient beds to be collocated with 15 haemodialysis stations</li><li>• 8 pulmonary beds required</li><li>• Will require recruitment of 2 pulmonologists</li></ul>
Outcome	<ul style="list-style-type: none"><li>• This will decongest pathology clinic</li><li>• Pulmonary / nephrology develop service</li></ul>

## 2.4 Background - analysis of requirements

# Key requirements identified in the 2020 Annual Plan

## Chemotherapy

	Chemotherapy
Current situation	<ul style="list-style-type: none"><li>• Drama is in the top 4 prefectures in Greece in cancer mortality</li><li>• 1600 patient files in Theageneio, 900 in Kavala, 390 in Papanikolaou and 270 in Alex</li><li>• The trend is increasing with more than 300 being diagnosed every year at the General Hospital of Drama</li><li>• Oncologists accept too many patients whom they don't have the capacity to provide chemotherapy to</li></ul>
Objectives	<ul style="list-style-type: none"><li>• Training of 4 manufacturers in infusions / chemotherapy</li><li>• Recruitment of 2 oncologists (Curator A and Director)</li></ul>
Proposal	<ul style="list-style-type: none"><li>• Development of a 6-bedded daily chemotherapy unit (currently have space available and can provide the required medical equipment) with short hospitalization</li><li>• Injection space operation (chemotherapy) including a waiting room and doctor's office</li><li>• Development of an oncology council to judge the incidents</li></ul>
Outcome	<ul style="list-style-type: none"><li>• Increased capacity, better cancer outcomes</li></ul>

## 2.5 Background - analysis of requirements

# Key requirements identified in the 2020 Annual Plan

## Renal Dialysis (Nephrology)

	Renal Dialysis (Nephrology)
Current situation	<ul style="list-style-type: none"><li>• There are 3 doctors who serve patients from Drama and from parts of Serres and Kavala, providing essentially the services of the Nephrology Department (1100 dialysis / month (12,255 in 2019), for 80 permanent, in 6-day operation in 3 shifts per day</li><li>• <b>Roles:</b> Perform min 50 emergency dialysis / month (500 in 2019), provide dialysis to patients with HIV &amp; HCV, HBV, place dialysis catheters (110 in 2019), treat nephrological patients responsibly in other clinics of the hospital, mainly in Pathological Clinic (350 in 2019), support patients in the ICU, perform kidney biopsies (glomerulonephritis, at 10 / year) and cover the needs for 24 hours of the Private TN Unit</li></ul>
Proposal	<ul style="list-style-type: none"><li>• Conversion of Renal Dialysis Unit to an integrated Nephrology Department e.g. inpatient unit</li><li>• Includes: artificial Kidney Unit for 90 permanent dialysis patients (15 Stations), Nephrology clinic with the possibility of hospitalization for 8 Patients, Peritoneal Dialysis Unit, Outpatient Clinics (kidney and hypertension), Nephrology Laboratory</li></ul>
Outcome	<ul style="list-style-type: none"><li>• Meeting the increased needs of Drama and the wider area for quality and efficient treatment of kidney disease and hypertension, institutional coverage of medical procedures</li><li>• Integrated Unit</li></ul>

## 2.6 Background - analysis of requirements

# Key requirements identified in the 2020 Annual Plan

## Cardiology

	Cardiology
Current situation	<ul style="list-style-type: none"><li>• Kavala and Drama Hospital were responsible for 500 acute cardiac events in 2019</li><li>• It is recommended to refer patients for coronary angiography – there is a current lack of angiography capacity in the area and patients are often transferred to Alexandroupolis or Thessaloniki</li></ul>
Proposal	<ul style="list-style-type: none"><li>• Establishment and operation of a joint Hemodynamic Laboratory for the Hospitals of Drama and Kavala. This laboratory could be developed at the G.N. Kavala</li><li>• As it takes a maximum of 90 minutes for the doctor to intervene from the time the heart attack occurs there should be a standby ambulance exclusively for transportation from Drama to Kavala, on a 24-hour basis</li></ul>
Outcome	<ul style="list-style-type: none"><li>• Increased angiography capacity giving better quality medical services</li><li>• Reduction of the psychosomatic stress of the patients who have to move to Thessaloniki or Alexandroupolis, also decongestion of laboratories at these sites</li><li>• Financial benefit for patients and especially their attendants / saving resources</li><li>• Incentive to attract new doctors and better training of trainees</li><li>• Streamlining the operation of the Health Charter of our region.</li></ul>

## 2.7 Background - analysis of requirements

### Key requirements identified in the 2020 Annual Plan

#### Orthopaedics

	Orthopaedics
Proposal	<ul style="list-style-type: none"><li>• Development of two MAF beds with zero costs</li><li>• Establishment of an ilizarov Interventional Method training center</li><li>• Development of surgeries</li><li>• Creation of an additional ward (only one works), according to the specifications, for the hospital prisoners (their operation starts in SEPTEMBER 2020).</li><li>• Development of a special examination area and minor interventions adjacent to intervention suites</li></ul>
Proposed Result	<ul style="list-style-type: none"><li>• Procedure room to be collocated with operating theatre suites</li></ul>

## 2.8 Background - analysis of requirements

# Key requirements identified in the 2020 Annual Plan

## Endoscopy

	Endoscopy
Current situation	<ul style="list-style-type: none"><li>• In the G.N.D. operates a fully equipped Endoscopy Unit which is housed in the Septic Surgery Unit</li><li>• Possibility of Anaesthesiology coverage, covering the whole range of modern Gastroenterology and Hepatology</li><li>• The Surgery Clinic has Surgeons - Endoscopists who from 2015 to 2018 have performed 5,100 diagnostic and invasive endoscopies</li><li>• The ward also has a resuscitation unit with 2 beds that are constantly monitored by nurses</li><li>• There is a special area for disinfecting the endoscopes after each endoscopic operation, with a modern washing machine of high standards</li></ul>
Proposal	<ul style="list-style-type: none"><li>• Establishment of an Endoscopy Department under the Gastroenterology Department</li></ul>
Outcome	<ul style="list-style-type: none"><li>• Expanding services for inpatients and outpatients</li></ul>

## 2.9 Background - analysis of requirements

### Key requirements identified in the 2020 Annual Plan

#### ENT

	ENT
Current situation	<ul style="list-style-type: none"><li>• ENT services are on site but limited</li></ul>
Objectives	<ul style="list-style-type: none"><li>• Development of ENT endoscopy outpatient service</li><li>• Increase of minor interventions in TEI</li><li>• Increase of day surgeries for shrinkage of nasal cavities (coagulation) with the use of forceps radio frequencies</li><li>• Development of surgeries in a target age group of children under 10 years (in case of recruitment of one paediatric anaesthesiologist)</li></ul>
Result	<ul style="list-style-type: none"><li>• Expansion of ENT Services</li></ul>

## 2.10 Background - analysis of requirements

# Key requirements identified in the 2020 Annual Plan

## Intensive Care Unit (ICU)

	ICU
Current situation	<ul style="list-style-type: none"><li>• Currently 7 beds are fully developed (Excluding the 5 beds not currently utilised)</li></ul>
Proposal	<ul style="list-style-type: none"><li>• Aim to utilise the 5 beds not utilised</li><li>• Ensure dialysis capability is available for patients in ICU</li></ul>
Outcome	<ul style="list-style-type: none"><li>• Full operation of 12 ICU beds, providing more capacity</li><li>• Dialysis capability in the unit</li></ul>

## 2.11 Background - analysis of requirements

# Key requirements identified in the 2020 Annual Plan

## Anaesthesiology Department

	Anaesthesiology Department
Proposal	<ul style="list-style-type: none"><li>• Aim to improve the provision of pain clinic services by expanding its cooperation with all departments in the hospital for integrated treatment of patients</li><li>• Increase the number of staff anaesthetists'</li></ul>
Outcome	<ul style="list-style-type: none"><li>• Reduce the waiting time for an opinion from external partners that they are contracted with, who do NOT do axial S / C and holidays</li><li>• Further support for increasing the number of procedures under anaesthetic</li><li>• To reduce the hospitalisation time of patients</li><li>• To increase the revenues of the G.N.D. from the outpatient service</li></ul>

## 2.12 Background - analysis of requirements

# Key requirements identified in the 2020 Annual Plan

## Psychiatric Sector

	Psychiatric Sector
Current situation	<ul style="list-style-type: none"><li>• Currently 18 beds</li></ul>
Proposal	<ul style="list-style-type: none"><li>• As only a Psychiatric Regular Outpatient department operates currently, the 18 beds (which provided in the OEY) will be distributed in other sectors. This supports the increased number of proposed pulmonology and nephrology beds</li></ul>
Outcome	<ul style="list-style-type: none"><li>• Increase inpatient capacity in nephrology and pulmonology</li><li>• Provide capacity for relocated haemodialysis unit</li></ul>

## 2.13 Background - analysis of requirements

# Key requirements identified in the 2020 Annual Plan

## Laboratory Sector

	Laboratory Sector
Current situation	<ul style="list-style-type: none"><li>• Doctor and auxiliary anatomists have been sent to and trained in a lab at the General Hospital of Serres</li><li>• They have applied for the recruitment of another TE Medical Laboratory Technologist</li><li>• Drama general hospital covers its increased needs by concluding contracts with external laboratories (at great cost) which is covered by its budget</li></ul>
Objectives	<ul style="list-style-type: none"><li>• Recruitment of 2 anatomists (one position with the rank of Director) and 2 additional assistants</li></ul>
Proposal	<ul style="list-style-type: none"><li>• Full development and operation of the Laboratory and abolition of external contracts</li></ul>
Outcome	<ul style="list-style-type: none"><li>• Complete and rational operation of the Laboratory</li><li>• Saving resources - reducing operating costs</li></ul>

## 2.14 Background - analysis of requirements

# Key requirements identified in the 2020 Annual Plan

## Biopathology

	Biopathology
Current situation	<ul style="list-style-type: none"><li>• The spatial planning of the Hospital does not allow the joint operation of the blood donation and on-call haematology departments</li></ul>
Objectives	<ul style="list-style-type: none"><li>• Faster release of results</li><li>• Introduction of new tests (e.g. Development of Real Time PCR test, fast performance)</li><li>• Internal quality control</li><li>• Unification of codes for reagent supply tenders and increase of time duration of the contract in 3 years</li><li>• Completion of tenders and signing of contracts to reduce costs and waste of time minimum 20%</li><li>• Consulting intervention to clinicians regarding the most rational order of examinations</li><li>• Creation of level III bio-protection for Real time PCR operation</li></ul>
Proposal	<ul style="list-style-type: none"><li>• Modification of the Organization for its inclusion in it: A. Microbiological - Immunological, B. Biochemical, C. Haematology and creation of a Blood Donation Department, which until today is together with Haematological</li></ul>
Outcomes	<ul style="list-style-type: none"><li>• With this merge, it will enable them to remove 2 positions of medical staff</li></ul>

## 2.15 Background - analysis of requirements

# Key requirements identified in the 2020 Annual Plan

## Blood Donation

	Blood Donation
Current situation	Out of scope
Objectives	
Proposal	
Result	
Solutions	

## 2.16 Background - analysis of requirements

# Key requirements identified in the 2020 Annual Plan

## Imaging

	Imaging Diagnostic
Current situation	<ul style="list-style-type: none"><li>• Operation of 16 slice MRI x 1, Xray unit x 1, Ultrasound x 2, Mammography unit x 1 and Bone Densitometry x 1</li></ul>
Objectives	<ul style="list-style-type: none"><li>• Reduction of waiting time to serve outpatients and inpatients</li></ul>
Proposal	<ul style="list-style-type: none"><li>• Supply of an additional 64-section CT scanner or MRI scanner</li></ul>
Outcomes	<ul style="list-style-type: none"><li>• Reduce the waiting time for an opinion and diagnosis from external partners</li><li>• Reduce the length of hospital stay time of patients due to early to examination and diagnosis</li><li>• Increase GND revenue from outpatient services</li></ul>

## 2.17 Background - analysis of requirements

# Key requirements identified in the 2020 Annual Plan

## Pharmacy

	Pharmacy
Current situation	<ul style="list-style-type: none"><li>The Pharmacy of the Hospital operates without a license as the space in which it is housed (basement) is very small and unsuitable for its operation</li></ul>
Proposal	<ul style="list-style-type: none"><li>Transfer to the current Physiotherapy Center is required, which with some small interventions will cover all health and safety rules as provided by current legislation</li></ul>
Outcomes	<ul style="list-style-type: none"><li>The department will more fit for purpose through the redevelopment</li><li>This will enable and support licensing of the department</li></ul>

