INDUSTRIAL TRAINING REPORT

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2022

DECLARATION

I hereby declare that this report is my own writing and is correct to my knowledge.

Date: 14 October 2022

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ABDUL RAHIM BIN SAIDI
(BK19110293)

ACKNOWLEDGEMENTS

I would like to thank my supreme gratitude to the Faculty of Engineering, Universiti Malaysia Sabah for providing such kind of opportunity for students to broaden their perception of how the real world in the field of Electronic Engineering (Computer) looks like as well organizing the whole internship program and its effort to make sure that the whole internship program to achieve its desired goals.

I would also like to express my special thanks to Mrs. Arbaah Binti Zakaria, Project Manager of the Access Project Delivery PB Utara, Network Development Sabah, Network Sabah Region, Telekom Malaysia Berhad, giving me a chance to spend my practice in her company and helping me in my day-to-day activities during the intern time.

I extend my grateful thanks to the Elite, Admin, Technical Supports, and Protégé of the Access Project Delivery PB Utara, Network Development Sabah, Network Sabah Region, Telekom Malaysia Berhad, in the Department those help me with moral and material needs as well as sharing me their knowledge to improve my theoretical knowledge to the real works.

Finally, I would like to express my special thanks to my family and friends for helping me in all aspects and appreciating me to spend my all time in the workplace during my internship time.

EXECUTIVE SUMMARY

This report detailed the training provided by Telekom Malaysia Berhad's Company Access Network Development Sabah from July 25 to September 30, 2022. The training was conducted in the Department of Access Network Development Sabah, Telekom Malaysia Berhad, with Mrs. Arbaah Binti Zakaria working as the department's assigned supervisor. Throughout the training, she was assigned three primary tasks. The assignments include creating a visually appealing website for the Department, completing Infrastructure Drawing & Diagram (IDD), and creating a weekly Project Commitment vs. Actual Project Delivery PB Utara PowerPoint slide. During the task, the achievements were learned and explored the technical steps clearly to create the website required that can be used by the department directly after two weeks of struggling. Not to mention for only another two weeks spent time searching for data, reading a map, and calculating precisely to do the Infrastructure Drawing & Diagram (IDD). Continue with formal design slide needs to be done in a fast-paced way each day to update the project progress for my supervisor's presentation with her boss. The difficulties encountered were mainly about the deadline for each task. Another challenge was when I was assigned a duty that I had never done before and had to investigate it on my own, even after asking for assistance from the workers. My lack of visualization in the arts made it tough for me to complete the slide design to match my supervisor's expectations. Not to mention working outside of business hours to fulfil the deadline because the task assigned was time-consuming. I need to learn more about websites and applications that have been developed by Telekom Malaysia Berhad during the period of my internship. Being prepared for good mental health is a must to be more professional in the industry.

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LIST OF ABBREVEATION

A2P	-	Application-to-Pear
AKS	-	Arahan Kerja Selamat
AND	-	Access Network Development
ASB	-	AS – Built Diagram
ASEAN	-	Association of Southeast Asian Nations
ASN	-	Autonomous System Number
CDN	-	Content Delivery Network
CSR	-	Cell Site Routers
DC	-	Data Centre
DCR	-	Debt-Coverage-Ratio
DDF	-	Digital Distribution Frame
DSL	-	Digital Subscriber Line
DSS	-	Distribution Side
DWDM	-	Dense Wavelength Division Multiplexing
FDC	-	Fiber Distribution Cabinet
FDP	-	Fiber Distribution Point
FMR	-	Final Measurement Report
FTB	-	Fiber Termination Box
FWS	-	Fiber Wall Socket
FTTH	-	Fiber-to-the-Home
Gbps	-	Gigabyte per Second
GPON	-	Giga Passive Optical Network
HCD	-	Home Country Direct
ICT	-	Information & Communication Technology
IDD	-	Infrastructure Drawing & Diagram
IoT	-	Internet of Thing
IP	-	Internet Protocol
IPVPN	-	Internet Protocol Virtual Private Network

ISP	-	Internet Service Provider
ITFS	-	International Toll-Free Service
KPOPSABAH	-	K-Kom Point of Presence Sabah
LNS	-	Local Number Solution
MDF	-	Main Distribution Frame
MNO	-	Mobile Network Operator
MSAN	-	Multi-Service Access Node
MSB	-	Main Switchboard
NEPS	-	Network Engineering Planner System
NGBH	-	Next Gen-Backhaul
NPE	-	Network Provider Edge
OCI	-	Oracle Cloud Infrastructure
ODF	-	Optical Distribution Frame
ONU	-	Optical Network Unit
OLT	-	Optical Line Terminal
PDU	-	Power Distribution Unit
PON	-	Passive Optical Network
PoPs	-	Point of Presence
QC	-	Quality Check
QoS	-	Quality of Service
RR	-	Residential Contractor
SIP	-	Session Initiation Protocol
SLD	-	Straight Line Diagram
SMS	-	Short Message Service
Tbps	-	Terabyte per Second
TM	-	Telekom Malaysia
UIFN	-	Universal International Free phone Number
UMS	-	Universiti Malaysia Sabah
UN SDGs	-	United Nations Sustainability Development
UPS	-	Uninterruptible Power Source
VLAN	-	Virtual Local Area Network
VoIP	-	Voice over Internet Protocol
VSAT	-	Very-Small-Aperture Terminal
WIA	-	Wholesale Internet Access

Wi-Fi	-	Wireless Fidelity
WWS	-	Wholesale Wireless Service

CHAPTER 1

INTRODUCTION

1.1 Overview

The goal of creating this Industrial Training Report is to improve the student's writing skills in recording the daily tasks assigned as well as new experiences and tasks learned, as well as the student's commitment and responsibility in recording the daily tasks assigned and preparing this Industrial Training Report assigned. It also helps students comprehend the format of the Final Year Project, which is required of all engineering UMS students in their final year for two semesters.

Beginning with a 10-week Industrial Training program, engineering UMS students fulfil a graduation requirement by participating in a related industry. The 10-week Industrial Training Program began on July 25th and will end on September 30th, 2022. Following the completion of the Industrial Training, students will prepare the Industrial Training Report, which has a deadline of September 14, 2022.

For my Industrial Training, I joined Telekom Malaysia Berhad, the state's largest telecommunications company, for 10 weeks. The selected company had to be approved by the Industrial Training Coordinator to guarantee that it was suitable for the student to develop technical expertise. A supervisor will oversee and guide them throughout the training. The daily tasks of the students must be recorded in a logbook. The academic supervisor will also receive a copy of this logbook so they are informed of the student's activities during training.

1.2 Company Background

Figure 1.1: Company's Logo

Source: LOGOLOOK (2021)

Telecommunications firm Telekom Malaysia Berhad (TM) was established in Malaysia in 1984. It began as the national telecommunications business for fixed line, radio, and television broadcasting services and has since grown to become the country's top provider of broadband data, fixed line, pay television, and network services. Given Malaysians' rapid adoption of digital technology, TM is one of the country's largest government-linked firms, with 21788 people (*Employee Data Telekom Malaysia,2022*) and a market capitalization of more than RM22.95 billion for the second fiscal quarter of 2022 (*Trading Economics, 2022*).

By providing a full range of communication services and solutions in fixed (telephony and broadband), mobile, content, WIFI, cloud, data centre, cybersecurity, IoT, and smart services, Telekom Malaysia Berhad (TM), Malaysia's premier integrated telco, is aiming to enable Digital Malaysia. In a highly competitive world, TM is driven by stakeholder value creation; it lays emphasis on delivering an enhanced customer experience through continual customer service quality improvements and innovations, while focusing on increasing operational efficiency and productivity.

TM has led each phase of the nation's telecommunications technology evolution and will do so going forward in its role as the facilitator of Digital Malaysia. It serves as Malaysia's communications backbone and an ASEAN digital centre, with the most extensive convergence connectivity network and digital infrastructure. TM

remains committed to providing an increasingly digital lifestyle and society, as well as digital businesses and government, in order to make "Life and Business Easier, for a Better Malaysia."

1.3 Company Location

Telekom Malaysia Berhad, Access Network Development (AND) is strategically located at Jalan Bunga Kemunting, Off Jalan Pahlawan, Kepayan, Sabah. It can be found on google maps as shown in the figure below:

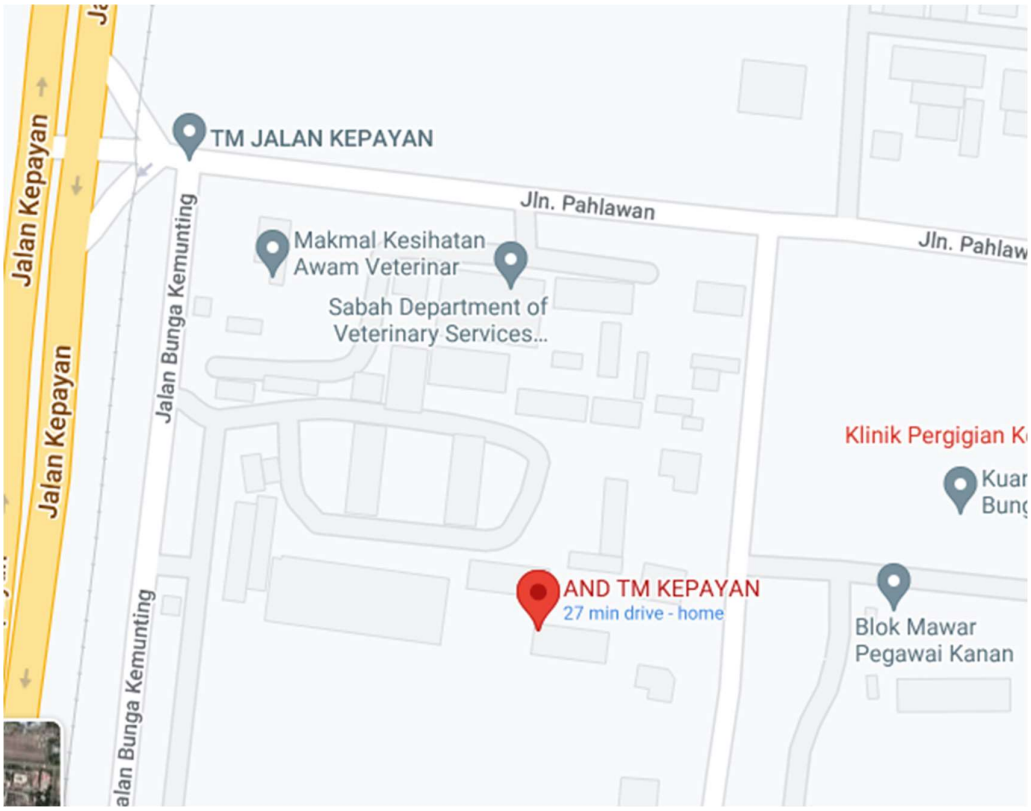


Figure 1.2: Location of AND TM Kepayan

1.4 Department Structure & Organization Chart

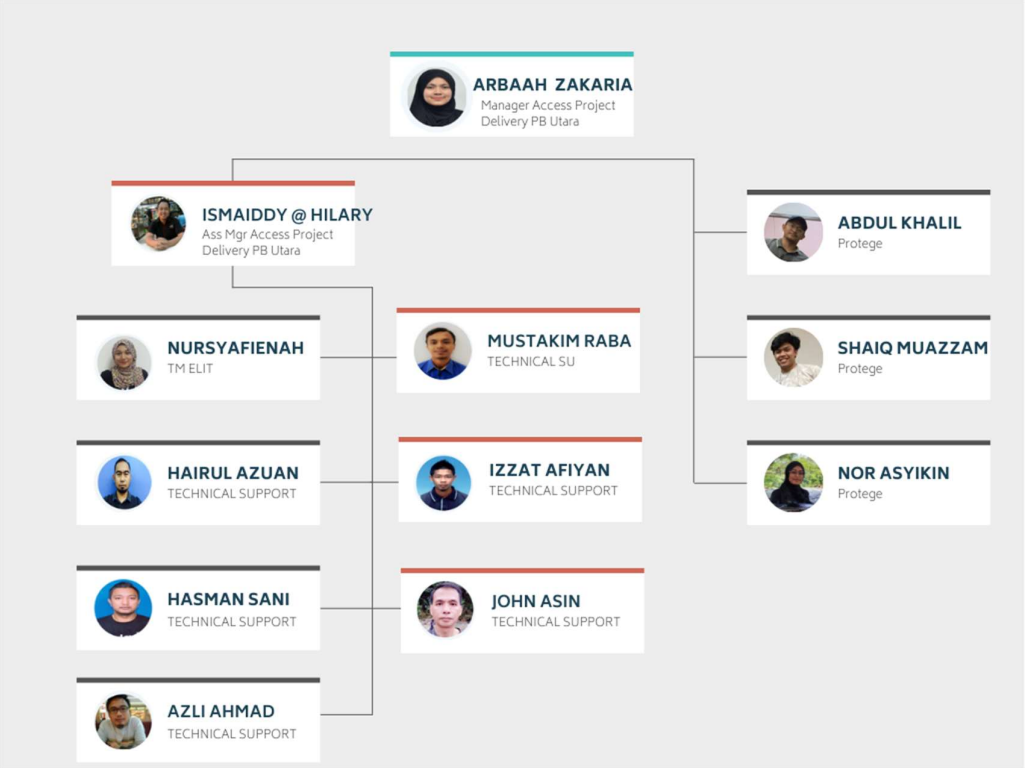


Figure 1.3: Organization Chart Access Network Development (AND) Sabah Project Delivery PB Utara

1.5 Product or Services at Telekom Malaysia

Product and services at Telekom Malaysia split into 5 sectors which are Data Services, Backhaul Services, Voice Services, Access Services, Infra Services & Adjacent Business.