## 2.18 Background - analysis of requirements - Summary

Service	Functional rooms (additional)	
Pathology (General Medicine)	<ul style="list-style-type: none"> <li>8x Nephrology beds required</li> <li>Additional 8x Pulmonary beds required</li> </ul>	<ul style="list-style-type: none"> <li>8 pulmonary (respiratory medicine) beds are required given the current occupancy of the available beds; these can be accommodated in the current bed allocation. Location to be confirmed</li> <li>Nephrology; additional beds to be co located as part of an integrated unit. See nephrology section</li> </ul>
Chemotherapy	<ul style="list-style-type: none"> <li>6 x space daily chemotherapy unit required</li> <li>Including injection space operation (chemotherapy) with a waiting room and Doctor's office</li> </ul>	<ul style="list-style-type: none"> <li>This could be accommodated on Level B (Current Inpatient Unit (600m2)</li> <li>Area circa 200m2 subject to development of an SoA</li> </ul>
Nephrology	<ul style="list-style-type: none"> <li>Conversion of Artificial Kidney Unit to an integrated Nephrology Department</li> <li>Includes: Artificial Kidney Unit for 90x permanent dialysis patients, Nephrology clinic with the possibility of hospitalization for 8x patients, Peritoneal Dialysis Unit, Outpatient Clinics (kidney and hypertension), Nephrology Laboratory</li> </ul>	<ul style="list-style-type: none"> <li>Integrated unit at level D , second floor</li> <li>Subject to a detailed SoA, and confirmation of the dimensions of the department, the inpatient unit could be converted to an integrated nephrology/haemodialysis unit</li> <li>The current Administration station would provide OPD and patient training facilities Administration moved to accommodate additional MTN accommodation</li> </ul>
Dialysis Unit (MTN)	<ul style="list-style-type: none"> <li>Transfer the MTN to the second floor (where admin offices are located currently)</li> <li>Use the current MTN space for 15 x stations for haemodialysis, with doctors' offices, waiting for haemodialysis patients and attendants, water treatment facilities, storage of patient files, nursing attire personnel, guarded and temperature-controlled storage of sanitary material-water-salt-consumable materials)</li> </ul>	<ul style="list-style-type: none"> <li>See explanation above</li> </ul>
Cardiology	<ul style="list-style-type: none"> <li>Establishment and operation of a joint Hemodynamic Laboratory for the Hospitals of Drama and Kavala. This laboratory could be developed at the G.N. Kavala</li> <li>As it takes a maximum of 90 minutes for the doctor to intervene from the time the heart attack occurs there should be a standby ambulance exclusively for transportation from Drama to Kavala, on a 24-hour basis – infrastructure must support this</li> </ul>	<ul style="list-style-type: none"> <li>Cath Lab to be developed at Kavala</li> <li>Non-invasive cardiology unit may be required to support a cardiology service.</li> <li>This could be accommodated on Level B (Current Inpatient unit (600m2 Section). There is also space at level C for non invasive cardiology (Current cardiology department)</li> <li>Area circa 50m2 subject to development of an SoA</li> </ul>

## 2.19 Background - analysis of requirements - Summary

Service	Functional rooms (additional)	
Orthopaedics	<ul style="list-style-type: none"> <li>Development of 2x MAF (High Dependency Unit) beds</li> <li>Establishment of an ilizarov Interventional Method training center</li> <li>Creation of an additional ward (only one works currently)</li> <li>Development of a special examination area and minor interventions in the ICU</li> </ul>	<ul style="list-style-type: none"> <li>Our understanding is that this development is largely educational and planned for one of the buildings adjacent on the campus</li> <li>An interventional room could be included in a redevelopment of HDU</li> <li>MDT Room located in Orthopaedic Inpatient unit for inpatient therapy</li> </ul>
Endoscopy	<ul style="list-style-type: none"> <li>Establishment of an Endoscopy Department (Gastroenterology - Endoscopy) under the Surgery Clinic</li> </ul>	<ul style="list-style-type: none"> <li>Current ICU becomes Endoscopy suite</li> <li>Confirmation of Second stage recovery</li> <li>Day and endoscopy recovery facilitated in unit</li> </ul>
ICU	<ul style="list-style-type: none"> <li>Utilisation of 5 x additional beds (giving a 12-bed unit)</li> </ul>	<ul style="list-style-type: none"> <li>This is to be located at level C next to operating theatres</li> <li>ICU and ED extension has been commenced. Information to be furnished</li> </ul>
Imaging Department	<ul style="list-style-type: none"> <li>Supply of an additional 64-section CT scanner or MRI</li> </ul>	<ul style="list-style-type: none"> <li>Required area 150m2 subject to SoA</li> </ul>
Psychiatry Sector	<ul style="list-style-type: none"> <li>The 18 beds will be distributed in other sectors</li> </ul>	<ul style="list-style-type: none"> <li>No inpatient beds planned and existing space to be utilised for other services</li> </ul>
Blood Donation	<ul style="list-style-type: none"> <li>Creation of a Blood Donation Department, currently together with Hematological (infrastructure requirements not specified)</li> </ul>	<ul style="list-style-type: none"> <li>To remain as is</li> </ul>
Pharmacy	<ul style="list-style-type: none"> <li>Pharmacy to transfer to the current Physiotherapy Centre</li> </ul>	<ul style="list-style-type: none"> <li>Location confirmed</li> </ul>
Chemotherapy	<ul style="list-style-type: none"> <li>Location of new chemotherapy stations</li> </ul>	<ul style="list-style-type: none"> <li>Moving to level B where administration is currently</li> </ul>



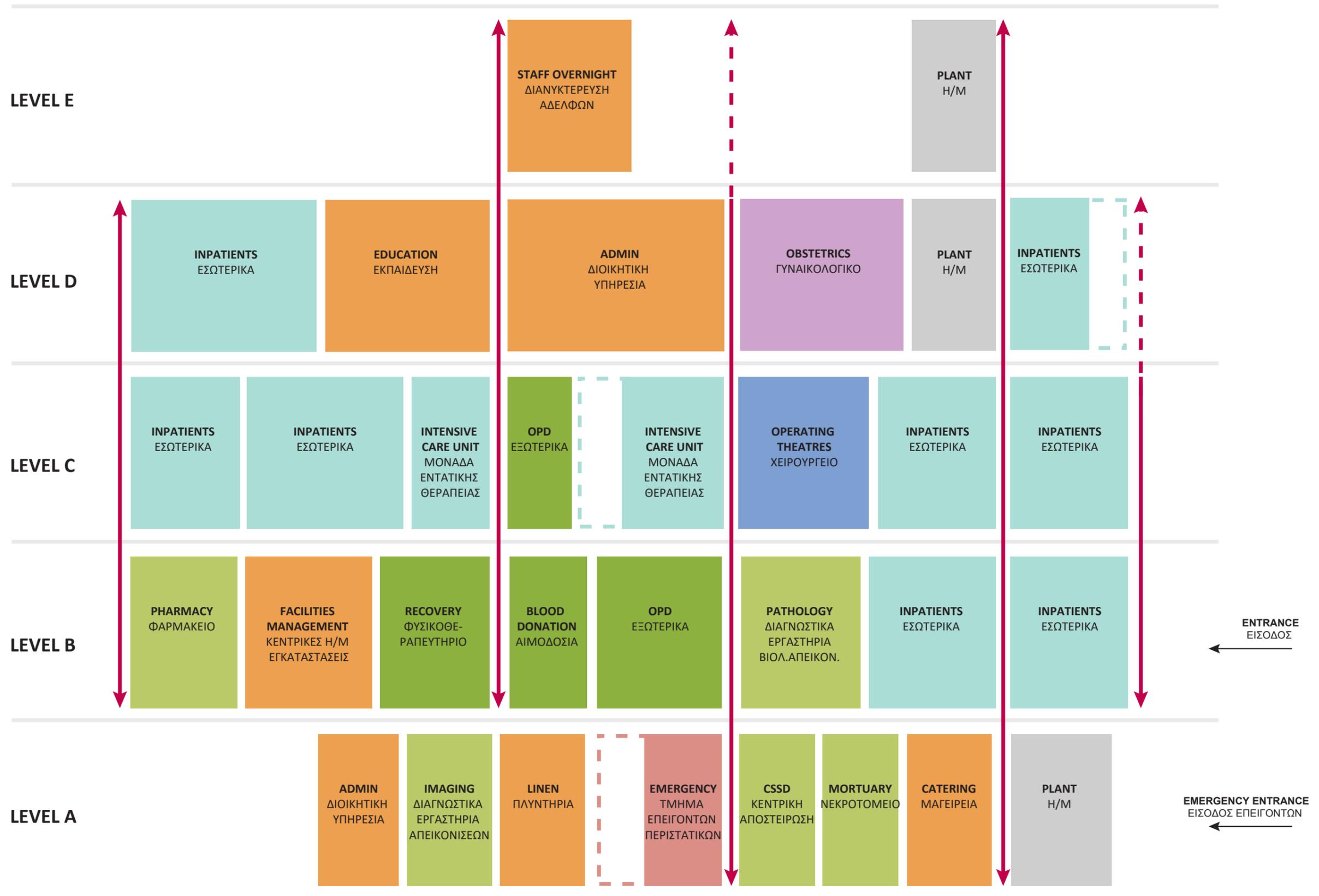
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## Part 2

# Existing infrastructure

# 2.7 Existing stacking

Stacking Diagram

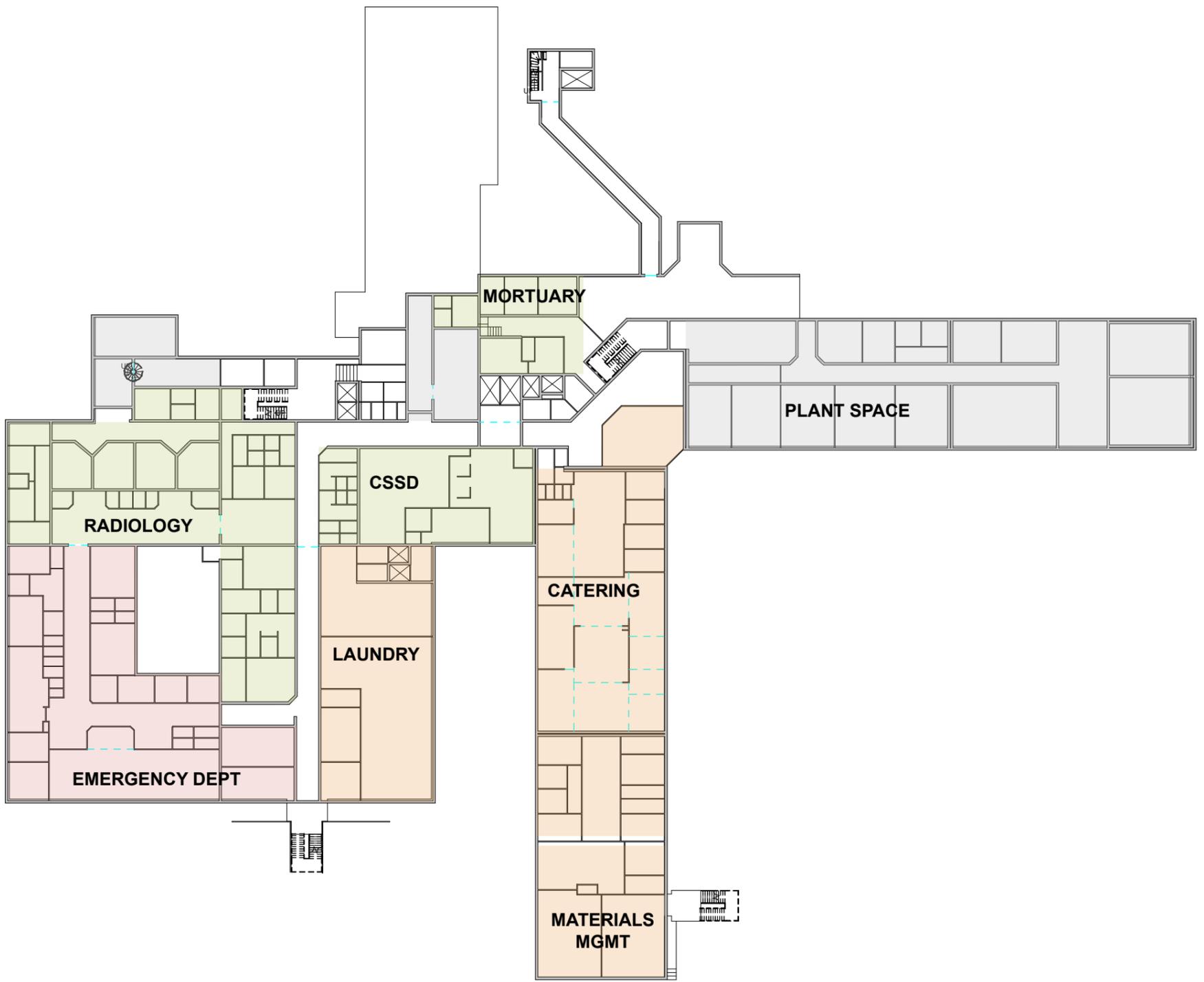


# 2.8 Existing departmental relationships

Bubble Diagram

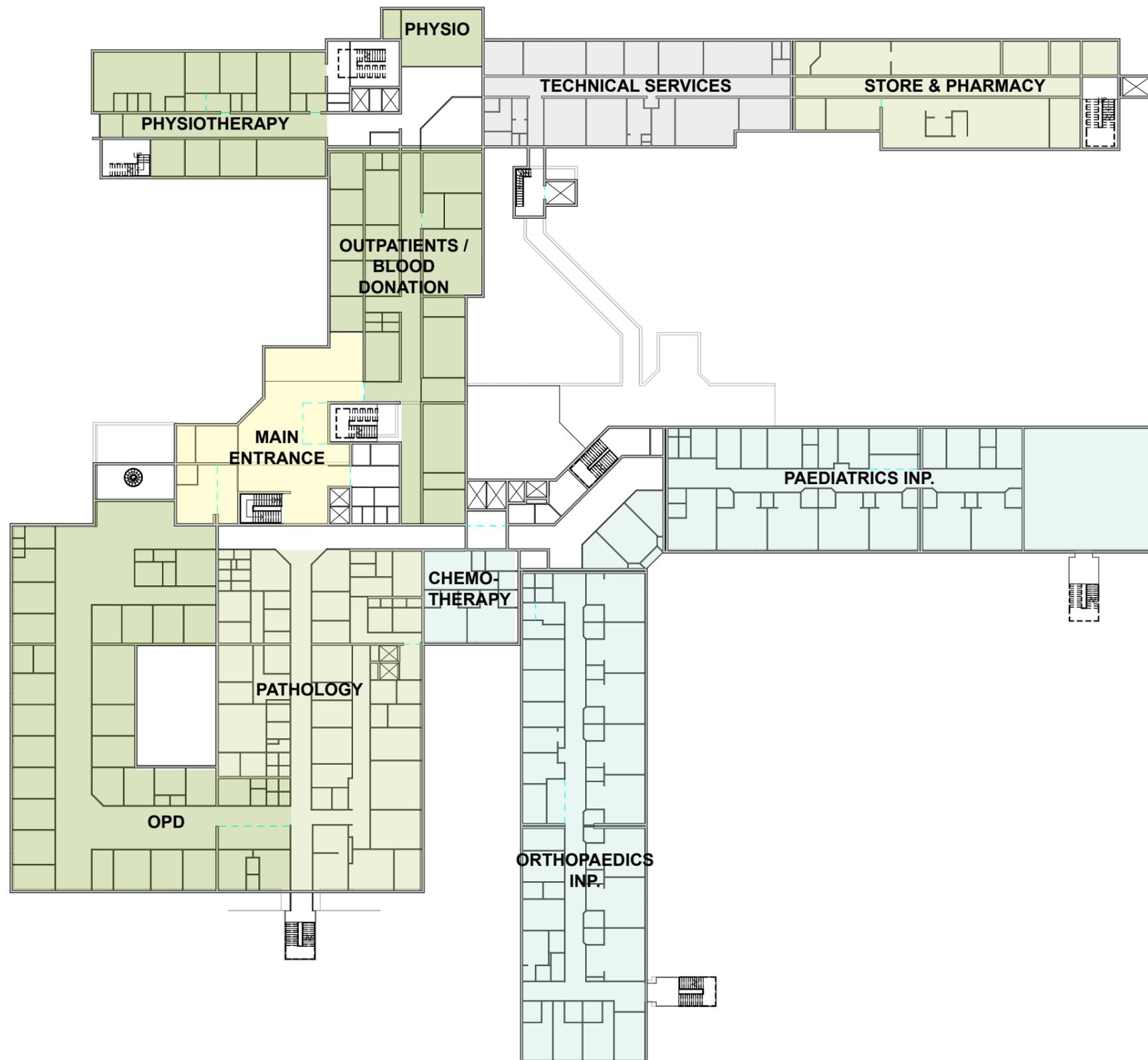


# 2.9 Existing Clinical Layout and Adjacencies



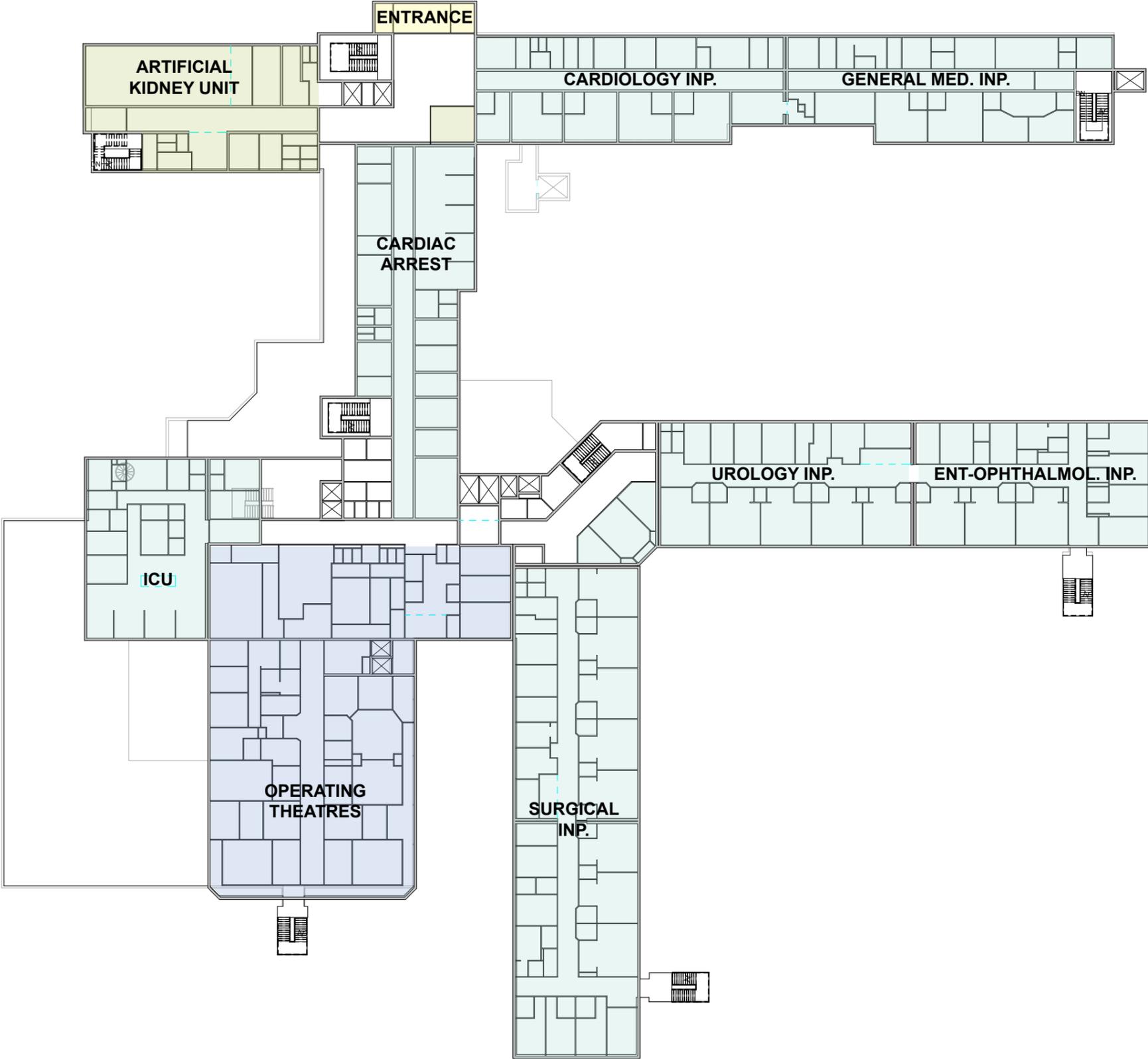
LEVEL A

## 2.9 Existing Clinical Layout and Adjacencies



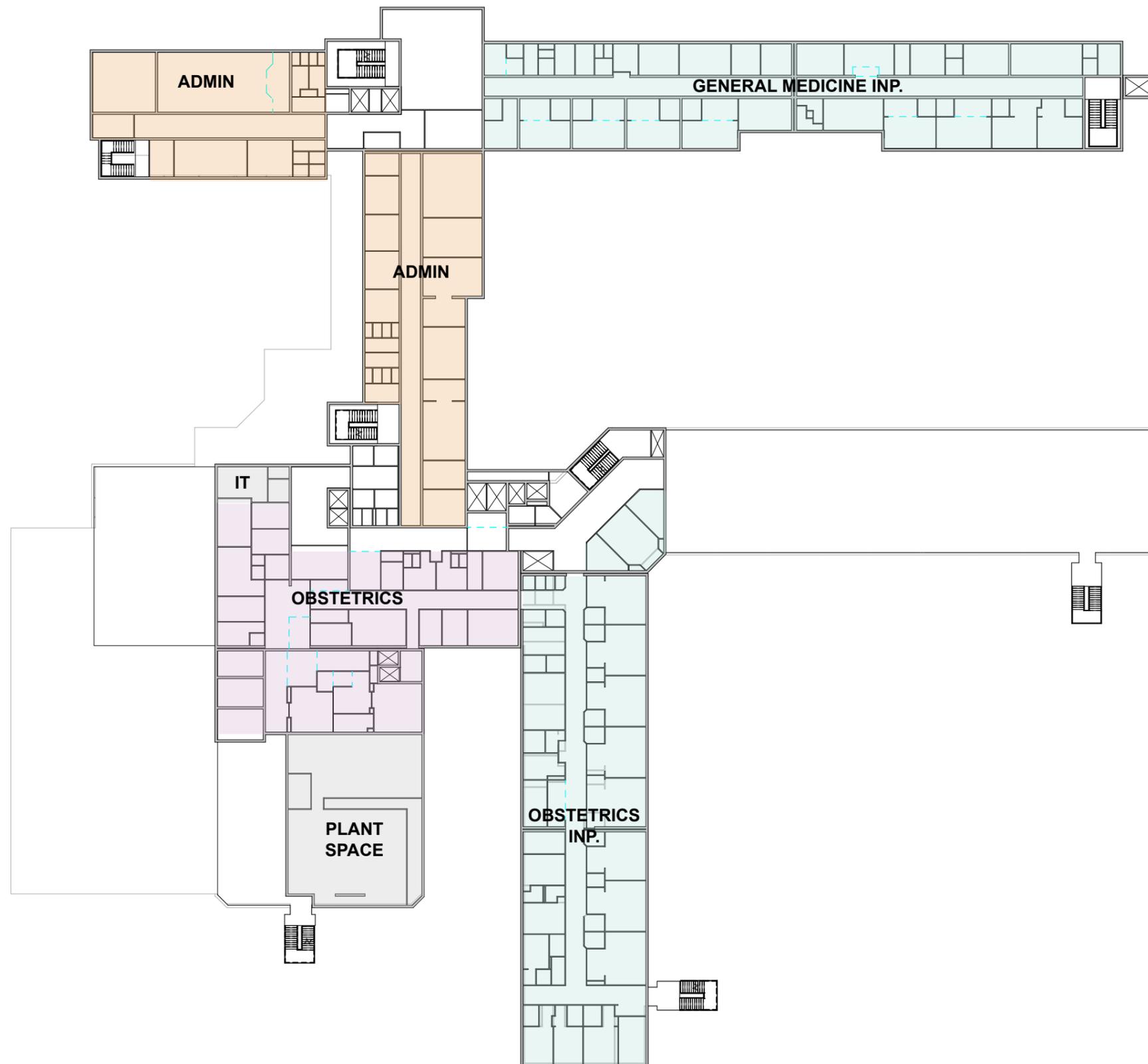
LEVEL B

# 2.9 Existing Clinical Layout and Adjacencies



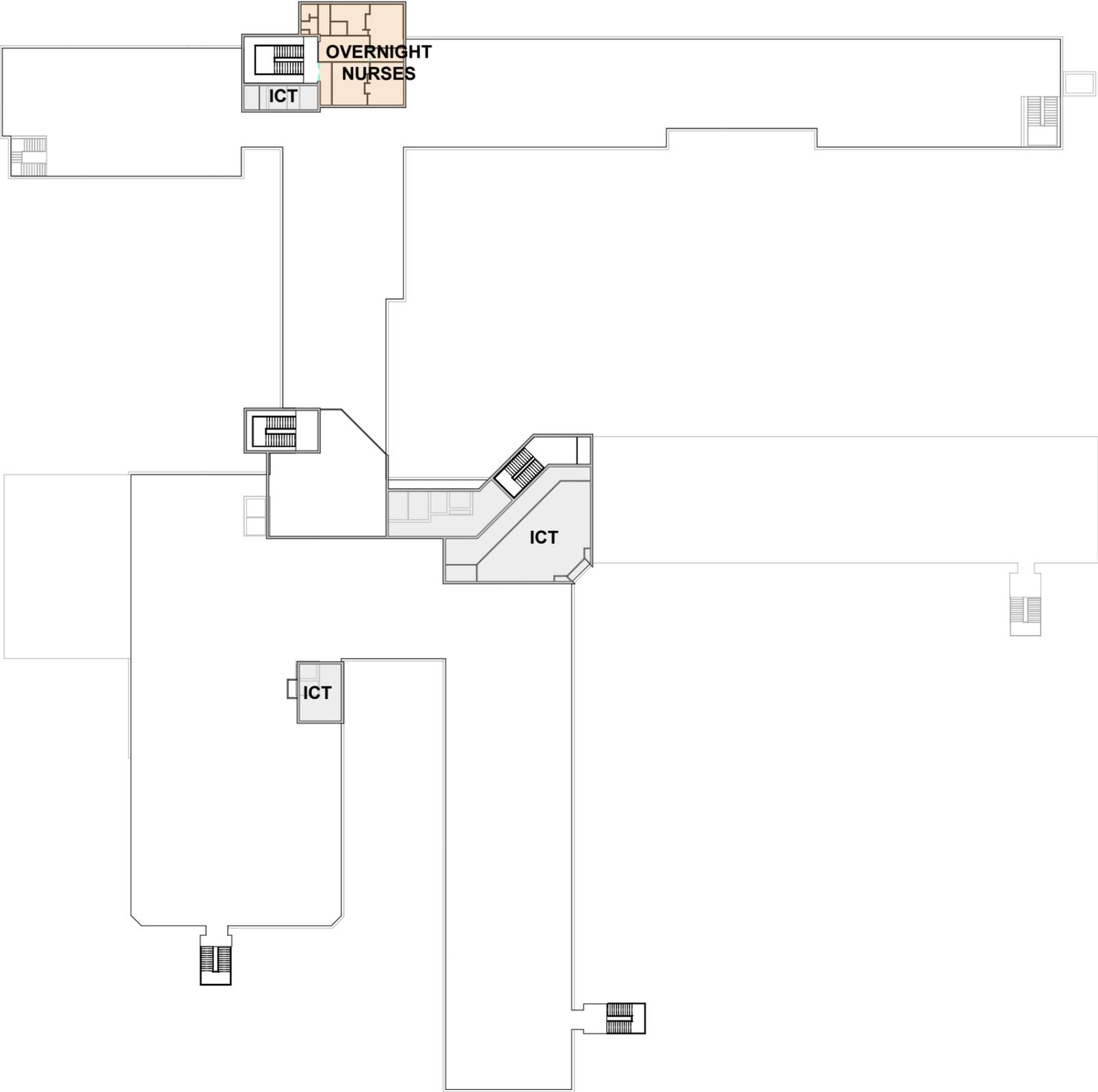
LEVEL C

## 2.9 Existing Clinical Layout and Adjacencies



LEVEL D

# 2.9 Existing Clinical Layout and Adjacencies



LEVEL E

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## Part 3

# Redevelopment proposals

# 3.1 Proposed interventions - EMERGENCY DEPARTMENT

## Proposal:

We understand that it is a key priority as identified in the 2020 Business Plan (see item 2.1) to expand the Emergency Department in order to create more space for short term care and a better functionality of the department as a whole.

It is furthermore our understanding that GH Drama has already commissioned spatial studies and feasibility study. This information has not been made available during this review.

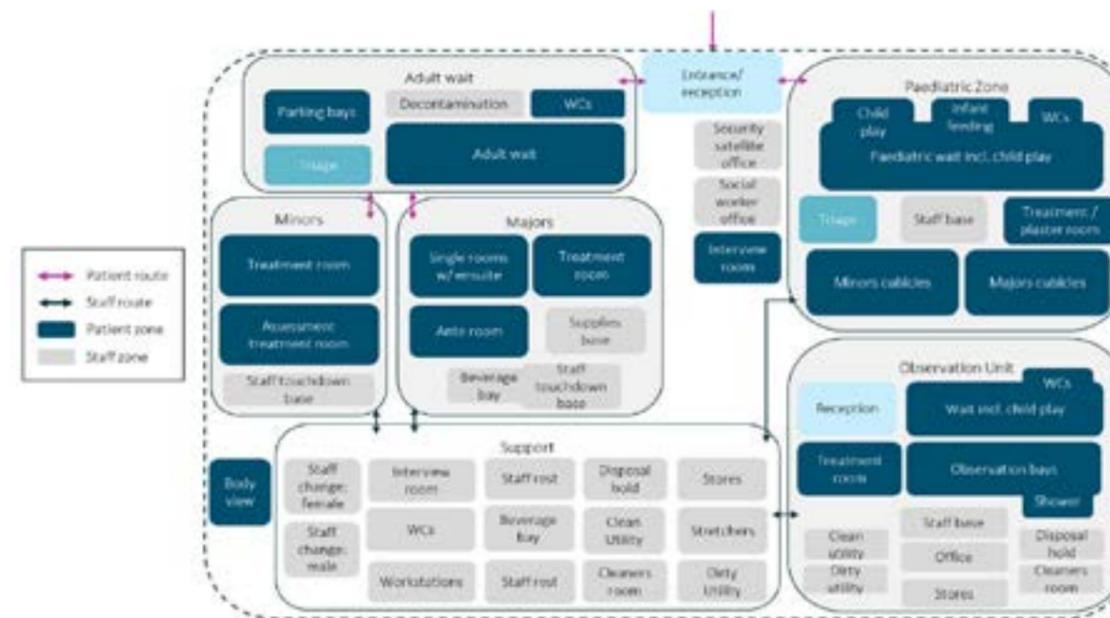
The following paragraphs are intended as a guidance for the redevelopment of the spatial and operational functions of the Emergency Department.

The Emergency Department at General Hospital Drama provides an emergency healthcare service to the local population of Drama and surrounding areas. It provides secondary level emergency care services for both adults and paediatrics in response to accidents and incidents and medical emergencies.

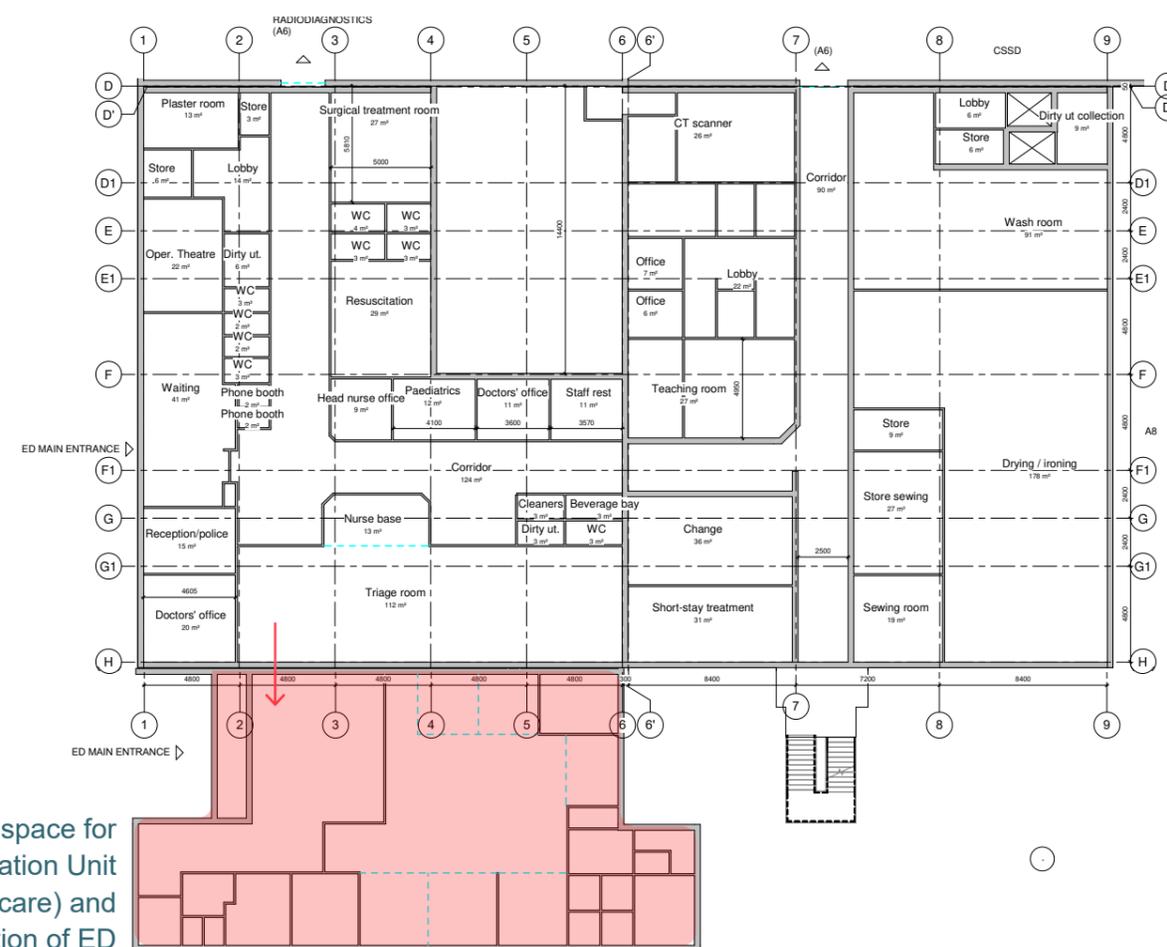
## Design requirements

The following principles should be supported through the design and layout of the Department.

- The majority of patients will arrive at the Emergency Department by car, or taxi and will access the hospital via the ambulatory walk in entrance.