Data Services

Table 1.1 Data Services

Type	Descriptions

Global Ethernet Services	Provides a secure point-to-point and multipoint-to-point Ethernet connectivity deployed over TM's private Global Ethernet Over MPLS network and a strong position in the market globally with over 20 PoPs connectivity owned by TM worldwide. TM as ASEAN Gateway for Layer 2 & Layer 3 services. The implementation of VLAN to have multiple ends customers in a single port also reduce the cost of port and cross-connect.
Global Hosting Services	TM's Global Hosting Services is a data centre facility that rents spaces for servers and other computing hardware. It is a cost-effective and secure way of managing a business. Flexible and resilient, TM's Managed Data Centre The solution combines cost-effectiveness with high levels of customer responsiveness. It also guarantees easy round-the-clock access to resources. TM's Global Network can accommodate customers' global business expansion smoothly with the support of major DCs in Malaysia, Mega-I and Billion Centre in Hong Kong, which are all ready for service. • DC Services via neutral and highly reliable hubs. • Various choices of network service. • One-stop total solution service. Flexibly-structured facility and various ICT-related services.
Global Internet Protocol Virtual Private Network (IPVPN) Services	TM's Global IPVPN Services offers a secure, scalable communication network and flexible architectural option that is customized to increase the efficiency of your business, connecting you're geographically dispersed employees, remote workers, business partners, branch offices, and suppliers across continents in a cost-effective manner.

Global VSAT Services	Global VSAT Services offers a wide range of global connectivity for high-speed Internet access, voice and data throughput up to 1Gbps. Global VSAT technology provides high mobility and cost-effective solutions for users who are seeking an independent communications network connecting a number of remote sites.
International Bandwidth Services	TM's International Bandwidth Services link Malaysia to any destination in the world. We leverage us extensive international network infrastructure, which is comprised of a combination of terrestrial, submarine fibre optic cable systems and satellites, to offer a range of high-quality and reliable bandwidth services.
International Ethernet Services	TM's International Ethernet Services is designed to deliver high bandwidth capacity, flexible service scalability and reliable access solutions for corporate networks to achieve a competitive edge in today's business world.
Optical Bandwidth	Optical Bandwidth offers dedicated point-to-point transmission riding on Dense Wavelength Division Multiplexing (DWDM) with speeds ranging from 2.5Gbps to 100Gbps. It caters to the growing the complexity of customers' demands, from very high-speed data transfer to video streaming that requires huge bandwidth capacity.
TM IP Transit	TM IP Transit service is specifically designed to provide very high performance of global and regional connectivity through a single ASN (AS4788). Powered by one of the most interconnected networks, TM provides a reliable network and a scalable capacity with guaranteed delivery of customers' critical

	information. TM's core IP backbone network spans over 30 major cities around the world and has over 4.29Tbps of network traffic diversely routed on different submarine fibre cables focused on providing connectivity within and to/from Asia. As a single-provider solution, TM provides a scalable platform specifically geared toward market growth for global and regional carriers.

Source: TMWholeSale (2022)

Backhaul Services

Table 1.2 Backhaul Services

Type	Descriptions
IP Wholesale	IP Wholesale is an essential component that connects a network's PoPs to TM's IP Core Network backbone to enable end-to-end IP connectivity. IP Wholesale provides an immediate and cost-effective means for businesses to deliver IP-Managed services nationwide.
My1Hub	My1Hub™ is a one-stop solution that provides competitive Internet bandwidth and hosting services in the region. We facilitate your comprehensive ICT needs through seamless and reliable connectivity, enabling efficient reachability to the Internet and Global networks.
TM Next-Gen Backhaul™ (NGBH™)	Presently, the bandwidth demand from MNOs keeps increasing. With the deployment of Long Term Evolution (LTE), MNOs will need to improvise their network capacity to cater to an even greater surge in bandwidth demand. NGBH™ offers a comprehensive mobile backhaul solution over Ethernet to MNOs, providing more bandwidth and Quality of Service

	(QoS) granularity than legacy Time-Division Multiplexing (TDM) services, with higher degrees of flexibility and better scalability.
Wholesale Ethernet	Awarded "Asia Pacific's Best Wholesale Ethernet Service Provider", TM now brings you the advantages of Carrier Class Ethernet in the wholesale business arrangement to provide cost-effective, robust, scalable and seamless connectivity solutions for business needs.
Wholesale Internet Access	Wholesale Internet Access (WIA) is a premium Internet service for licensed operators of Internet Service Provider (ISP) networks and content providers. Designed to cater to high-speed and dedicated Internet access requirements, WIA offers the highest network scalability, security, and flexibility to customers.

Source: TMWholeSale (2022)

Voice Services

Table 1.3: Voice Services

Type	Descriptions
Bilateral Voice Services	TM has voice interconnects to more than 287 carriers in over 73 countries. Being an incumbent operator in Malaysia (primarily fixed and broadband), the established inter-carrier arrangement with all other domestic mobile carriers ensures that TM is capable of terminating Malaysia's traffic with the highest quality and clarity. Riding on bilateral arrangements, it is also able to support International Toll-Free Service (ITFS), Home Country Direct (HCD), and Universal International Freephone Number (UIFN).

Global SMS Hub	Global SMS Hub enables users to access hundreds of mobile networks around the world by using just one connection and one single contract. No more hassle to establish multiple agreements to terminate Application-to-Peer (A2P) International SMS traffic. No more worries about different mobile technologies.
Hubbing Voice Services	TM acts as a transit hub for voice termination to over 1,000 fixed and mobile destinations, both domestically and internationally. It offers Standard and Premium hubbing service options, with different routing and pricing to ensure the best combination of quality and price ratio.
Local Number Solution (LNS)	Providing Malaysia numbering as a service that provides call communication to end users of Carrier over an IP network. Callers from Malaysia or around the world may call the Malaysia local numbering provided by TM specifically the 0154-600 XXXX numbers. Voice calls are collected by TM voice Switches and converted to VoIP (SIP). Calls are then routed via IP links to Carrier's SIP Server in Carrier's VoIP network. From there, they are transported to the Carrier's end users. This is a solution for the Carrier in delivering their services such as local numbering, virtual numbering, conferencing, and any other businesses that require Malaysia numbering to serve targeted end users.
Wholesale VoIP (Voice over Internet Protocol)	Wholesale VoIP service offers cost-effective communication solutions without compromising on the quality of the call communication.

Sources: TMWholeSale (2022)

Access Services

Table 1.4: Access Services

Type	Descriptions
DSL Wholesale	DSL (Digital Subscriber Line) Wholesale connects users to the Internet via a conventional phone line. It enables connectivity for broadband providers to offer Internet service to end-users through TM's wired broadband network.
Wholesale Wireless Service (WWS)	These days, connectivity to the Internet permeates all actions and all ages. Be it for leisure or work, customers see the availability of WiFi at an establishment or location as a bonus. This, in turn, can be used as an advantage to differentiate your business. With our WWS, we can give you the advantage of providing WiFi to your customers in an affordable and convenient manner.

Source: TMWholeSale (2022)

Infra Services

Table 1.5: Infra Services

Type	Descriptions
Tenancy	Tenancy service is a commercially negotiated wholesale space rental service where the service providers may co-locate their types of equipment at any of TM's premises.

Source: TMWholeSale (2022)

Adjacent Business

Table 1.6: Adjacent Business

Type	Descriptions
TM Content Delivery Network (TM CDN)	Experience media like never before with TM CDN. Gratifying entertainment experience anytime,

	anywhere with shorter connection distance and faster load time.
Professional Services	Professional Services is a service that is designed to ensure your project is well-planned and accelerated by providing related training, consultancy, and structured project management.

Source: TMWholeSale (2022)

Summary TM WholeSale Product Listing

Table 1.7: Summary TM WholeSale Product Listing

Category	Products/Solutions
Data Services	• Global Ethernet Services • Global Hosting Services • Global Internet Protocol Virtual Private Network (IPVPN) Services • Global VSAT Services • International Bandwidth Services • International Ethernet Services • Optical Bandwidth • TM IP Transit
Backhaul Services	• IP Wholesale • My1Hub™ • TM Next-Gen Backhaul™ (NGBH™) • Wholesale Ethernet • Wholesale Internet Access
Voice Services	• Bilateral Voice Services • Global SMS Hub • Hubbing Voice Services • Local Number Solution • Wholesale VoIP
Access Services	• DSL Wholesale

	• Wholesale Wireless Service
Infra Services	• Tenancy
Adjacent Business	• TM Content Delivery Network (TM CDN) • Professional Services

1.6 Telekom Malaysia Business Type

Telekom Malaysia Bhd. engages in the establishment, maintenance, and provision of telecommunication services and solutions in broadband, data, and fixed-line. It operates through the following segments: unifi, TM ONE, TM GLOBAL, and Shared Service and Others (NIKKEI Asia,2022). The unifi segment comprises retail business, which refers to telecommunication services and communications solutions to households, individuals as well as small and medium enterprise companies. The TM ONE segment includes telecommunications services and communications solutions to small and medium businesses as well as corporate and government customers. The TM GLOBAL segment covers the wholesale telecommunications services delivered over the group's networks to domestic and international carriers. The Shared Services and Others segment refers to the information technology and network, and its subsidiaries. The company was founded in 1946 and is headquartered in Kuala Lumpur, Malaysia.

1.7 Activities or Workflow inside TM AND PB Utara Department

The activities or workflow by The Access Network Delivery (AND) PB Utara is mainly focusing on project progress or status update. Here is a short summary flow of the main task:

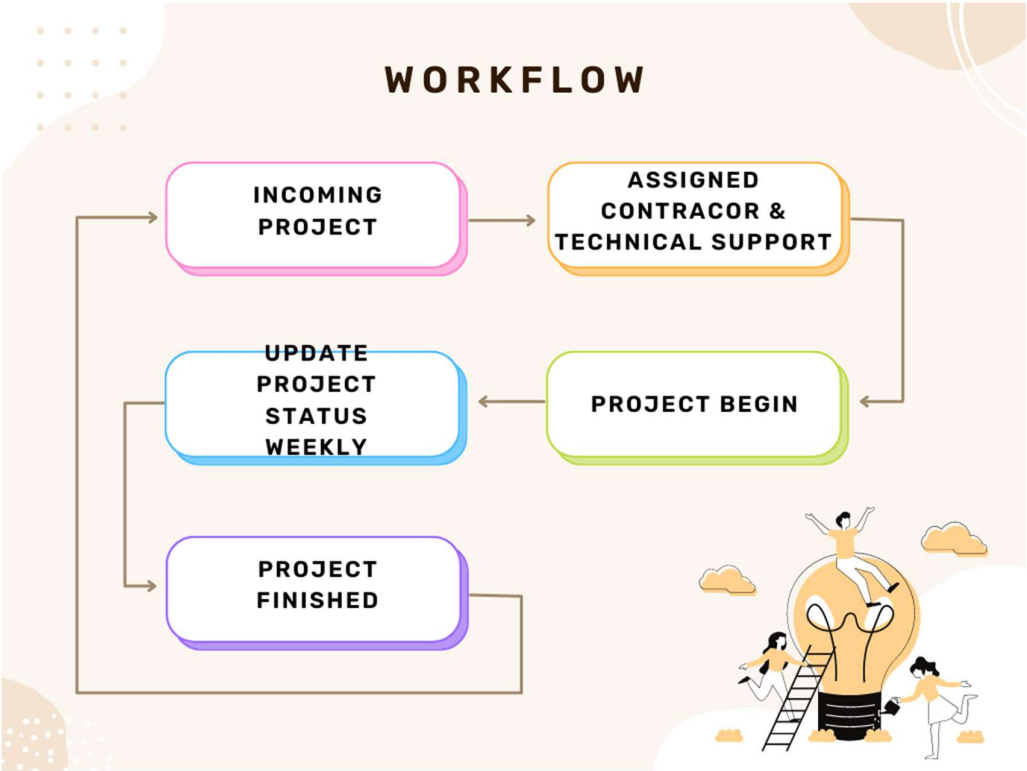


Figure 1.4: Main task Project Delivery PB Utara

1.8 Objective of Industrial Training

My training was enhanced in Telekom Malaysia Berhad, Access Network Development Sabah under Access Project Delivery PB Utara Department. The objective of this organization is to deliver as many as possible projects in terms of services & products of the highest quality to the customer. Prior to graduating and entering the workforce, the students' industrial training gives me the opportunity to study in a real working setting. Practical experience, observation, and job performance, also enable me to advance my knowledge. The key objective of the assigned assignment is to implement knowledge and skills obtained from the faculty, to learn and improve knowledge and new skills during the internship, and to in still the excellent values of integrity, self-confidence, and responsibility, to strengthen soft skills such as communication, decision-making, and leadership, to develop responsibility and

commitment, to documenting tasks in the logbook every day, and to learn how to approach outsiders, give commands, and operate as a team.

CHAPTER 2

JOB TRAINING, EXPERIENCE & ACCOMPLISHMENTS

2.1 Work Experienced during Industrial Training

Week 1

It begins during the first week of my Industrial training at the Access Network Development (AND), Telekom Malaysia Berhad, Kepayan, Sabah, where I meet the employees and my supervisor. The infrastructure of the building is simple and positioned in a somewhat hidden location if the map is not carefully analysed. The interiors have a lot of files everywhere, from the desk to the shelf, each with its own color-coded system. As shown in Figure 2.2, the walk space is sufficiently compact with a table and chair. The admin told me about the office's rules and regulations as a newcomer. When I met with my supervisor, she informed me right away that there would be no Industrial Training plan for the entire week. The plan will be provided as soon as she has a task to assign to me each week. Following our discussion, she came up with a plan and assigned me the duty of creating a graphical website for the department. As a result, I need to do some study on it. My supervisor also led a safety awareness programme called "Arahan Kerja Selamat" (AKS) during the same week.

Figure 2.1: AND TM Kepayan (Outdoor)

Figure 2.2: AND TM Kepayan (Indoor)

Week 2

Week 2 began with the website's required state being in progress. There are numerous technical tasks to complete in order for the website to work correctly. I also talked with my boss to picking some ideas from the conversation. As a result, a

prototype of the website has been completed, and some feedback from my supervisor and co-workers must be considered. I did some dashboard performance for the department while working on the Department website. I gained some new Excel skills while working on the dashboard. The PROTEGE also taught me theoretical information about the Electrical System Telekom Malaysia.

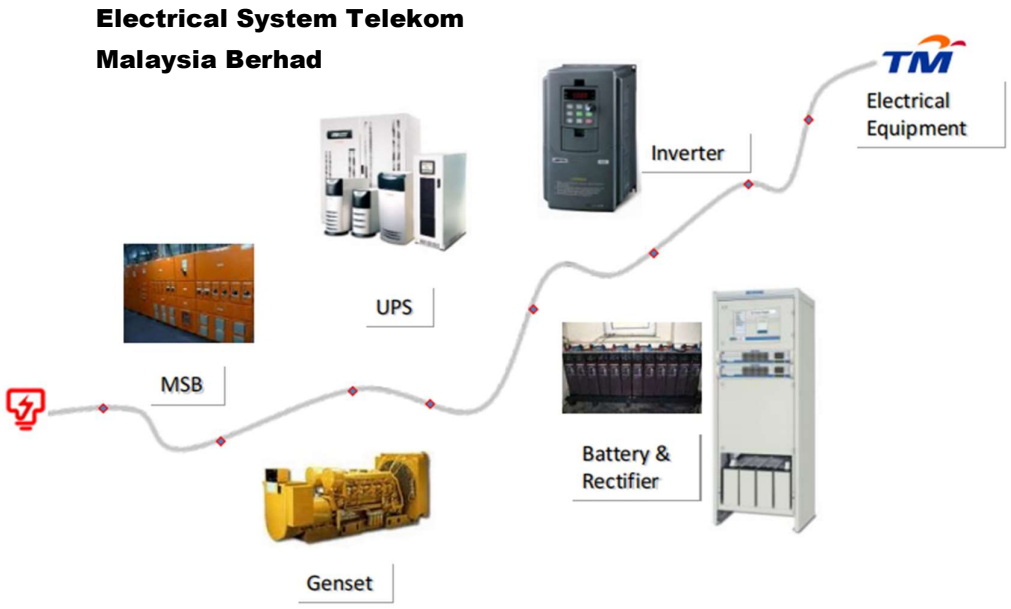


Figure 2.3: Electrical System Telekom Malaysia Berhad

Week 3

The website is launched in week 3, after which it has to be monitored and troubleshoot as needed. My boss assigns me another weekly duty to complete the Project Commitment versus Actual PB Utara PowerPoint slide when I finish the website. Every week, the weekly huddle slide must be updated for my supervisor's presentation to Telekom Malaysia's upper management. The PROTEGE PB Utara will then teach me conceptually about the fibre-to-the-home (FTTH) network. The following day, understand about Asset Tagging and Verification.

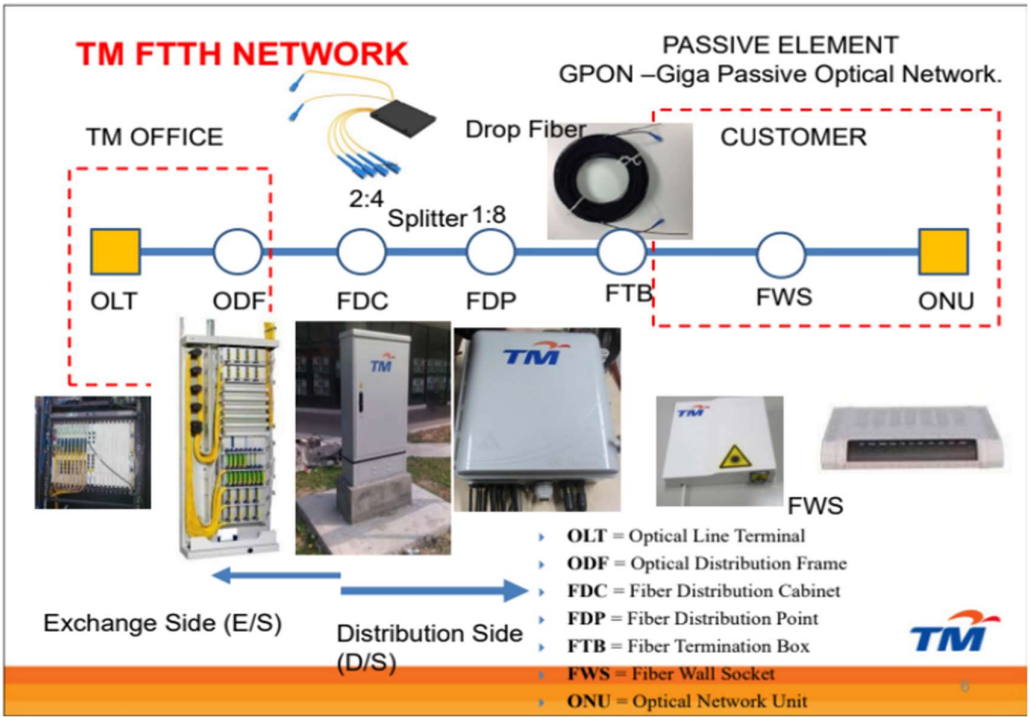


Figure 2.4: FTTH Network

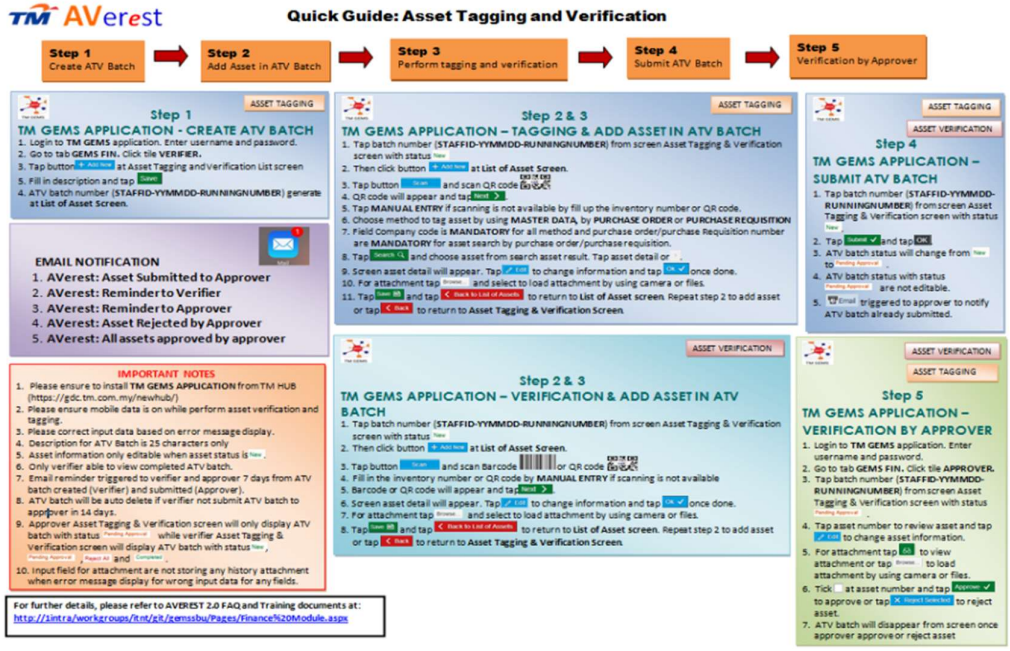


Figure 2.5: Quick Guide for Asset Tagging & Verification

Week 4

In week 4, another big task is given, this time concerning the Infrastructure Drawing & Diagram (IDD) of a project. The diagram represents the project's overall summary plan. My supervisor gave me training time to complete the diagram and compare it to her (the one she had already completed) and look for errors if they were not the same. She guides me through the diagram step by step.

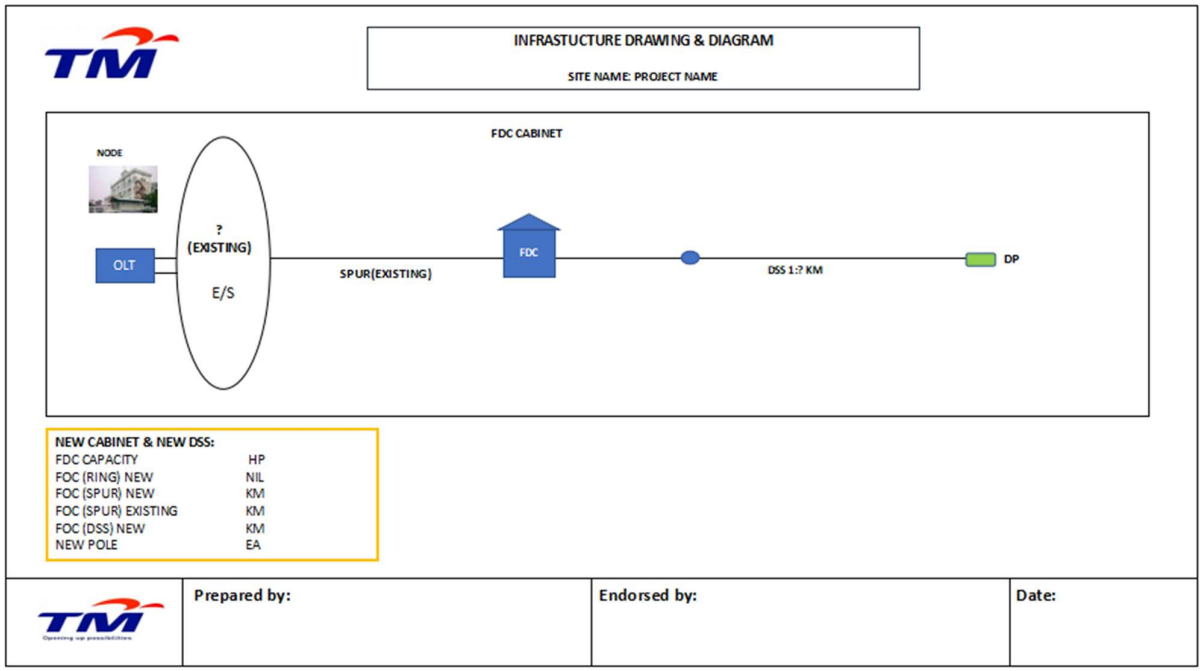
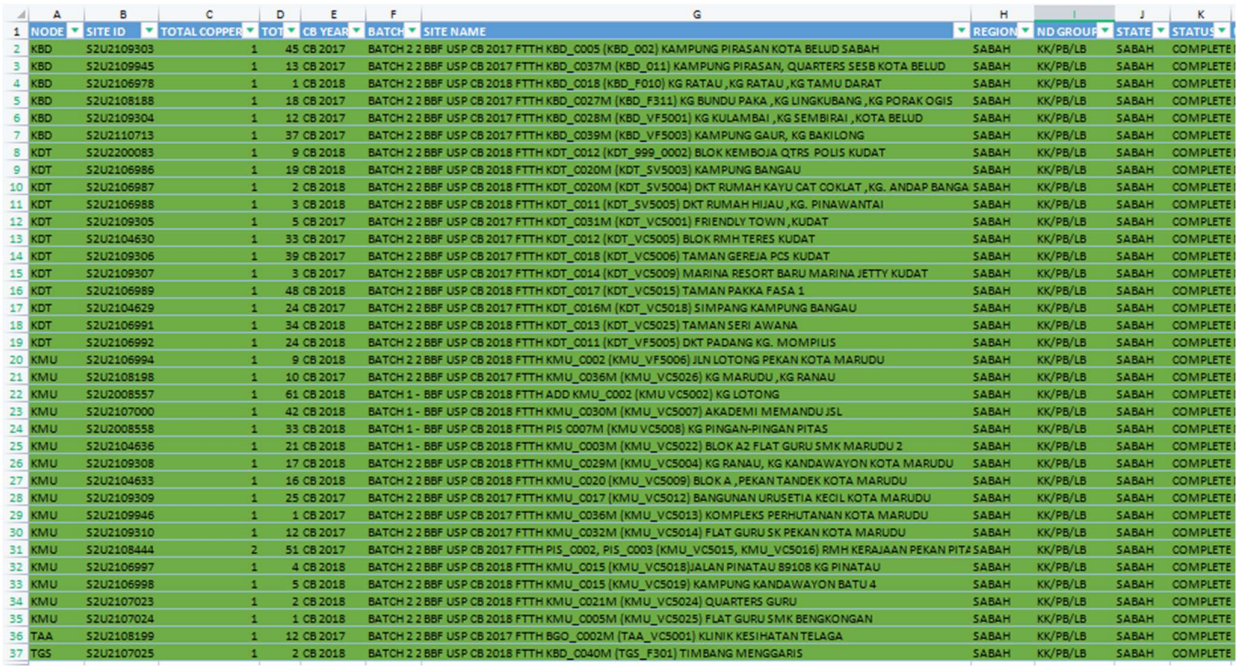


Figure 2.6: Infrastructure Drawing & Diagram (IDD) Template

Week 5

My Industrial Training became more intense when my supervisor assigned PROTEGE and me to work on Debt-Coverage-Ratio (DCR). The Infrastructure Drawing & Diagram is required for DCR submission. DCR is typically used to claim project funds for a project that has already been finished. For August and September 2022 entries, 36 projects must be claimed. As a consequence, 36 Infrastructure Drawings and diagrams would be required. The time spent searching for data,

analysing data, calculating data, organising data, uploading data, and so on makes the Infrastructure Drawing & Diagram (IDD) as well as the Debt-Coverage-Ratio (DCR) time-consuming to be completed. At the same time, do the Weekly Huddle slide.