- Ambulance attendees will enter via a separate secure covered access into the Department to the assessment area or Resuscitation rooms
- Less acutely ill or injured patients will register and be triaged where observations and investigations are initiated. Following this, patients will be allocated to one of the general assessment rooms and may be admitted, discharged or transferred to the Observation beds from here once diagnosis is established and the patient stabilised
- Patients requiring immediate resuscitation, or who are very acutely ill may arrive by ambulance and will be taken straight to the resuscitation room. It is likely that the Emergency Department will have been pre-warned of impending arrival. Once a patient who is severely ill has been stabilised, they will be transferred to a tertiary or specialist hospital for further care and treatment
- Should decontamination facilities be required, they will be located immediately adjacent to the main ambulance bay; with a hot and cold-water supply as well as an external power supply
- Observation of movement of activity between the main entrance, main waiting support public facilities is overseen by reception and security
- Any ambulatory paediatric patients entering the Emergency Department will arrive at the main ambulatory entrance and will proceed directly to the Paediatric Emergency Department section for triaging and treatment
- Post-investigation, treatment, follow up appointments or referral to GP and discharge will be organised in the Emergency Department.
- Attendance peaks and troughs will vary during the 24-hour period. It is therefore a requirement for the Emergency Department to have capability to open and close sections to allow for appropriate staffing during periods of low activity (e.g. during the night)
- Any patient requiring an overnight stay will be admitted to a specific inpatient unit, in line with acuity and specialty requirements.