	A	B	C	D	E	F	G	H	I	J	K
1	NODE	SITE ID	TOTAL COPPER	TOT	CB YEAR	BATCH	SITE NAME	REGION	ND GROUP	STATE	STATUS
2	KBD	S2U2109303	1	45	CB 2017	BATCH 2 2 BBF USP CB 2017 FTTH KBD_C005 (KBD_002) KAMPUNG PIRASAN KOTA BELUD SABAH		SABAH	KK/PB/LB	SABAH	COMPLETE
3	KBD	S2U2109945	1	13	CB 2017	BATCH 2 2 BBF USP CB 2017 FTTH KBD_C037M (KBD_011) KAMPUNG PIRASAN, QUARTERS SESB KOTA BELUD		SABAH	KK/PB/LB	SABAH	COMPLETE
4	KBD	S2U2106978	1	1	CB 2018	BATCH 2 2 BBF USP CB 2018 FTTH KBD_C018 (KBD_F010) KG RATAU ,KG RATAU ,KG TAMU DARAT		SABAH	KK/PB/LB	SABAH	COMPLETE
5	KBD	S2U2108188	1	18	CB 2017	BATCH 2 2 BBF USP CB 2017 FTTH KBD_C027M (KBD_F311) KG BUNDU PAKA ,KG LINGKUBANG ,KG PORAK OGIS		SABAH	KK/PB/LB	SABAH	COMPLETE
6	KBD	S2U2109304	1	12	CB 2017	BATCH 2 2 BBF USP CB 2017 FTTH KBD_C028M (KBD_VF5001) KG KULAMBAI ,KG SEMBIRAI ,KOTA BELUD		SABAH	KK/PB/LB	SABAH	COMPLETE
7	KBD	S2U2110713	1	37	CB 2017	BATCH 2 2 BBF USP CB 2017 FTTH KBD_C039M (KBD_VF5003) KAMPUNG GAUR, KG BAKILONG		SABAH	KK/PB/LB	SABAH	COMPLETE
8	KDT	S2U2200083	1	9	CB 2018	BATCH 2 2 BBF USP CB 2018 FTTH KDT_C012 (KDT_999_0002) BLOK KEMBOJA QTRS POLIS KUDAT		SABAH	KK/PB/LB	SABAH	COMPLETE
9	KDT	S2U2106986	1	19	CB 2018	BATCH 2 2 BBF USP CB 2018 FTTH KDT_C020M (KDT_SV5003) KAMPUNG BANGAU		SABAH	KK/PB/LB	SABAH	COMPLETE
10	KDT	S2U2106987	1	2	CB 2018	BATCH 2 2 BBF USP CB 2018 FTTH KDT_C020M (KDT_SV5004) DKT RUMAH KAYU CAT COKLAT ,KG. ANDAP BANGA		SABAH	KK/PB/LB	SABAH	COMPLETE
11	KDT	S2U2106988	1	3	CB 2018	BATCH 2 2 BBF USP CB 2018 FTTH KDT_C011 (KDT_SV5005) DKT RUMAH HIJAU ,KG. PINAWANTAI		SABAH	KK/PB/LB	SABAH	COMPLETE
12	KDT	S2U2109305	1	5	CB 2017	BATCH 2 2 BBF USP CB 2017 FTTH KDT_C031M (KDT_VC5001) FRIENDLY TOWN ,KUDAT		SABAH	KK/PB/LB	SABAH	COMPLETE
13	KDT	S2U2104630	1	33	CB 2017	BATCH 2 2 BBF USP CB 2017 FTTH KDT_C012 (KDT_VC5005) BLOK RMH TERES KUDAT		SABAH	KK/PB/LB	SABAH	COMPLETE
14	KDT	S2U2109306	1	39	CB 2017	BATCH 2 2 BBF USP CB 2017 FTTH KDT_C018 (KDT_VC5006) TAMAN GEREJA PCS KUDAT		SABAH	KK/PB/LB	SABAH	COMPLETE
15	KDT	S2U2109307	1	3	CB 2017	BATCH 2 2 BBF USP CB 2017 FTTH KDT_C014 (KDT_VC5009) MARINA RESORT BARU MARINA JETTY KUDAT		SABAH	KK/PB/LB	SABAH	COMPLETE
16	KDT	S2U2106989	1	48	CB 2018	BATCH 2 2 BBF USP CB 2018 FTTH KDT_C017 (KDT_VC5015) TAMAN PAKKA FASA 1		SABAH	KK/PB/LB	SABAH	COMPLETE
17	KDT	S2U2104629	1	24	CB 2017	BATCH 2 2 BBF USP CB 2017 FTTH KDT_C016M (KDT_VC5018) SIMPANG KAMPUNG BANGAU		SABAH	KK/PB/LB	SABAH	COMPLETE
18	KDT	S2U2106991	1	34	CB 2018	BATCH 2 2 BBF USP CB 2018 FTTH KDT_C013 (KDT_VC5025) TAMAN SERI AWANA		SABAH	KK/PB/LB	SABAH	COMPLETE
19	KDT	S2U2106992	1	24	CB 2018	BATCH 2 2 BBF USP CB 2018 FTTH KDT_C011 (KDT_VF5005) DKT PADANG KG. MOMPILIS		SABAH	KK/PB/LB	SABAH	COMPLETE
20	KMU	S2U2106994	1	9	CB 2018	BATCH 2 2 BBF USP CB 2018 FTTH KMU_C002 (KMU_VF5006) JLN LOTONG PEKAN KOTA MARUDU		SABAH	KK/PB/LB	SABAH	COMPLETE
21	KMU	S2U2108198	1	10	CB 2017	BATCH 2 2 BBF USP CB 2017 FTTH KMU_C036M (KMU_VC5026) KG MARUDU ,KG RANAU		SABAH	KK/PB/LB	SABAH	COMPLETE
22	KMU	S2U2008557	1	61	CB 2018	BATCH 1 - BBF USP CB 2018 FTTH ADD KMU_C002 (KMU VC5002) KG LOTONG		SABAH	KK/PB/LB	SABAH	COMPLETE
23	KMU	S2U2107000	1	42	CB 2018	BATCH 1 - BBF USP CB 2018 FTTH KMU_C030M (KMU_VC5007) AKADEMI MEMANDU JSL		SABAH	KK/PB/LB	SABAH	COMPLETE
24	KMU	S2U2008558	1	33	CB 2018	BATCH 1 - BBF USP CB 2018 FTTH PIS C007M (KMU VC5008) KG PINGAN-PINGAN PITAS		SABAH	KK/PB/LB	SABAH	COMPLETE
25	KMU	S2U2104636	1	21	CB 2018	BATCH 1 - BBF USP CB 2018 FTTH KMU_C003M (KMU_VC5022) BLOK A2 FLAT GURU SMK MARUDU 2		SABAH	KK/PB/LB	SABAH	COMPLETE
26	KMU	S2U2109308	1	17	CB 2018	BATCH 2 2 BBF USP CB 2018 FTTH KMU_C029M (KMU_VC5004) KG RANAU, KG KANDAWAYON KOTA MARUDU		SABAH	KK/PB/LB	SABAH	COMPLETE
27	KMU	S2U2104633	1	16	CB 2018	BATCH 2 2 BBF USP CB 2018 FTTH KMU_C020 (KMU_VC5009) BLOK A ,PEKAN TANDEK KOTA MARUDU		SABAH	KK/PB/LB	SABAH	COMPLETE
28	KMU	S2U2109309	1	25	CB 2017	BATCH 2 2 BBF USP CB 2017 FTTH KMU_C017 (KMU_VC5012) BANGUNAN URUSETIA KECIL KOTA MARUDU		SABAH	KK/PB/LB	SABAH	COMPLETE
29	KMU	S2U2109946	1	1	CB 2017	BATCH 2 2 BBF USP CB 2017 FTTH KMU_C036M (KMU_VC5013) KOMPLEKS PERHUTANAN KOTA MARUDU		SABAH	KK/PB/LB	SABAH	COMPLETE
30	KMU	S2U2109310	1	12	CB 2017	BATCH 2 2 BBF USP CB 2017 FTTH KMU_C032M (KMU_VC5014) FLAT GURU SK PEKAN KOTA MARUDU		SABAH	KK/PB/LB	SABAH	COMPLETE
31	KMU	S2U2108444	2	51	CB 2017	BATCH 2 2 BBF USP CB 2017 FTTH PIS_C002, PIS_C003 (KMU_VC5015, KMU_VC5016) RMH KERAJAAN PEKAN PITA		SABAH	KK/PB/LB	SABAH	COMPLETE
32	KMU	S2U2106997	1	4	CB 2018	BATCH 2 2 BBF USP CB 2018 FTTH KMU_C015 (KMU_VC5018)JALAN PINATAU 89108 KG PINATAU		SABAH	KK/PB/LB	SABAH	COMPLETE
33	KMU	S2U2106998	1	5	CB 2018	BATCH 2 2 BBF USP CB 2018 FTTH KMU_C015 (KMU_VC5019) KAMPUNG KANDAWAYON BATU 4		SABAH	KK/PB/LB	SABAH	COMPLETE
34	KMU	S2U2107023	1	2	CB 2018	BATCH 2 2 BBF USP CB 2018 FTTH KMU_C021M (KMU_VC5024) QUARTERS GURU		SABAH	KK/PB/LB	SABAH	COMPLETE
35	KMU	S2U2107024	1	1	CB 2018	BATCH 2 2 BBF USP CB 2018 FTTH KMU_C005M (KMU_VC5025) FLAT GURU SMK BENGKONGAN		SABAH	KK/PB/LB	SABAH	COMPLETE
36	TAA	S2U2108199	1	12	CB 2017	BATCH 2 2 BBF USP CB 2017 FTTH BGO_C002M (TAA_VC5001) KLINIK KESIHATAN TELAGA		SABAH	KK/PB/LB	SABAH	COMPLETE
37	TGS	S2U2107025	1	2	CB 2018	BATCH 2 2 BBF USP CB 2018 FTTH KBD_C040M (TGS_F301) TIMBANG MENGGARIS		SABAH	KK/PB/LB	SABAH	COMPLETE

Figure 2.7: 36 Projects IDD for DCR Completed

Week 6

After we finalise all of the infrastructure drawings and diagrams in week 5, we must first complete the Debt-Coverage-Ratio submissions for August 2022. The final step in completing the DCR is to upload the necessary files to the SPHERE website. Meanwhile, my boss assigned me to work on the Network Diagram of a project that needed to be delivered. PROTEGE PB Utara taught me another notion of Triple Play Services.