Exemplary departmental diagram



Expansion space for Observation Unit (Short term care) and re-organisation of ED

# 3.1 Proposed interventions - EMERGENCY DEPARTMENT

## Exemplary Schedule of Accommodation

Emergency Department	Entrance, Reception & Waiting Facilities	Main entrance draught lobby	2	10.0	20.00
Emergency Department	Entrance, Reception & Waiting Facilities	Parking bay: 3 accident trolleys & 3 wheelchairs	1	12.0	12.00
Emergency Department	Entrance, Reception & Waiting Facilities	Reception and admin: 3 staff	1	15.0	15.00
Emergency Department	Entrance, Reception & Waiting Facilities	Security: satellite office	1	9.0	9.00
Emergency Department	Entrance, Reception & Waiting Facilities	Waiting:	1	30.0	30.00
Emergency Department	Entrance, Reception & Waiting Facilities	Waiting: play 4 children	1	10.0	10.00
Emergency Department	Entrance, Reception & Waiting Facilities	WC: ambulant	2	2.5	5.00
Emergency Department	Entrance, Reception & Waiting Facilities	WC: assisted with nappy change	1	4.5	4.50
Emergency Department	Entrance, Reception & Waiting Facilities	Decontamination room	1	12.0	12.00
Emergency Department	Social care & Distressed / Disturbed Persons	Interview room:	1	10.0	10.00
Emergency Department	Social care & Distressed / Disturbed Persons	WC: assisted	1	4.5	4.50
Emergency Department	Social care & Distressed / Disturbed Persons	Social Worker	1	10.0	10.00
Emergency Department	Assessment Facilities - Minors	Assessment Treatment rooms: A&E	4	12.0	48.00
Emergency Department	Assessment Facilities - Minors	Treatment room	1	18.0	18.00
Emergency Department	Assessment Facilities - Minors	Staff touch down base	1	4.0	4.00
Emergency Department	Treatment Facilities - Majors	WC: assisted	1	4.5	4.50
Emergency Department	Treatment Facilities - Majors	Assessment Treatment rooms	4	12.0	48.00
Emergency Department	Treatment Facilities - Majors	Isolation beds: single bedroom	2	16.0	32.00
Emergency Department	Treatment Facilities - Majors	Isolation beds: ensuite	2	4.5	9.00
Emergency Department	Treatment Facilities - Majors	Isolation beds: ante room	2	5.0	10.00
Emergency Department	Treatment Facilities - Majors	Bay: Beverage	1	3.0	3.00
Emergency Department	Treatment Facilities - Majors	Staff & communication base: 12 staff	1	16.0	16.00
Emergency Department	Treatment Facilities - Majors	Supplies base	1	10.0	10.00
Emergency Department	Patient Resuscitation Facilities	Resuscitation room	2	25.0	50.00
Emergency Department	Distressed & Bereaved Persons Facilities	WC: assisted	1	4.5	4.50
Emergency Department	Distressed & Bereaved Persons Facilities	Body viewing room	1	10.0	10.00
Emergency Department	Support facilities: Clinical	Dirty utility: bedpan disposal & urine test	1	9.0	9.00
Emergency Department	Support facilities: Clinical	Clean utility	1	12.0	12.00
Emergency Department	Support facilities: Clinical	Stretchers	1	9.0	9.00
Emergency Department	Staff Support Facilities: Rest and Recreation	Staff rest and beverage bay	1	15.0	15.00
Emergency Department	Staff Support Facilities: Sanitary & Changing	WC: ambulant	2	2.5	5.00
Emergency Department	Staff Support Facilities: Sanitary & Changing	Shower: ambulant (non patient)	2	2.5	5.00
Emergency Department	Staff Support Facilities: Sanitary & Changing	Staff changing room: 10 places - male	1	12.0	12.00
Emergency Department	Staff Support Facilities: Sanitary & Changing	Staff changing room: 10 places - female	1	12.0	12.00
Emergency Department	Staff Support Facilities: Offices	Office: 1 person	1	10.0	10.00
Emergency Department	Staff Support Facilities: Offices	Office: workstations	4	3.0	12.00
Emergency Department	Support facilities: Holding & Storage	Store: equipment & supplies	1	15.0	15.00
Emergency Department	Support facilities: Holding & Storage	Store: sterile supplies	1	10.0	10.00
Emergency Department	Support facilities: Holding & Storage	Store: major incident equipment	1	4.0	4.00
Emergency Department	Support facilities: Holding & Storage	Store: ready to use medical gas cylinders	1	4.0	4.00
Emergency Department	Support facilities: Holding & Storage	Store: ambulance equipment	1	4.0	4.00
Emergency Department	Support facilities: Holding & Storage	Linen trolley bay	0	2.0	0.00
Emergency Department	Clinical Support Accommodation	Local store	1	8.0	8.00
Emergency Department	Clinical Support Accommodation	Interview counselling room	1	9.0	9.00
Emergency Department	Support Facilities: Miscellaneous	Hold: disposal	1	5.0	5.00
Emergency Department	Support Facilities: Miscellaneous	Cleaners room	1	5.0	5.00

# 3.2 Proposed interventions - ARTIFICIAL KIDNEY UNIT

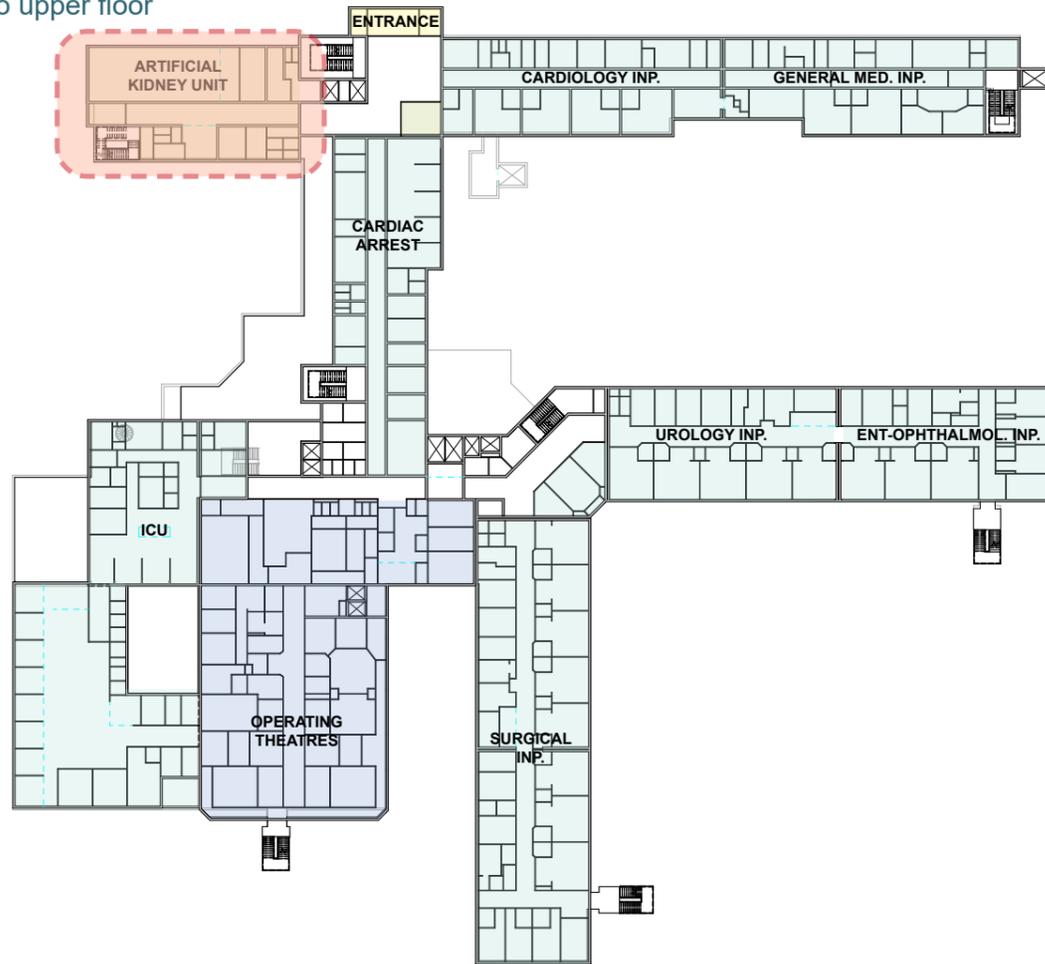
## Proposal:

It is proposed to move the Artificial Kidney Unit from level 1 to Level 2 and install a 8-bedded Haemodialysis Unit in its place. This will enable an integrated Nephrology service to be implemented to meet the increased demand of the Drama region.

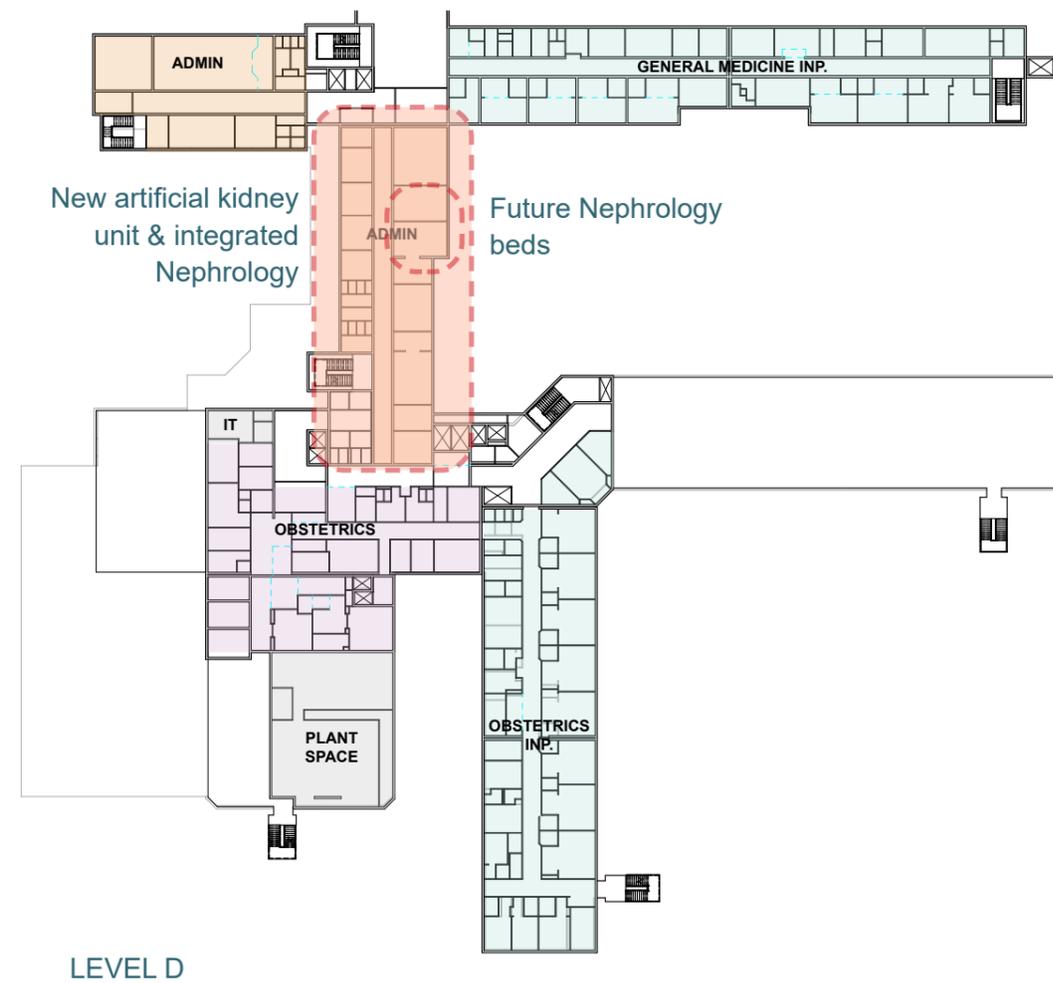
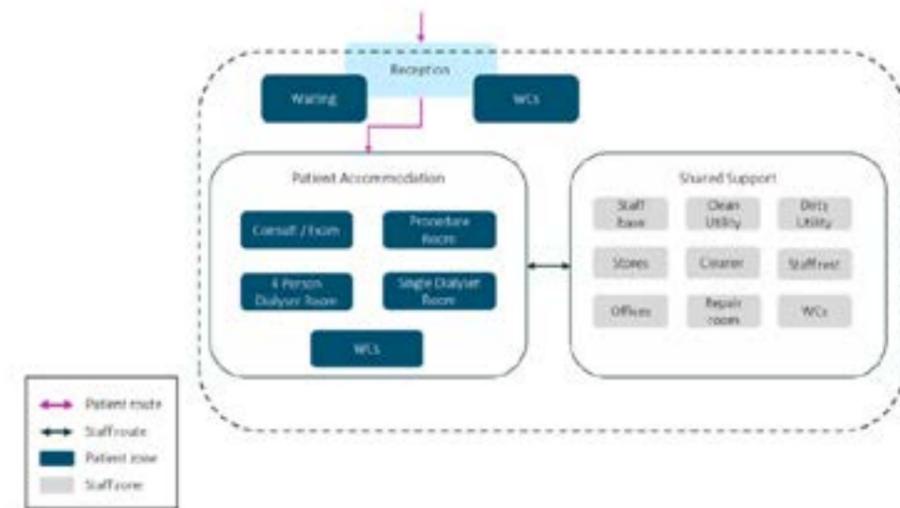
## Objectives: (for the new nephrology department)

- Maintaining a low rate of peritoneal infections in patients
- Ensuring good quality consumables / financial offer
- Recording of infections or complications of vascular access
- Maintaining good quality treated water
- Informative meetings with relatives of patient
- Psychological support actions for dialysis patients.

15-bed Haemodialysis, to move to upper floor



LEVEL C



LEVEL D

# 3.3 Proposed interventions - PHARMACY

## Proposal:

The Pharmacy of the Hospital operates without a license as the space in which it is housed (basement) is very small and unsuitable for its operation. Transfer to the current Physiotherapy Center is required, which with some small interventions will cover all health and safety rules as provided by current legislation

The Pharmacy service at Drama Hospital will provide a core support function to all inpatients and outpatients services. The Pharmacy service is essential to the efficient operation of the hospital. The pharmacy will support clinical activities throughout Sparta Hospital and will procure, receive, store and distribute medications.

## Services description:

Pharmacy practice models will include drug distribution and clinical services.

Sub-divisions of these components will include:

- Material procurement, preparation and distribution
- Control of drugs and drug products, medication safety, patient care services and medication usage policies
- Financial performance and human resources
- Research

The Pharmacy will procure, receive, store, prepare and dispense medications. It will also verify orders, prepare IV admixtures and provide drugs, drug products and related clinical information to professional staff and patients.

The Pharmacy will provide acute drug distribution by pneumatic tube system, and/or dedicated delivery personnel as appropriate and will also support unit-based cabinet dispensing of medications for Inpatients.

Pharmacy teams will be used to support departmental areas including the ED, Operating Theatres and some Inpatient units. Pharmacy teams will include clinical pharmacists, who will be integrated with the clinical teams within departments as required. They will facilitate the immediate distribution of pharmaceuticals in these areas.

Patient privacy will be considered and optimised for all pharmacy activity. All patient information will be treated as confidential, with access restricted to personnel providing care and services to the patient.