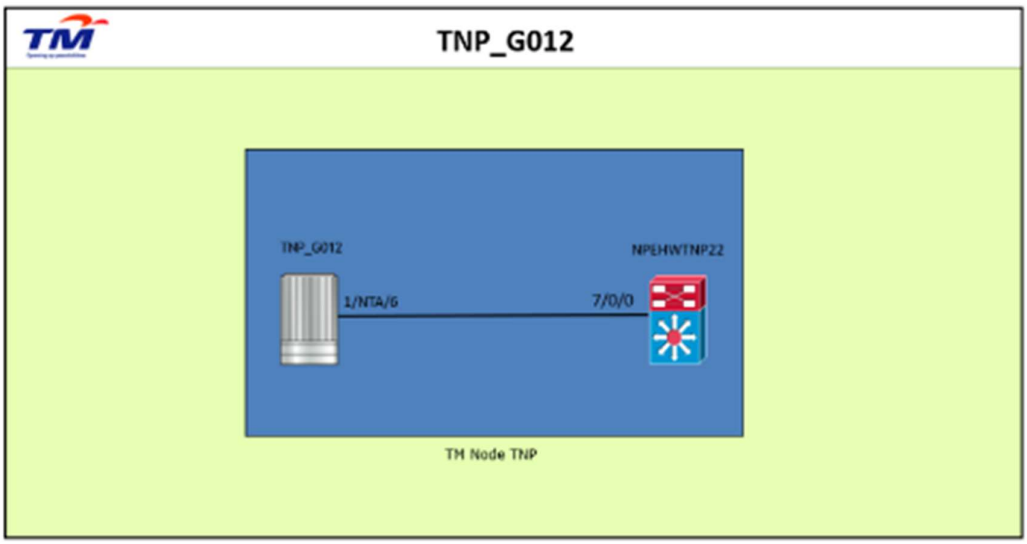


Figure 2.8: Network Diagram Sample

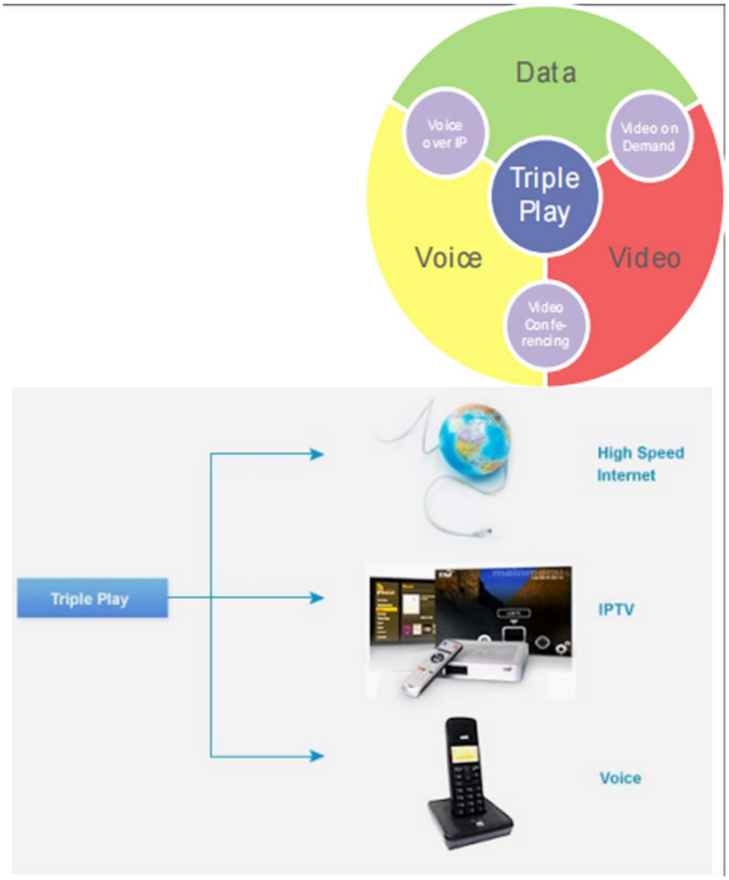


Figure 2.9: Triple Play Services Concept

Week 7

Week 7 begins with a weekly duty, the Debt-Coverage-Ratio (DCR) for August 2022 submissions. The technical support staff at the main office shows me how to utilise the Google Earth Pro software, which greatly facilitates their work. He taught me since technical support requested that I accompany him on a site visit to Kota Marudu. During a project site visit, technical support meets with the RR, which is another name for the vendor or contractor. They're debating where to put new cables, poles, and so on. Google Earth Pro software is used as a guide for the Technical Support. During the same week, I practised some technical abilities in Microsoft Excel to change certain data. As per usual, complete the weekly huddle slides for the Project Commitment vs. Actual for the first week of September. There is a meeting about PB Utara's implementation of the 5th generation network on Friday of week 7. I volunteered to participate in the meeting so that I could gain some insight into how the planning department handles difficult matters.

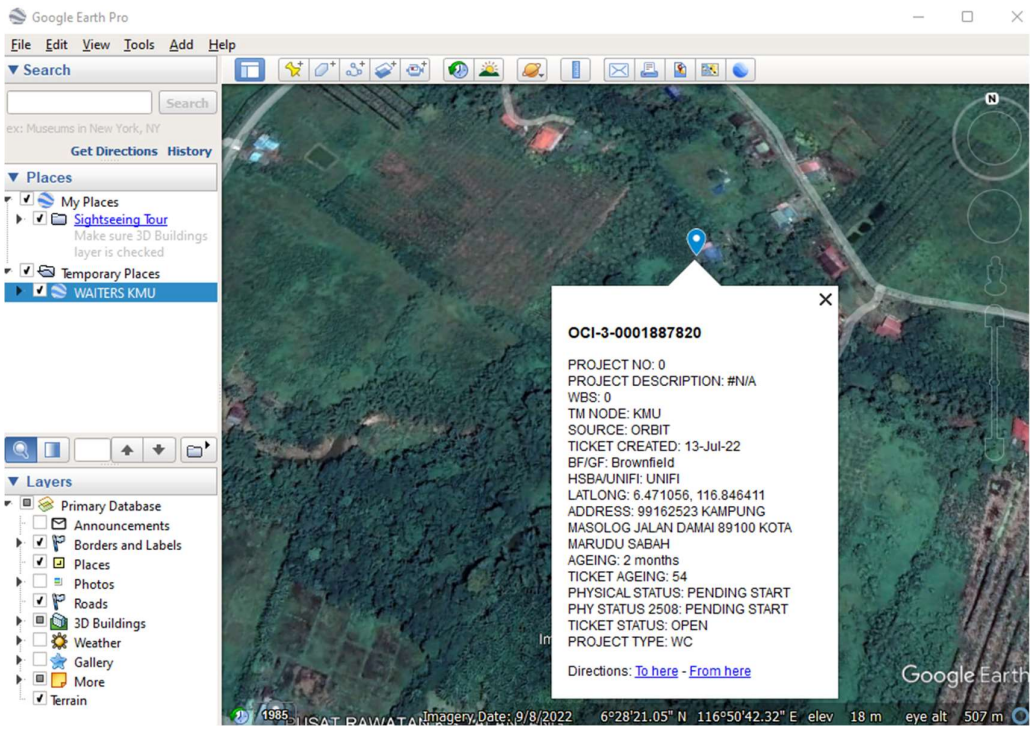


Figure 2.10: OCI Project in Google Earth Pro Software

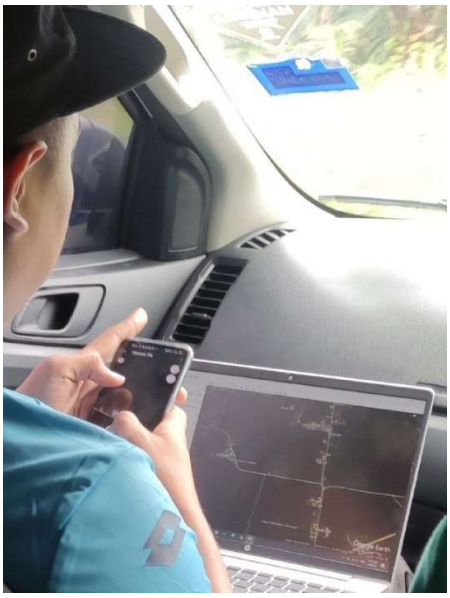


Figure 2.11: Using Google Earth Pro when Site Visit

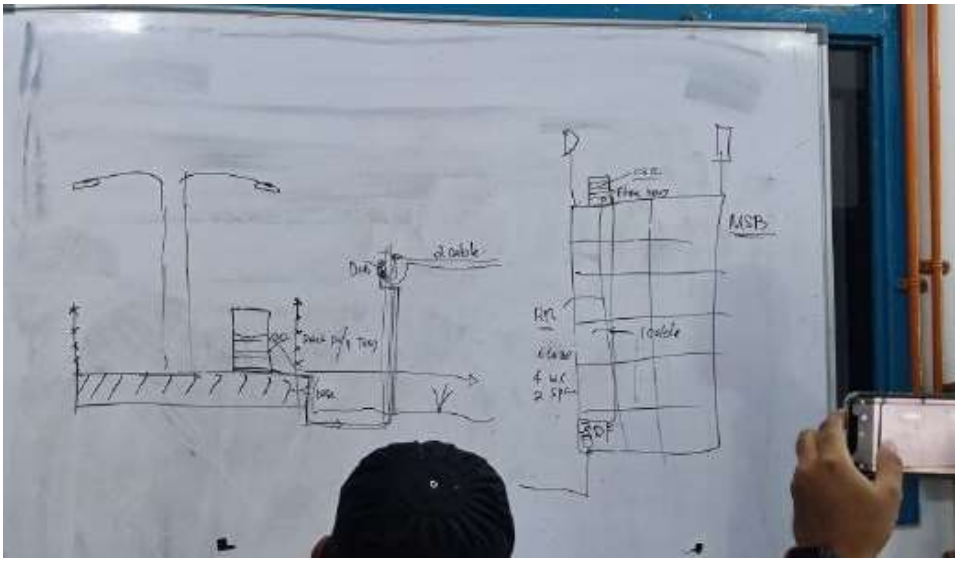


Figure 2.12: Scenario's when installing 5G Mobile Network

Week 8

In week 8, I explored Microsoft Excel, this time with the syntax SUMPRODUCT. Part 2 of my site visit to Kota Marudu resumes with permission from my supervisor. We went to the project site and discussed work with RR during the

site visit. Following that, we travel to Kota Marudu Exchange to patch the ready-to-use unifi service network. There, I also learned about various networking devices. At the main office, I specifically requested the code name of each project in order to learn background more about it from my supervisor. In terms of theoretical knowledge, I learned about the detail of the Multi-Service Access Node (MSAN) from the PROTEGE PB Utara.

Figure 2.13: Networking Devices inside Exchange Kota Marudu

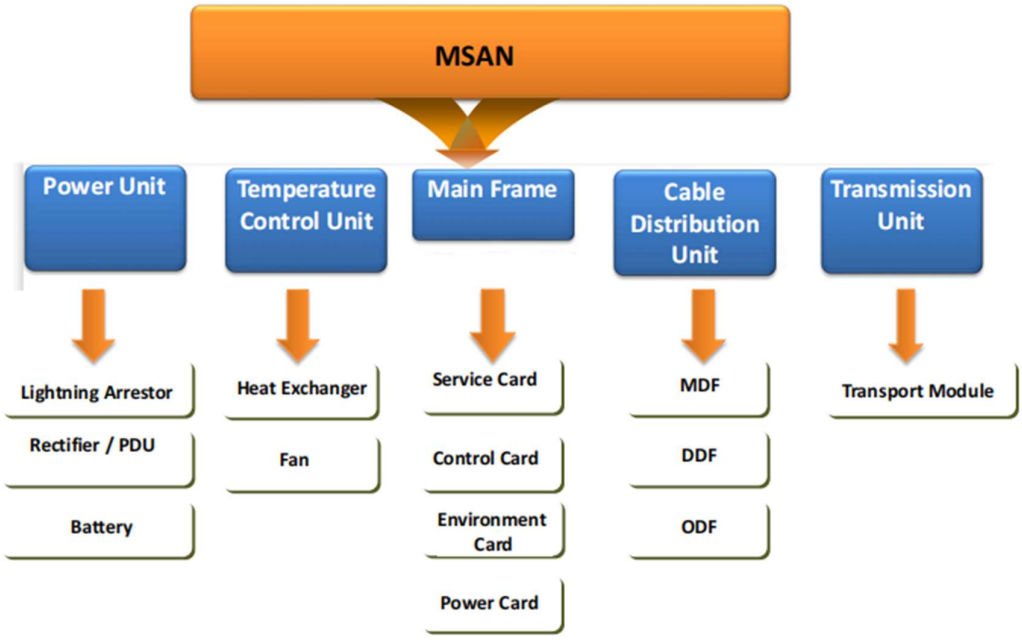


Figure 2.14: Multi-Service Access Node

Week 9

The technical support team requests assistance in rechecking and tallying the summary of the As-Built Drawing with the Infrastructure Drawing & Diagram (IDD). Both documents should have the same summary. PROTEGE PB Utara provided me with information on Fibre-to-the-Home Passive Optical Network (PON) Technology. The same week, TM Elite instructed PROTEGE PB Utara and I on how to create a PLAN with the help of the Network Engineering Planner System (NEPS) programme.

The final result of the PLAN would be referred to as a project's As-Built Diagram. My weekly work for Debt-Coverage-Ratio DCR submissions in September 2022 is still ongoing. Next, I met with PROTEGE PB Selatan to learn more about the technical aspects of installing Cell Site Routers (CSR) for 5 Generations (5G) communication. The software used to activate the CSR is the PuTTY software. Finally, my supervisor asked me to revise the PLAN that had already been produced for DCR submissions. I edited the image in CANVA software.

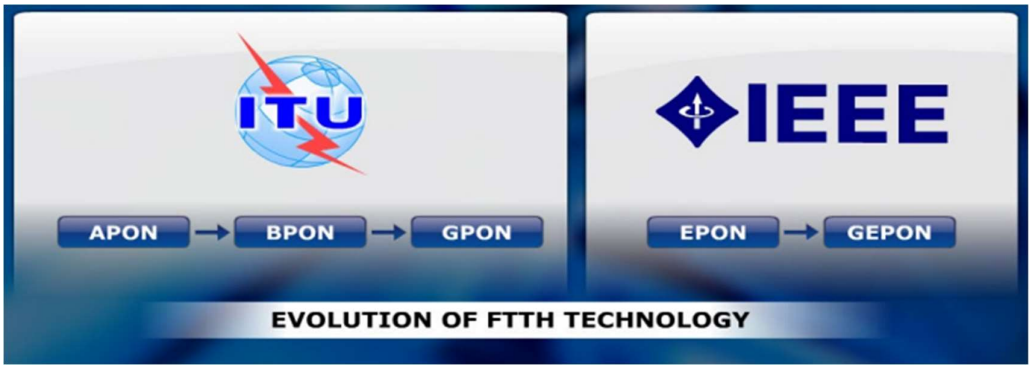


Figure 2.15: Evolution of FTTH Technology

Figure 2.16: TM Elite teach about NEPS Software

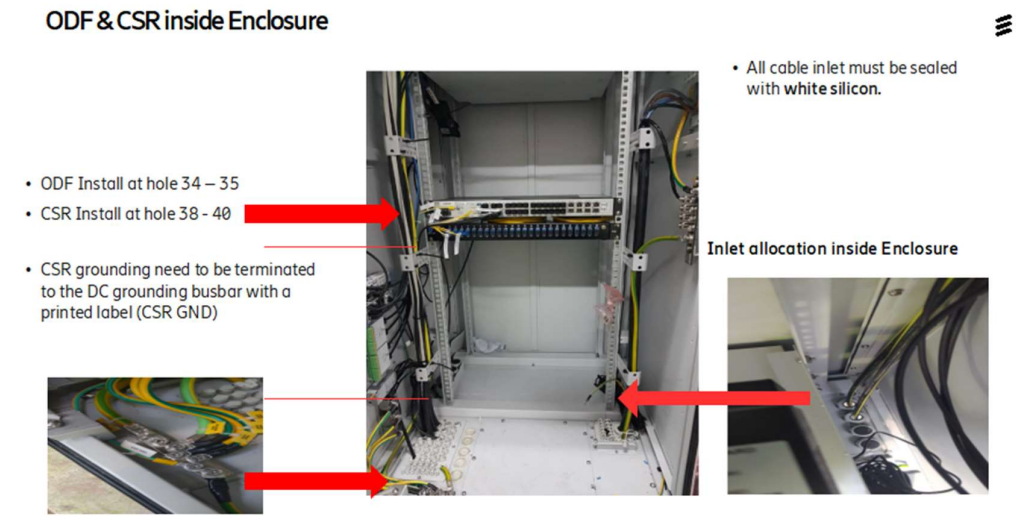


Figure 2.17: Modem Guideline

Week 10

My final week activities include following Technical Support to Penampang Exchange, Menggatal Exchange, Tuaran Exchange, and Tamparuli Exchange to connect the patch code from the Network Provider Edge (NPE) block to the Fibre Distribution Frame (FDF) block. I'm assisting them in pulling the cable as a group. We then proceed to Ranau Exchange the next day to patch the ready-to-use unifi network. I approach TM Elite and request that he provide me with some basic information regarding GRANITE Private Software. The GRANITE Software is the heart of Telekom Malaysia, and it is exclusively accessible to a limited people. My boss then sends me a link to Microsoft Power BI so I can keep track of her new 5 Generations (5G) projects. I met a contractor who was in charge of powering up the new Optical Line Terminal (OLT) while patching the cable at Tamparuli Node. He used SecureCRT to test the new OLT's details and ensure that it was functioning properly. Meanwhile, I learned about Test Gear, which is measuring and reading equipment or devices.

Figure 2.18: Pulling Patch Code Cable

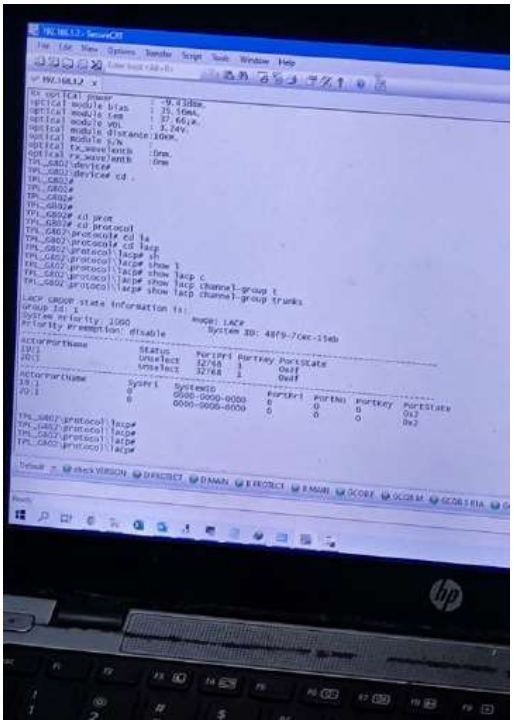


Figure 2.19: Sample Code using SecureCRT

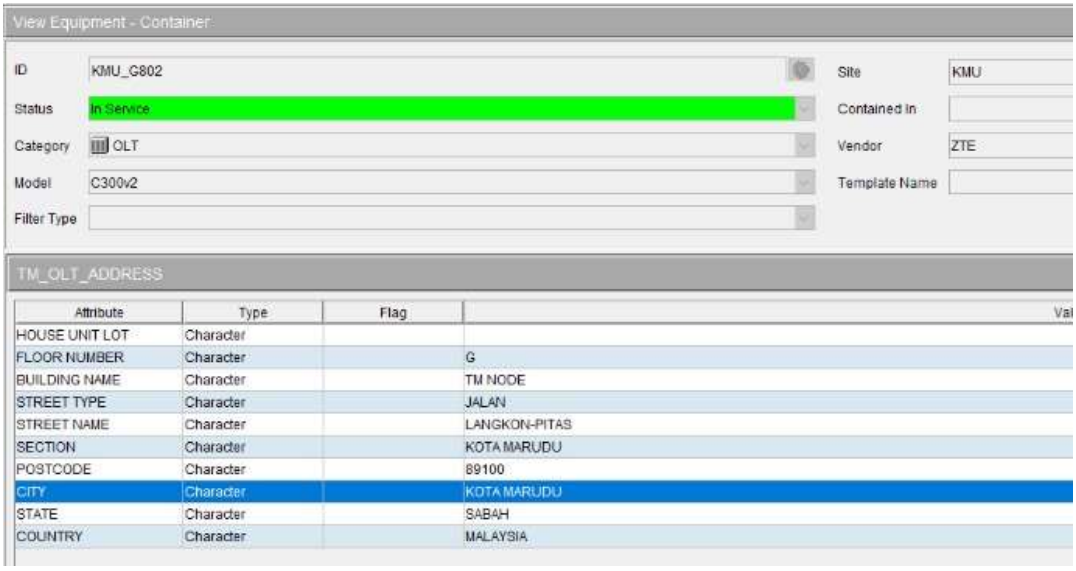


Figure 2.20: GRANITE Software

Type of Test Equipments	Test Capability	Part Number
OTDR 	**Fiber characterization at 1310/1550nm and 1625nm filter port for live testing** •Loss attenuation •Fiber length •ORL •Macrobend •Troubleshooting	AXS-110-NS751
PON Meter 	**PON signal power (1310/1490/1550 nm)** •Burst mode measurement •Pass thru measurement f •Optical power measurement	PPM-352C-00-EI-EUI-91
Cleaning Kit 	**Cleanliness of connectors**	CACKit
Fiber Inspection Probe 	**Connector inspection**	FIP-400-P-Single OR FEI-20H

Figure 2.21: Test Gear

CHAPTER 3

PROJECT ACTIVITIES

3.1 "ANDSABAH" SharePoint Site

During my Industrial Training, the first task given by my Industrial Supervisor is to do a website for the department. The purpose of the websites is to store, organize, share and access information from any device.

Figure 3.1: Easy Access Website on Any Devices

Since it is an organizational company, hence we need a secure website for the department. For info, every employee in the department has a Microsoft account. Thus, my supervisor gave me the option to do the website using Microsoft SharePoint since it meets all the website criteria required.

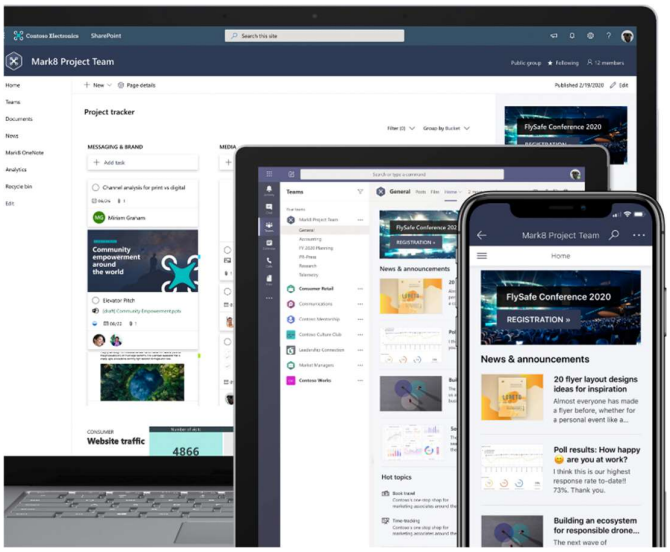


Figure 3.2: Microsoft SharePoint site on Any Devices

Source: Microsoft 365 (2022)

The first step I do when doing the Microsoft SharePoint site is exploring every feature available. Figure 3.3 list some of the major features of Microsoft SharePoint.

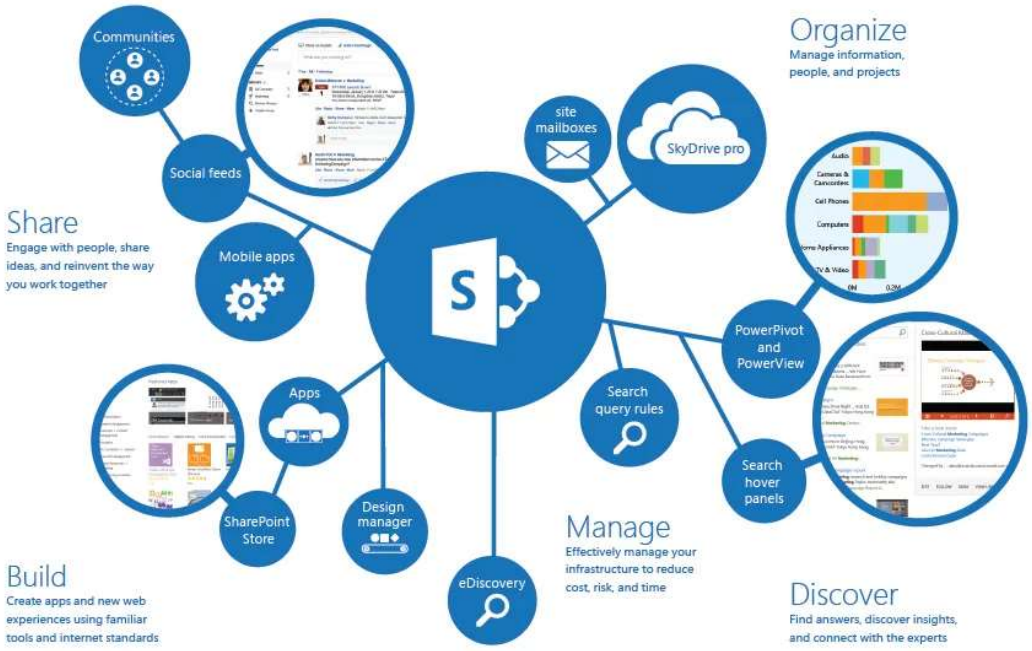


Figure 3.3 Features Available SharePoint Online

Source: HypertecDirect (2022)

Before using the features, we need to build the site first. Below are the details of the project.

Locations: At Office or Home

Procedure:

1. Login to any Microsoft Account and open the SharePoint site. I'm using my supervisor account since the one who created the site will have full control of the website.