There is an international drive to reduce error in relation to pharmacy dispensing and administration, therefore the implementation of an automated pharmacy management system in the future which will include materials management and dispensing systems will need to be taken into consideration.

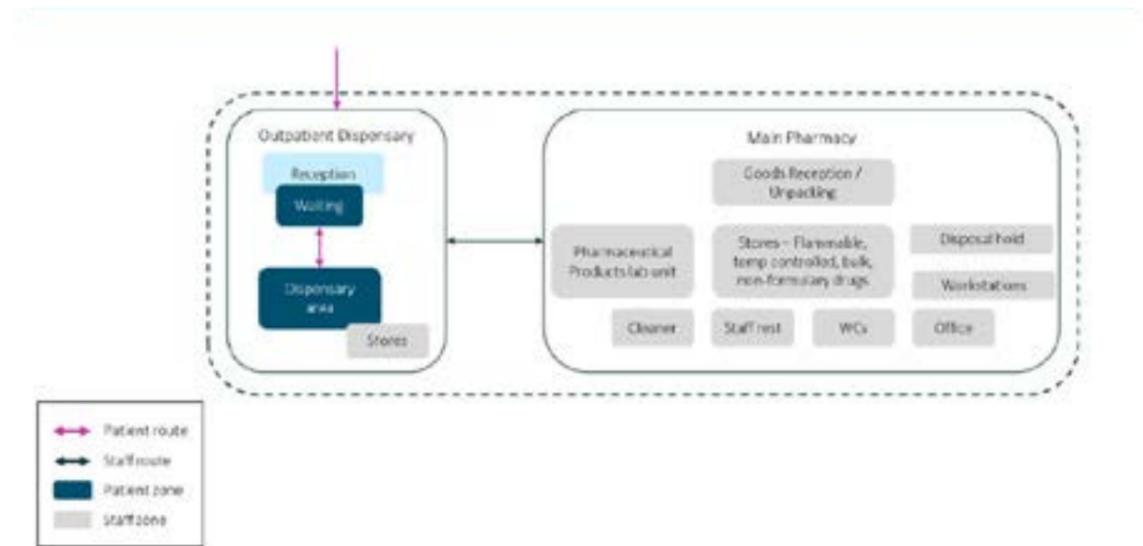
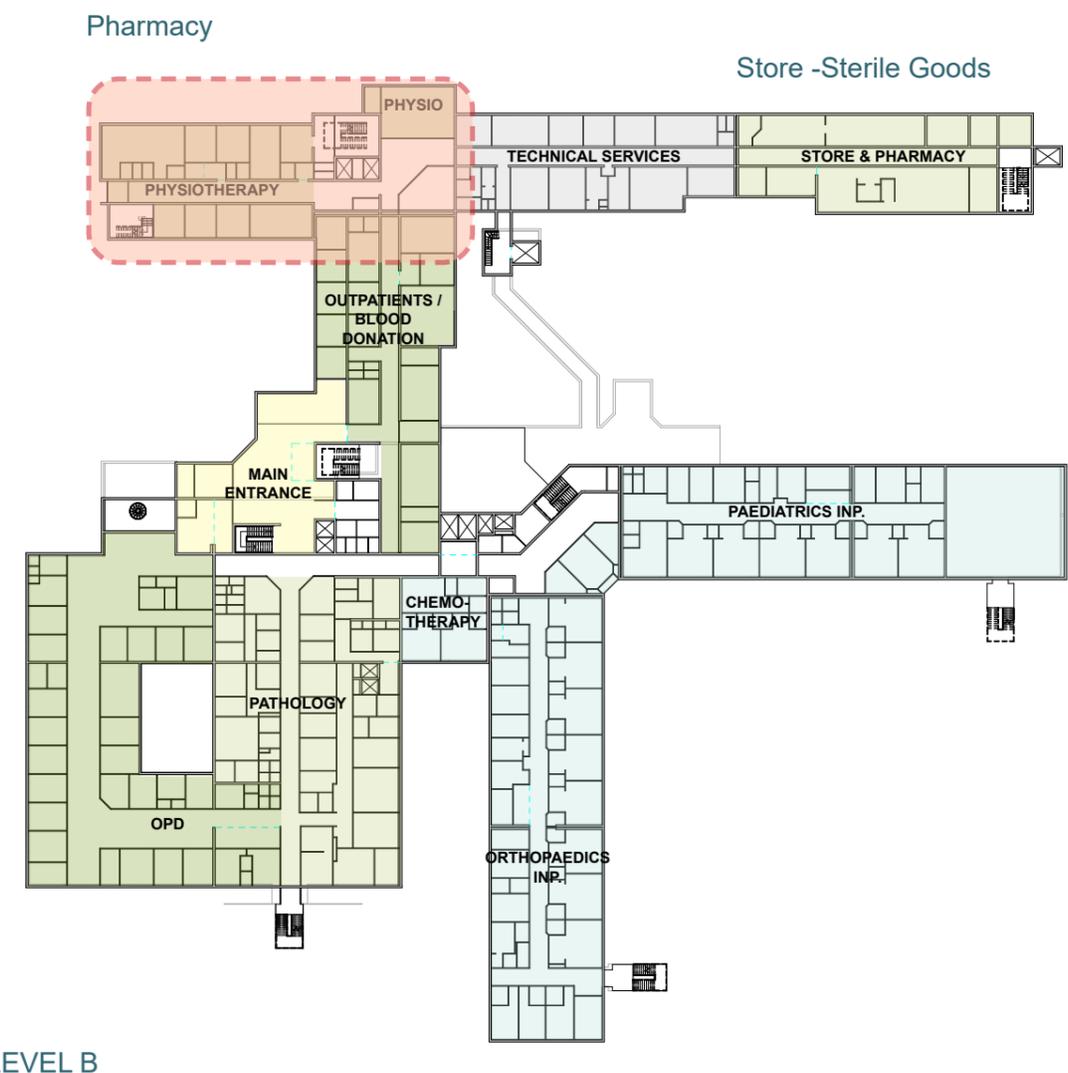


Figure 33. Pharmacy Internal Relationships

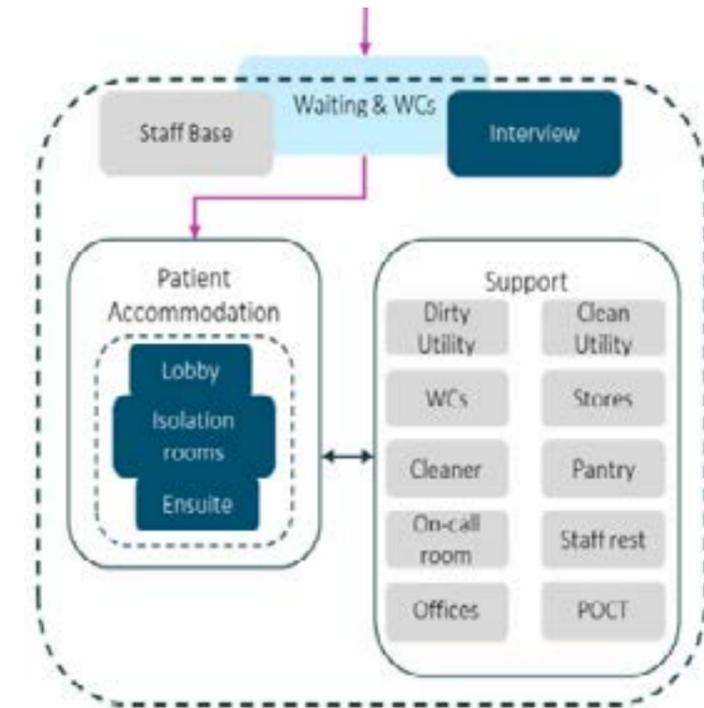


# 3.4 Proposed interventions - INTENSIVE CARE UNIT

## Proposal:

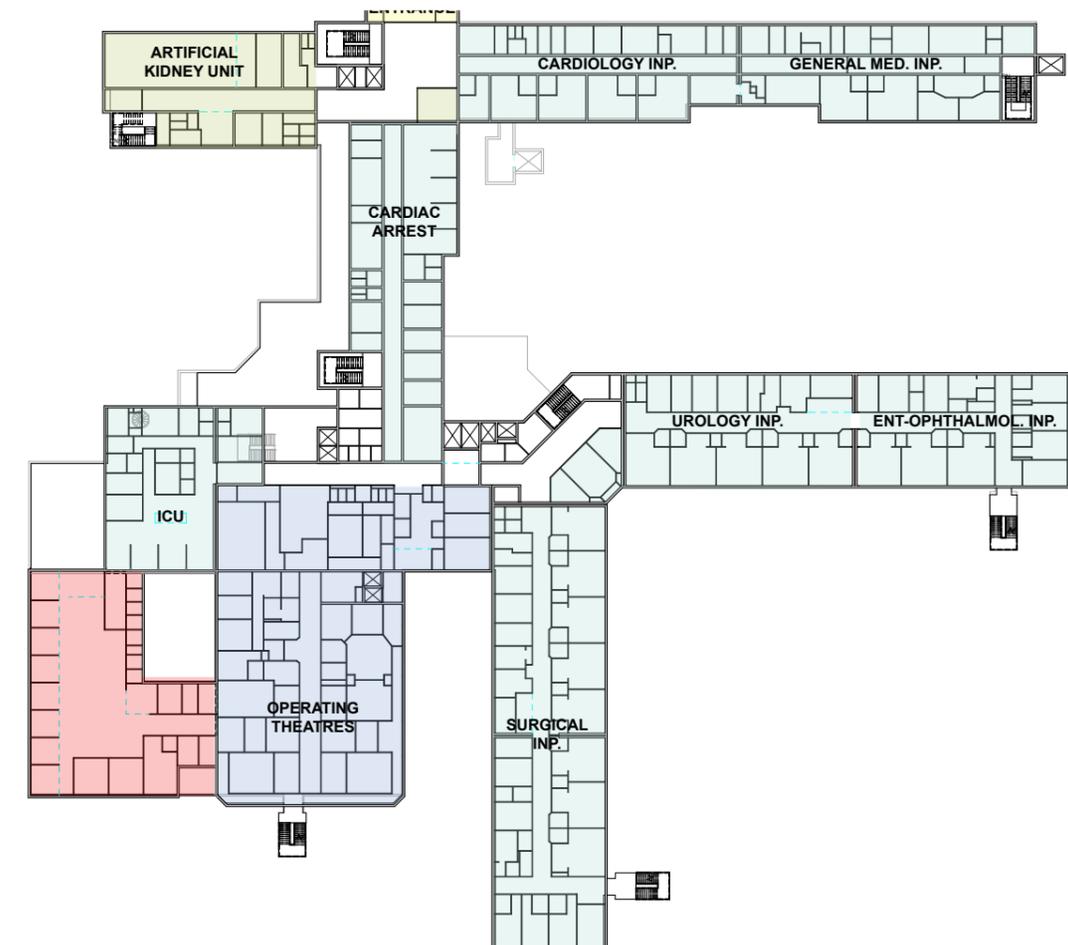
It is proposed to expand the existing 7 bed Intensive Care Unit by a further 5 beds. An area on level 2 has been identified adjacent to the existing ICU.