2. Click create a site if want to build a new Microsoft SharePoint site.

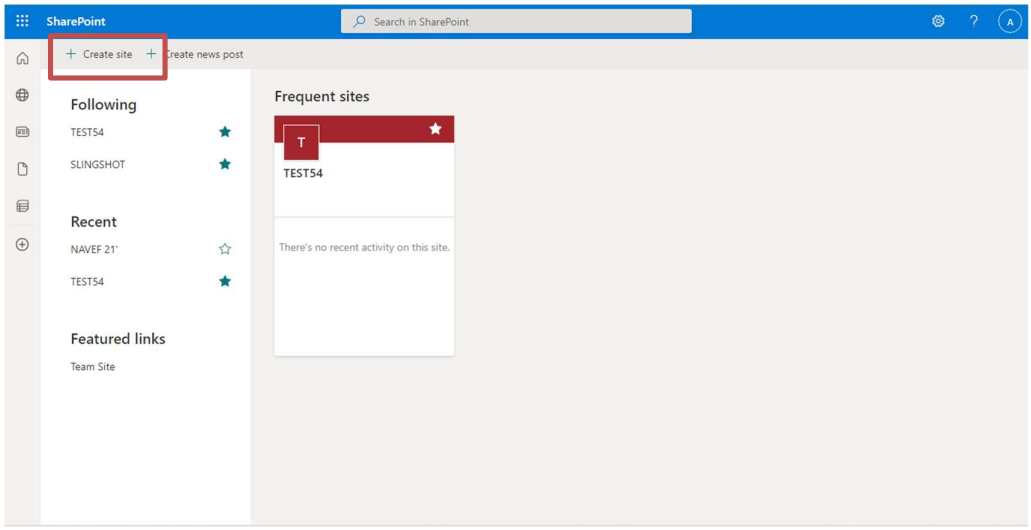


Figure 3.4: Create Site Options

3. The type of the site will appear, choose the Team Site since we want to share resources between the department.

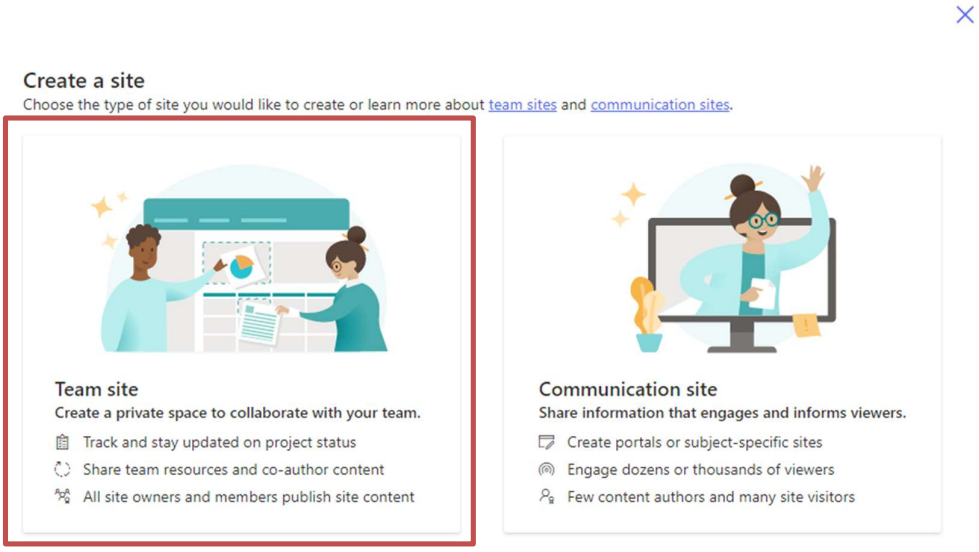


Figure 3.5: Type of Site

4. Insert the Site Name, change the privacy setting to Public and click next.

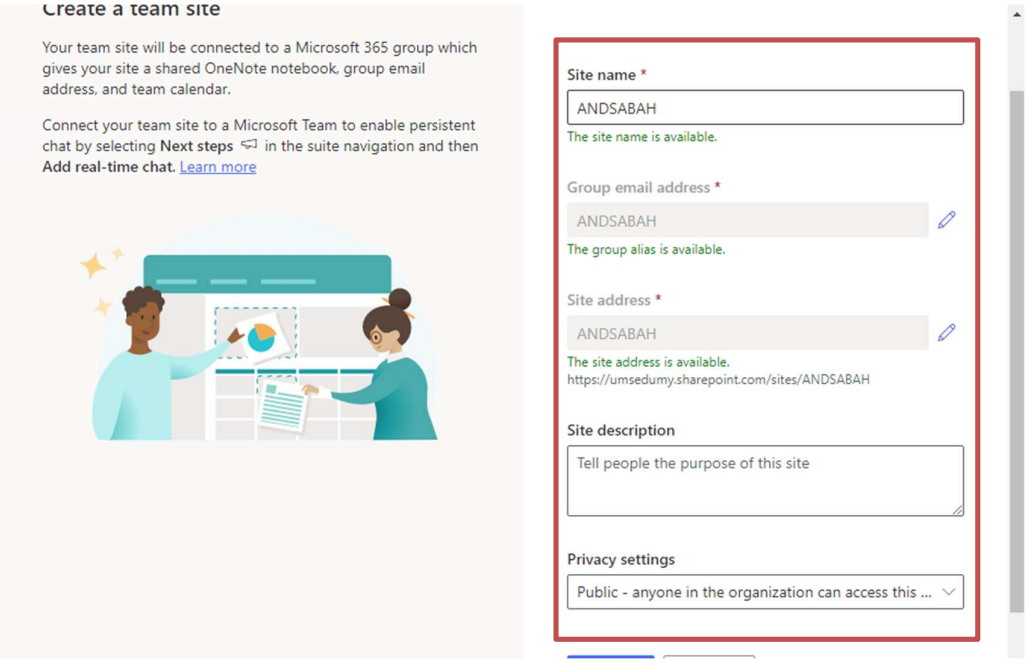


Figure 3.6: Insert Site Name & Change Privacy Settings

5. Add members inside the organization if you want and press Finish, you can add it later if want to finish the SharePoint site first. Remember, if not inside the organizations, the name & email will not appear.

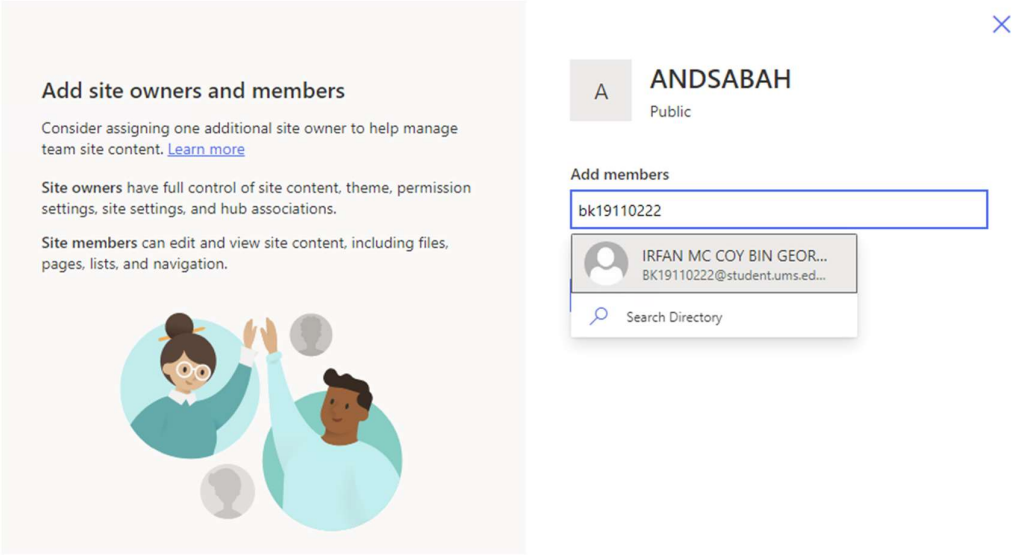


Figure 3.7: Add Members inside The Organizations

6. My supervisor has given me some details about the SharePoint site as stated in Figure 3.8.

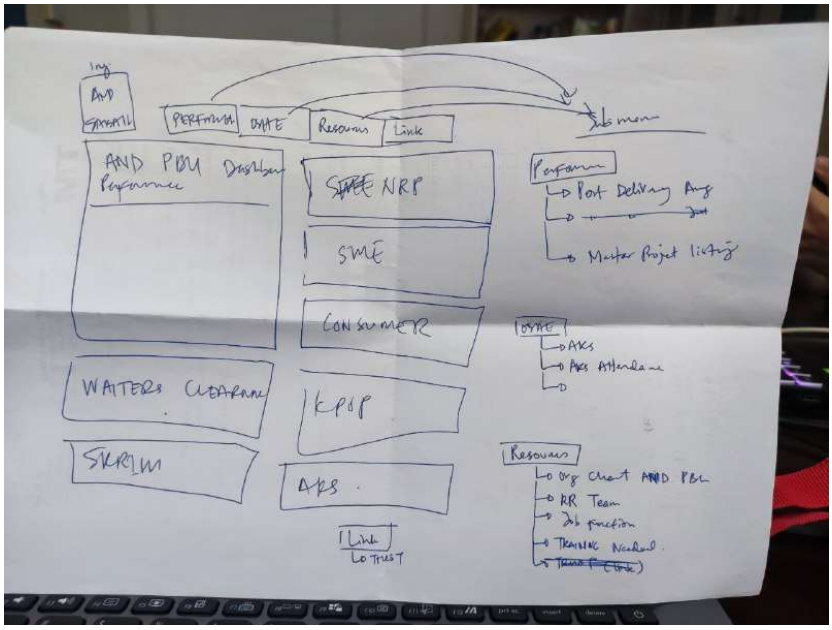


Figure 3.8: Website Details from Industrial Supervisor

7. With the detail given, I search for a template instantly to save time doing the SharePoint site with similar detail in Figure 3.8.