Critical Care/HDU - 12 beds	Entrance / Reception	Staff Base: including ward clerk	1	15.0	15.00
Critical Care/HDU - 12 beds	Entrance / Reception	Waiting:	1	10.0	10.00
Critical Care/HDU - 12 beds	Entrance / Reception	WC: assisted	1	4.5	4.50
Critical Care/HDU - 12 beds	Entrance / Reception	Patient Cubicle	12	25.0	300.00
Critical Care/HDU - 12 beds	Patient Accommodation	Ensuite: dual assistance	2	7.5	15.00
Critical Care/HDU - 12 beds	Patient Accommodation	Isolation Lobby	2	6.0	12.00
Critical Care/HDU - 12 beds	Patient Accommodation	Assisted shower / WC (central)	1	8.0	8.00
Critical Care/HDU - 12 beds	Clinical Support	Clean utility	1	9.0	9.00
Critical Care/HDU - 12 beds	Clinical Support	Medicines Management	1	10.0	10.00
Critical Care/HDU - 12 beds	Clinical Support	Dirty utility	1	9.0	9.00
Critical Care/HDU - 12 beds	Clinical Support	POCT	1	12.0	12.00
Critical Care/HDU - 12 beds	Clinical Support	Pantry	1	8.0	8.00
Critical Care/HDU - 12 beds	Clinical Support	Main Linen Store	1	3.0	3.00
Critical Care/HDU - 12 beds	Clinical Support	Bay: Resus trolley	1	2.0	2.00
Critical Care/HDU - 12 beds	Clinical Support	Bay: Airway equipment	1	2.0	2.00
Critical Care/HDU - 12 beds	Clinical Support	Bay: Endoscopy stack	1	2.0	2.00
Critical Care/HDU - 12 beds	Clinical Support	Store: transfer frames	1	12.0	12.00
Critical Care/HDU - 12 beds	Clinical Support	Store: consumables	1	12.0	12.00
Critical Care/HDU - 12 beds	Clinical Support	Cleaners room	1	7.0	7.00
Critical Care/HDU - 12 beds	Clinical Support	WC: assisted	1	4.5	4.50
Critical Care/HDU - 12 beds	Clinical support	Store: large equipment	1	18.0	18.00
Critical Care/HDU - 12 beds	Clinical support	Technician's workshop / office	1	20.0	20.00
Critical Care/HDU - 12 beds	Staff Facilities	Ward Manager Office: 1 person	1	10.0	10.00
Critical Care/HDU - 12 beds	Staff Facilities	Staff lockers	1	2.0	2.00
Critical Care/HDU - 12 beds	Staff Facilities	Rest room with beverage bay	1	12.0	12.00
Critical Care/HDU - 12 beds	Staff Facilities	Change: staff inc shower, wc	2	12.0	24.00
Critical Care/HDU - 12 beds	Staff Facilities	On call room with ensuite	1	16.0	16.00



Suggested organisation of new department

ICU expansion

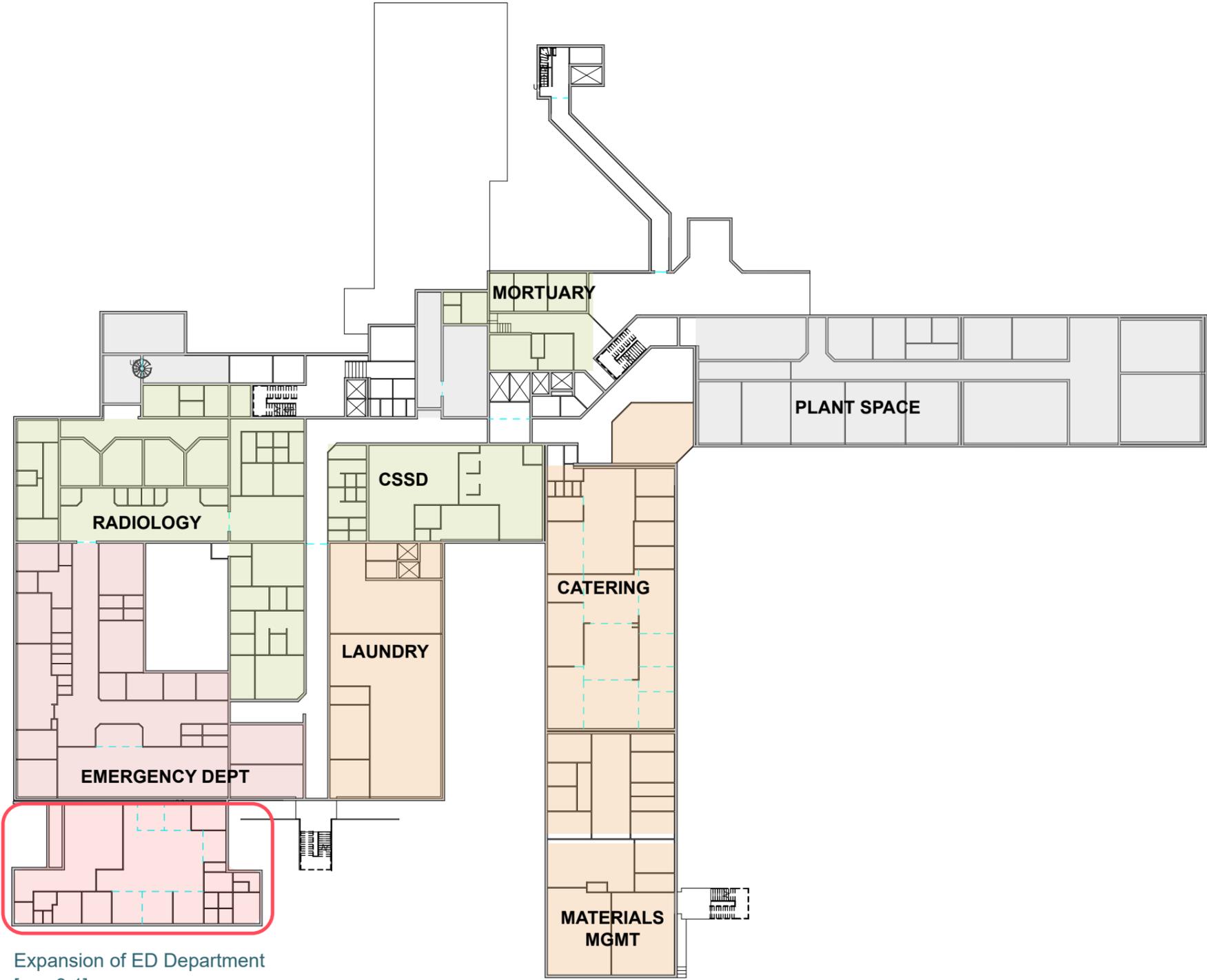


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## Part 4

# Future development proposals

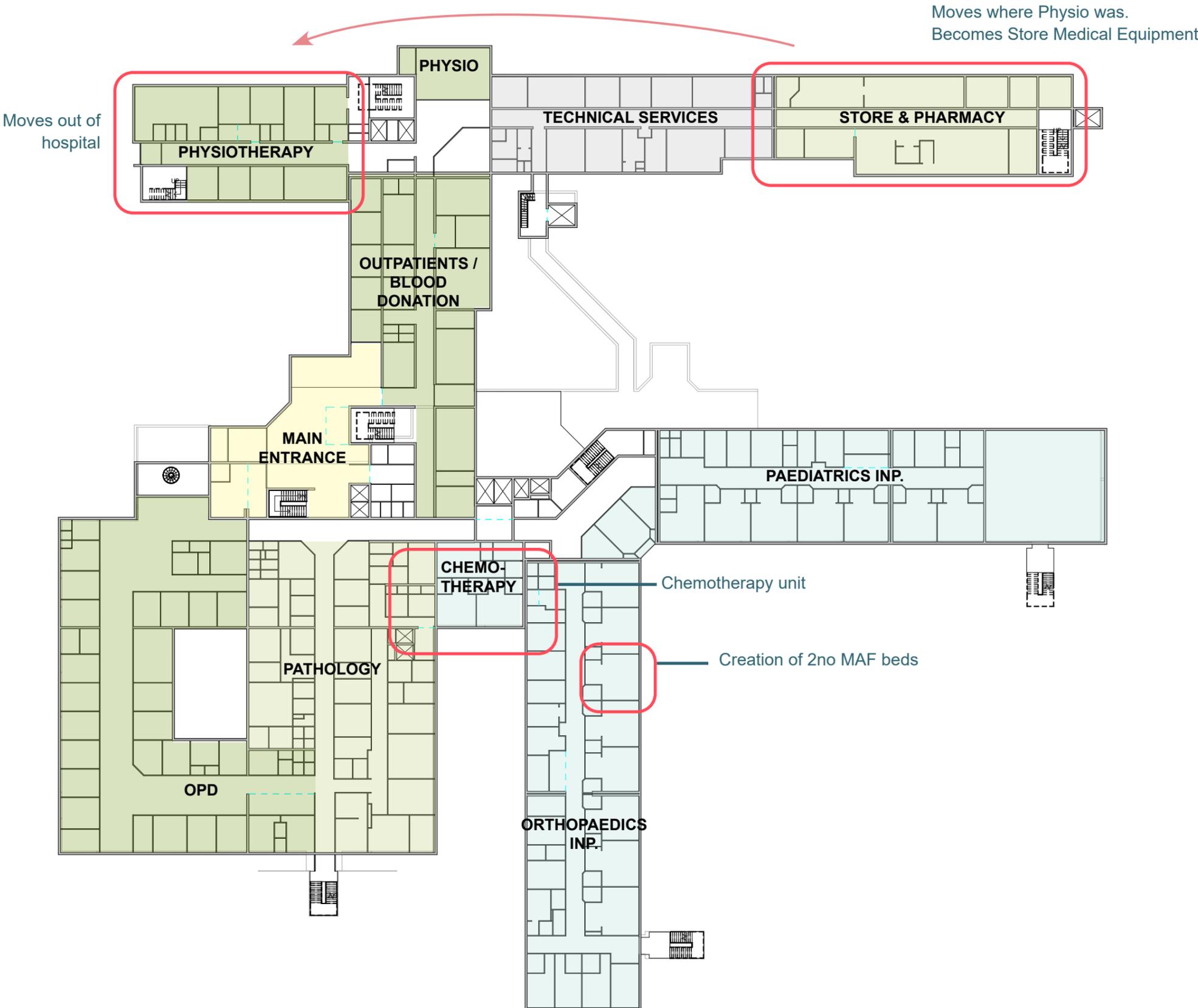
# 4.1 Future development proposals



LEVEL A

Expansion of ED Department  
[see 3.1]

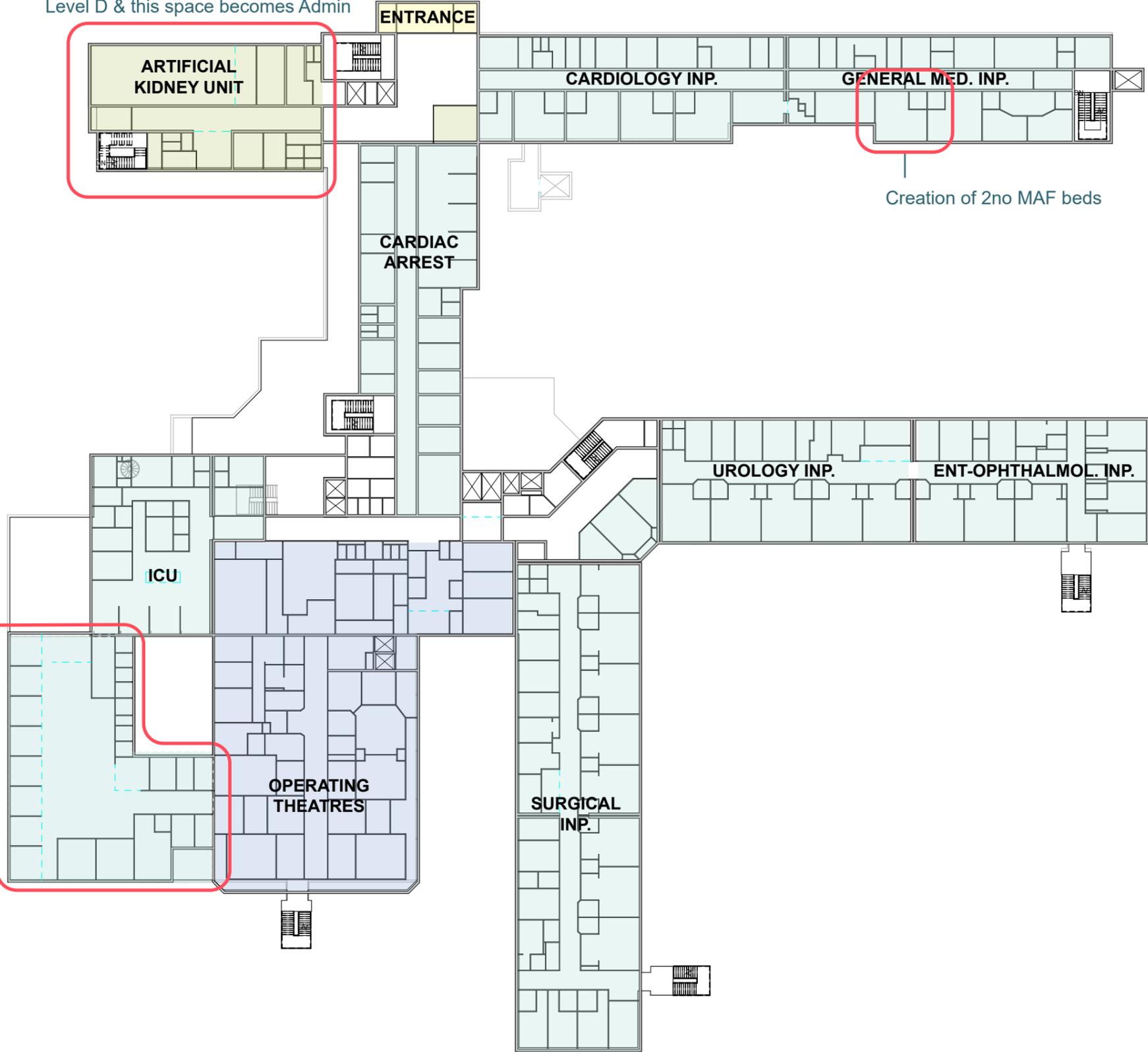
# 4.2 Future development proposals



LEVEL B

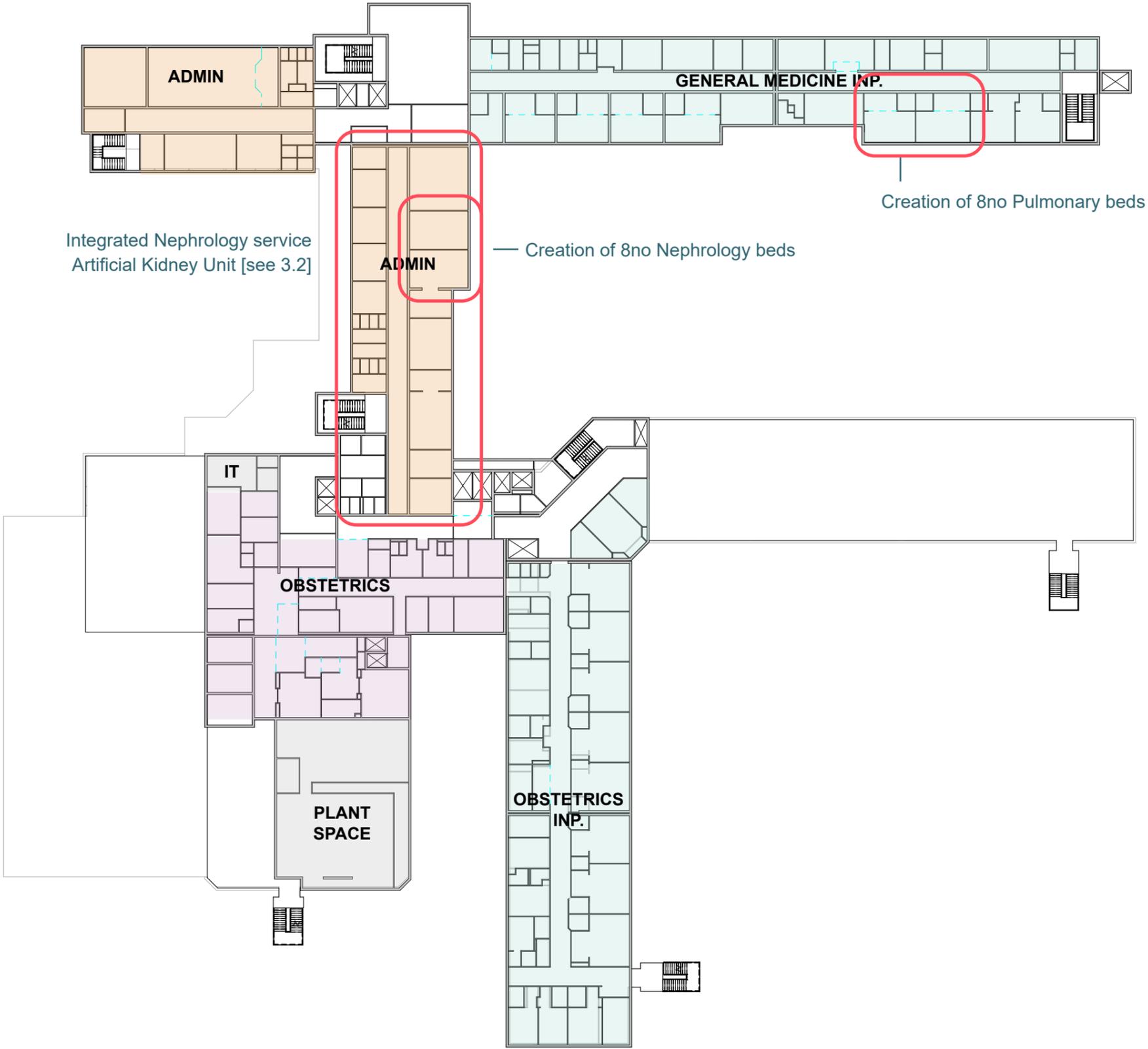
# 4.3 Future development proposals

Haemodialysis unit [see 3.2] moves to Level D & this space becomes Admin



LEVEL C

# 4.4 Future development proposals



LEVEL D

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## Part 5

# ICT & EPR future strategy recommendations

# 5.1 ICT & EPR future strategy

The vision for many new hospitals is to be facilities that will facilitate excellence in the delivery of clinical services, teaching and research in an environment that is fully supportive of patients, their families and staff. To support this, it is key for the healthcare facility to create a digital hospital with a focused emphasis on implementing clinical & operational processes in a paperless environment. To successfully pursue this ambition, it is imperative that a clear direction is established in relation to the managerial and operational activities and the clinical & business information requirements to support the strategic vision for the hospitals.

## 1 Project Scope

This paper endeavours to identify the strategic direction, the scope of the project and the four ICT workstreams to do this. These will include:

- Electronic Patient Record (EPR)
- Enterprise Resource Planning (ERP), covering HR, Finance, Materials Management and Facilities Maintenance
- ICT Infrastructure, covering Data Centre Design, Network Design, Server Strategy, Business Continuity, Collaboration, Security and IT Operating Model
- Health Information Exchange (HIE).

The project scope should be developed addressing the following areas related to the four ICT workstreams:

- 1 Provide a high-level roadmap outlining the key pre-operational activities and steps that need to be completed within the required timeframes and aligned with project programme.
2. A recommendation on the critical components required, including identifying the major components that can be implemented s.
3. The timelines and approach for standardising clinical and organisational processes
4. The defnition of a critical path of core project components to achieve the vision
5. Identifying the list of the dependencies (people, process and technology) required for implementing this vision, and the milestones associated with these dependencies
6. The timelines for integrating national programmes (such as H-cloud)
7. A proposed approach for implementation of what and when
8. The key stakeholders and leads
9. Confirmation of ICT Validation governance structure
10. A high-level budget estimate for completing all of the above
11. The list of assumptions and risks associated with achieving the strategic direction.
12. A programme management approach to manage the implementation of these four ICT Workstreams.

## 2 Project Methodology

The project methodology for each of the workstreams should:

1. Understand the current assumptions for all existing sites
2. Agree on the high-level requirements with relevant stakeholders
3. Document the high-level framework based on agreed set of high-level requirements.
4. Document the high-level roadmap
5. Document the high-level risks, assumptions and dependencies
6. Provide a high-level budget estimate of completion of the above

The above tasks will require a clear project governance and include representation of all key stakeholders e.g. MoH, 4th YPE, Hospital representative and the project team. This group will be responsible for then formation of an ICT Programme Steering Group to discuss and oversee project progress and deliverables by the appointed ICT project team.

## 3 High Level Roadmap

A high-level roadmap outlining the key pre-operational activities and steps that will need to be developed in the line with strategic vision and project delivery timeframe for the new hospitals. These key pre-operational activities will identify the people, processes and technology activities required for a high-level roadmap to be developed for each of the ICT workstreams. Also required to support the road map is the ICT Programme Management function. These roadmaps will identify the major activities required, including sequencing and timelines, which need to take place for each of the ICT workstreams in order to deliver the required functionality. The indicative roadmap can be seen in Figure 1 below.

Figure 1 Summary Indicative Roadmap



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## 4 Components of an ICT Hospital System

The following list identifies the components of the ICT system to be implemented. The components required for each of the ICT Workstreams will be identified. In order to ensure the delivery of the system, activities must start at the time of project execution in order for the system to be delivered in line with the operational readiness of the facility. The critical components for each workstreams are summarised below. A detailed specification for each of these will be required for the Approvals and Procurement process, following stakeholder consultation.

### 4.1 Electronic Patient Record (EPR)

The Electronic Patient Record (EPR) is the key ICT enabler to help achieve the vision for the hospital and strive for a digital and paperless hospital that satisfies Stage 6 of the Healthcare Information Management Systems Society (HIMSS) EPR Adoption model<sup>1</sup>. The introduction of an EPR is generally seen as a significant Clinical Transformation Programme. Stage 6 requires implementation of the following components:

- A single integrated electronic patient record across all acute, ambulatory and clinical specialties
- Secure access to all modules
- A comprehensive set of EPR modules, including:
  - Computerised Provider Order Entry (CPOE)
  - Closed-loop Medication Management
  - Clinical documentation: Electronic charting, care plans by clinical personnel
  - PACS is in place for managing medical images
  - Other clinical system e.g. cardiology, monitoring

### 4.2 Health Information Exchange (HIE)

The development of the HIE will be in response to the MoH requirements. The HIE Capabilities and responsibilities will be established with the MoH, involving the appropriate stakeholders to guide the design and services to be provided

### 4.3 Confirm the appropriate governance model for the HIE with the MoH

i.e. How the patient's identity will be confirmed, where the patient record will be stored, what information will be retrievable and who will access the records across the HIE Network.

### 4.4 Enterprise Resource Planning (ERP)

The critical components of the ERP solution include:

**Human Resources:** for workforce scheduling and rostering, employee services and payroll/administration functions, HR operations & supports, document and records management support and delivery

**Finance:** for Transaction Processing capability comprising accounting, reporting, transaction processing and control activities, streamlining processes and driving cost reductions, Business Decision Support including strategic planning, target setting, business portfolio management, planning, budgeting, forecasting, reporting and analytics, Finance Management for managing the cost, service and performance of the finance function and managing the finance workforce.

### 4.5 Materials Management

For sourcing supplier services, purchasing, stock control, maintenance and repair. The capability to manage and complete ad-hoc, planned and regular maintenance repair and overhaul activities of equipment.

### 4.6 ICT Infrastructure

The key Components of the required ICT Infrastructure required include: Network, Access Devices, Security, Strategy, Data Centre, Business Continuity, IT Operations, Communication and Collaboration.

### 4.7 The Infrastructure workstreams

- The IT architecture will aim to create an all-digital paperless hospital environment
- The IT architecture will be developed based on leading edge technologies and proven capability
- The IT architecture will ensure that information is available in a safe and secure manner, in the right format, at the right time, in the right place and to the right person
- The IT architecture should support 100% availability of IT services across the healthcare system
- The IT architecture will be scalable and interoperable
- IT architecture should be based on appropriate information and technology standards.

### 4.8 ICT Programme Management

The ICT Programme Management will be developed and supported by Performance Management Monitoring, detailed Work Plan Management and Risk and Issue Management.

## 5 Standardising Clinical and Organisational Processes

This project should afford the opportunity for the standardisation of clinical and organisational processes across the hospital organisation. This is an essential foundation for the development of the system. The development of the future processes, which assumes the integration of the interdependent workflows throughout the hospital, requires enabling technology such as an Electronic Patient Record (EPR). To ensure that the standardised clinical and operational processes can be supported and sustained by the appropriate technology, the ICT workstreams should engage with all work groups and stakeholder as soon as possible in order to advance the design phase. During this phase the ICT workstreams will describe the technology capabilities of the ICT systems, which will help ensure that the resulting clinical and operational processes can be supported. This collaborative approach to completing the design activity supports better informed decisions and delivers better, long term outcomes. This will ensure clinical staff are familiar with the technology capabilities early in the process while the alignment of processes and systems from the outset minimises future software customisations, process redesign and associated additional costs.

## 6 Standardising Critical Path: Core projects, Key Dependencies and National Programmes

The following requirements identify the list of the dependencies, both people, process and technology that will be required for implementing the ICT vision, together with indicative milestones associated with these dependencies. The timelines for integrating National programmes will need to be identified, as will the required interface with other acute, primary and community service providers. Delays to any of these critical path projects or dependencies will need to be evaluated to understand the implications to the overall scope, effort, resourcing and timelines required for the ICT implementation. Required tasks include:

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## 6.1 ICT Business Case Approval

The ICT Business Case approval is a critical first step required to achieve the overall vision. The Project Roadmap assumes that final approval will be completed TBD. The Roadmap also assumes that the detailed activities required to prepare for the Approvals and Procurement process will continue in parallel

## 6.2 Resourcing for Solution Approvals and Procurement Process

The resource requirements to support the Approvals and Procurement Process must be confirmed and in place to allow the Approvals and Procurement Process to proceed as planned.

## 6.3 Procurement Approach

The overall Procurement Strategy and approach must be agreed to allow the ICT Tender Specification processes to continue in-line with this strategy.

## 6.4 An Integrated Programme Management Plan

Created across Design, Construction, ICT, Medical Technologies, Healthcare planning, Organisation and Business Planning and needs to be completed to ensure all project milestones and interdependencies are aligned and recognised to support the detailed planning activities of all workstreams.

## 6.5 Data Migration, Merging and Conversion Strategy

A proposed approach to the migration, merging and conversion of data from the existing facilities must be in place by allowing the approach to be reflected in the ICT Tender specifications.

## 6.6 National Programmes

Identified and requirements included in specification documents.

## 6.7 ERP Implementation Approach

Agreement on the approach for implementing the ERP capability must be made to allow sufficient time to complete the procurement and implementation of the agreed solution in time for the opening of the hospitals.

## 6.8 ICT Infrastructure Implementation Approach

Agreement on the approach for implementing the ICT Infrastructure capability (e.g. use of shared services, use of existing components) must be made by to allow sufficient time to complete the procurement and implementation of the agreed solutions in time for the opening of the hospitals.

## 6.9 EPR Procurement is completed

## 6.10 Clinical Informatics

Clinical Informatics roles should be in position at the beginning of the phase of work to support the definition of the Clinical Content of the EPR solution. This is a key requirement to support the decision making required during the definition of clinical content.

## 6.11 Standardisation of Clinical and Organisational Processes

In consultation with existing hospitals must be completed to coincide with the end of the Design phase of the EPR solution.

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