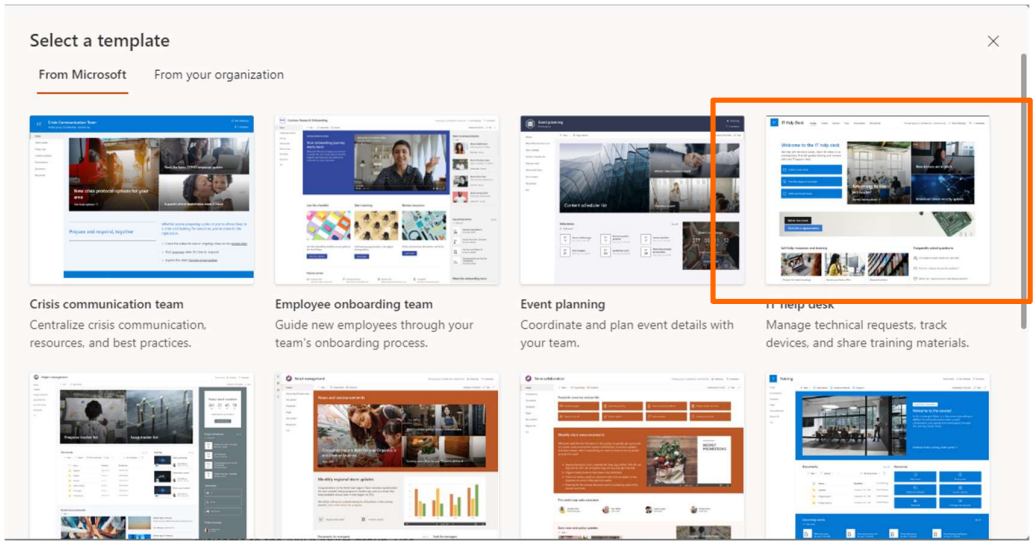


Figure 3.9: Choose Template

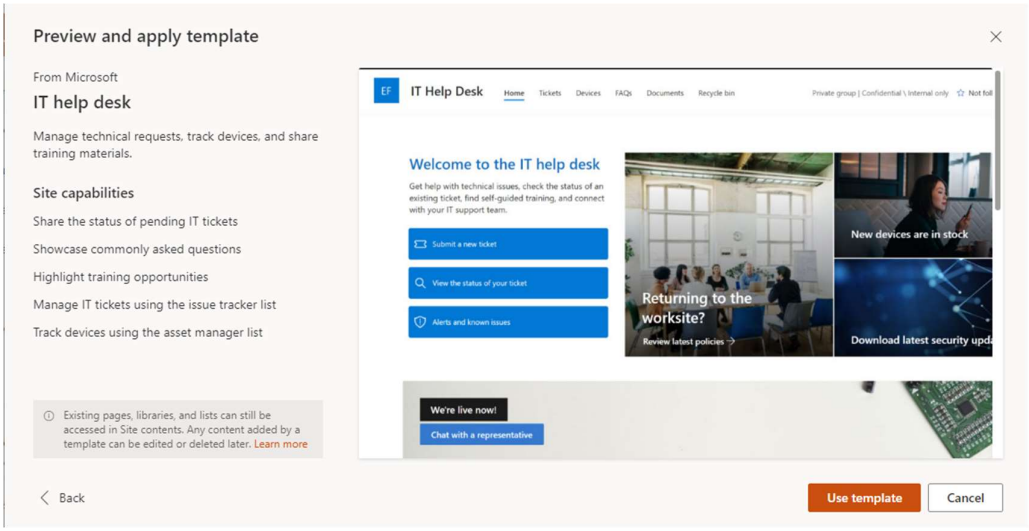


Figure 3.10: Preview & Apply Template

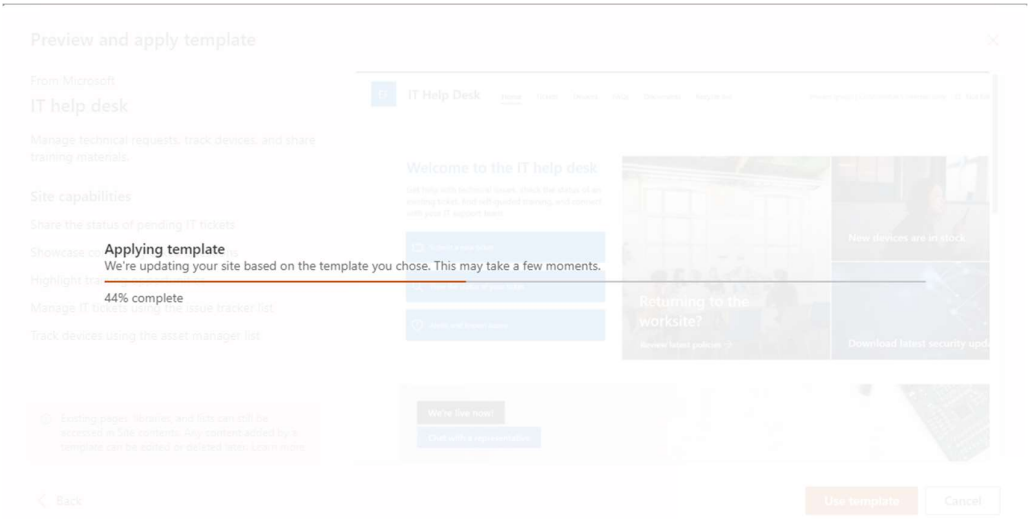


Figure 3.11 Applying Template

8. After that, click the **edit** button to customize the looks of the SharePoint Site.

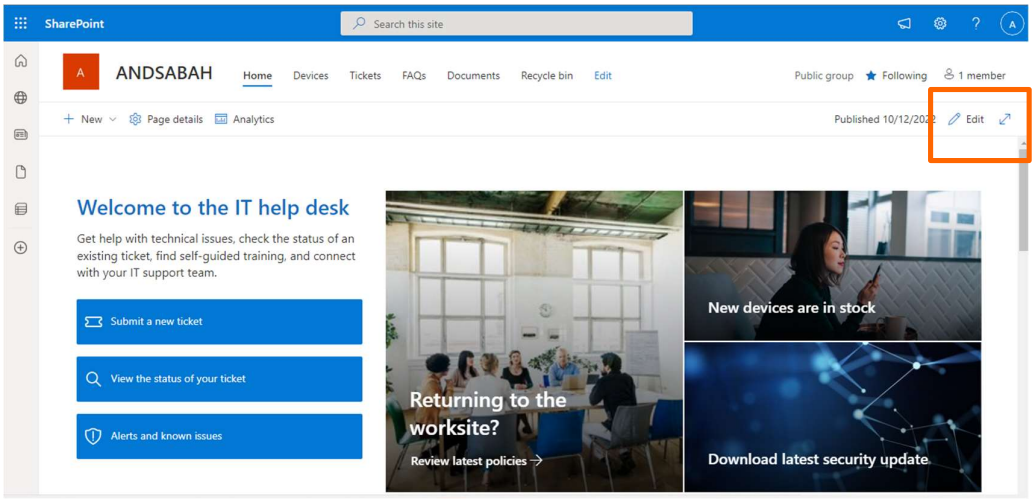


Figure 3.12: Click the Edit options

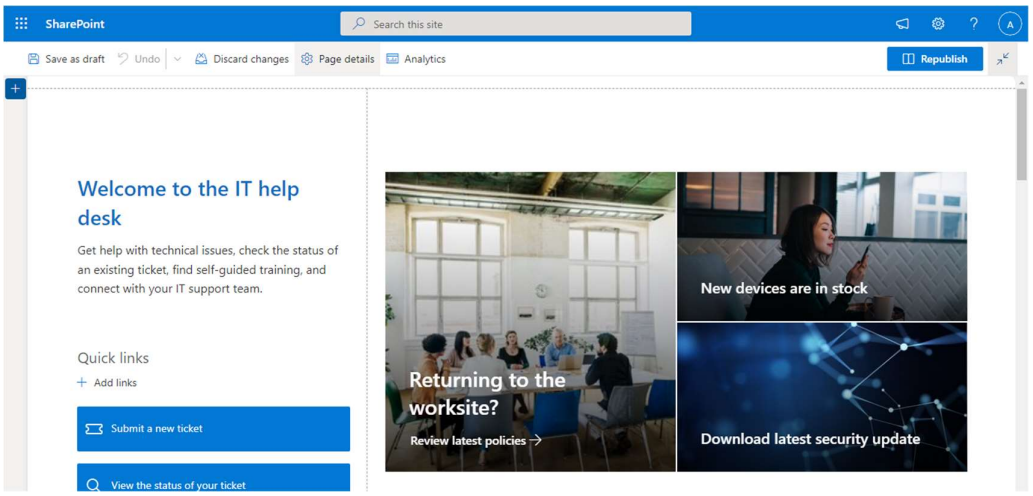


Figure 3.13: The Edit Interface

9. There's are a lot of customization features available on the SharePoint site. Below are some features of the "Web Part" features:

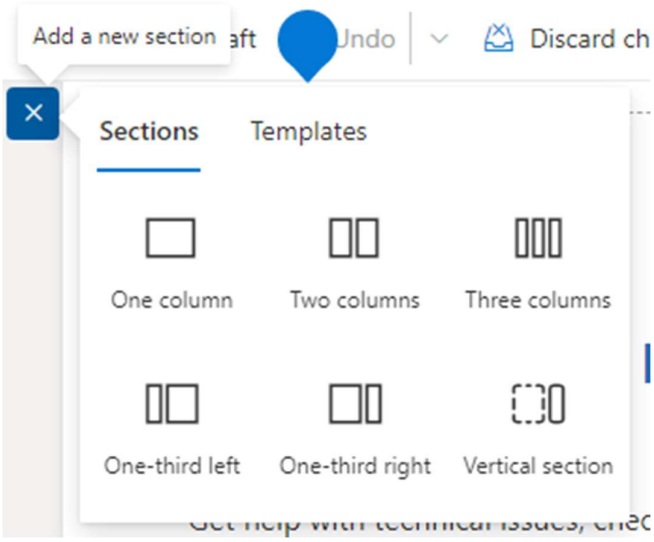


Figure 3.14: Add New Section

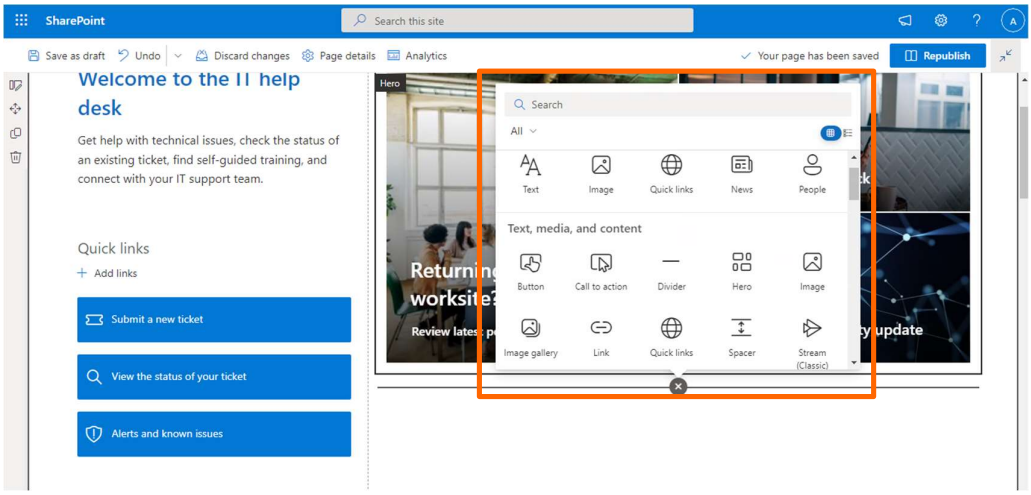


Figure 3.15: Web Part – 1

Here is the summary for Web Part-1

Table 3.1: Web Part type & Descriptions Part 1

Type	Descriptions
Text	Add and format text & table.

Image	Add an image, picture or photo to your page including text overlays and ability to crop and resize image.
Quick Links	Show a collection of links to content such as documents, images, videos, and more in a variety of layouts with options for icons, images and audience targeting.
News	Show news posts from one or more sites in a variety of layouts. You can filter news and target news to key audience.
People	Display selected people and their profiles.
Button	Add a clickable button with a custom label and link.
Call to Action	Add call to action text and an image paired with a clickable button.
Divider	Add a line to divide areas on your page.
Hero	Prominently display up to 5 pieces of content with links, image, pictures, videos, or photos in a highly visual layout.
Image	Add an image, picture or photo to your page including text overlays and ability to crop and resize image.
Image Gallery	Show several images, pictures or photos in a gallery layout.
Link	Add a link with rich preview such as an image or text brought in from the linked video or web content.
Quick Links	Show a collection of links to content such as documents, images, videos, and more in a variety of layouts with options for icons, images, and audience targeting.
Spacer	Add vertical space between areas on the page.
Stream	Display Stream videos or a Stream channel.

10. Refer to Appendix A to see the full list and summary of each "Web Part" feature.

11. By using some of the Web Part customizations features, and improving with some of the feedback from my supervisor and fellow employees, the final result of the Homepage is shown below:

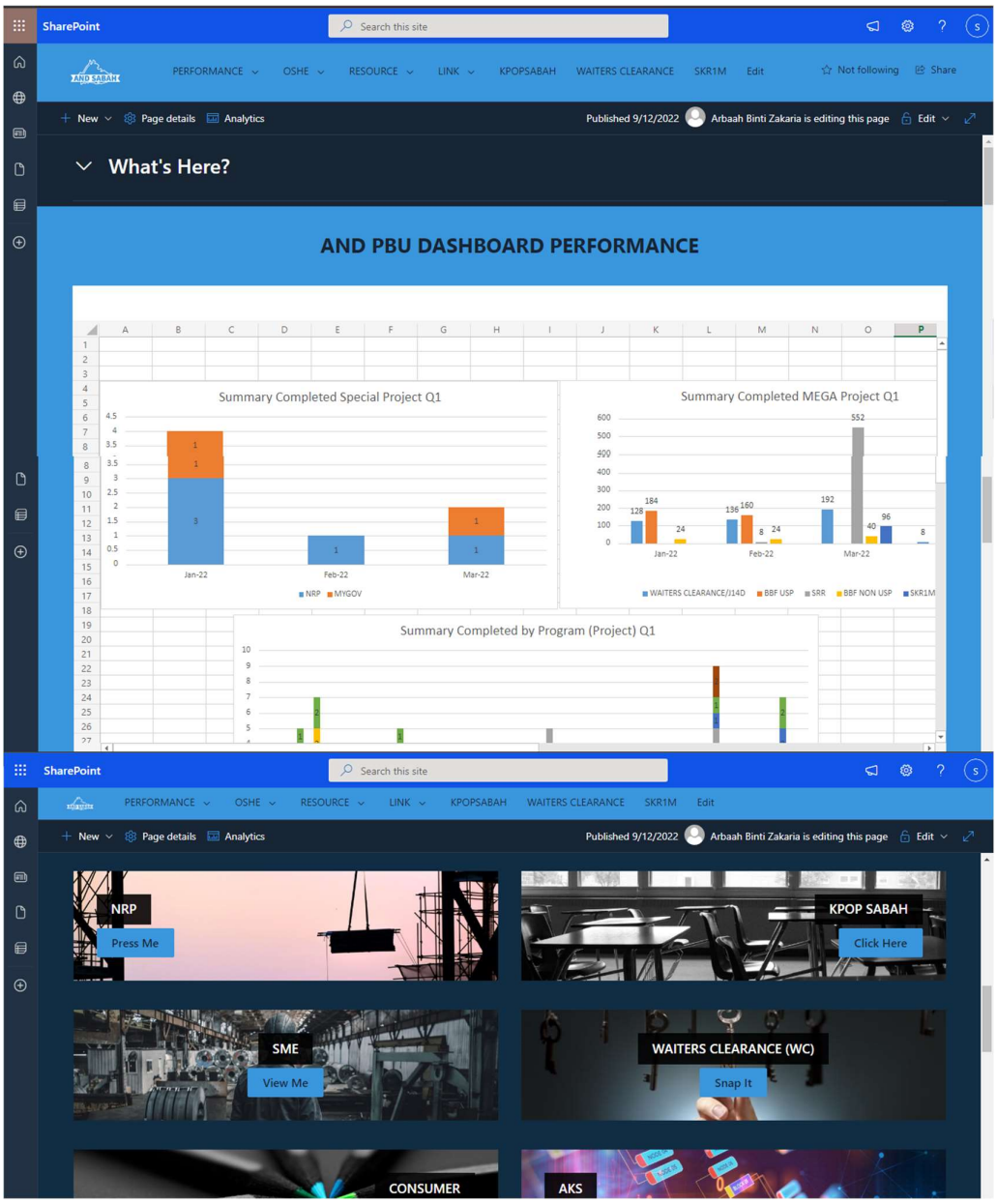


Figure 3.16 Homepage ANDSABAH SharePoint site

12. While doing the Homepage menu, I generated a logo for the website using CANVA software.

Figure 3.17: ANDSABAH SharePoint Site Official Logo

13. To edit the NAVIGATION Bar simply tap the Edit button on it.

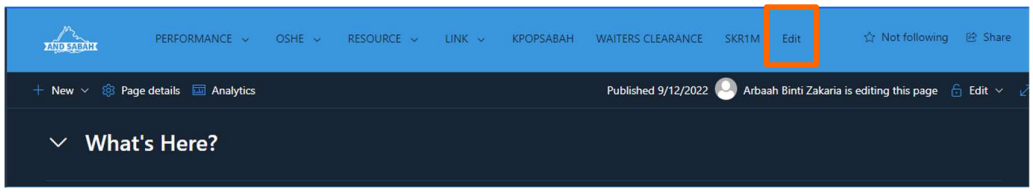


Figure 3.18: Navigation Bar

14. Figure 3.19 shows the Editing part of the NAVIGATION Bar. It splits into the Main link & Sub link.

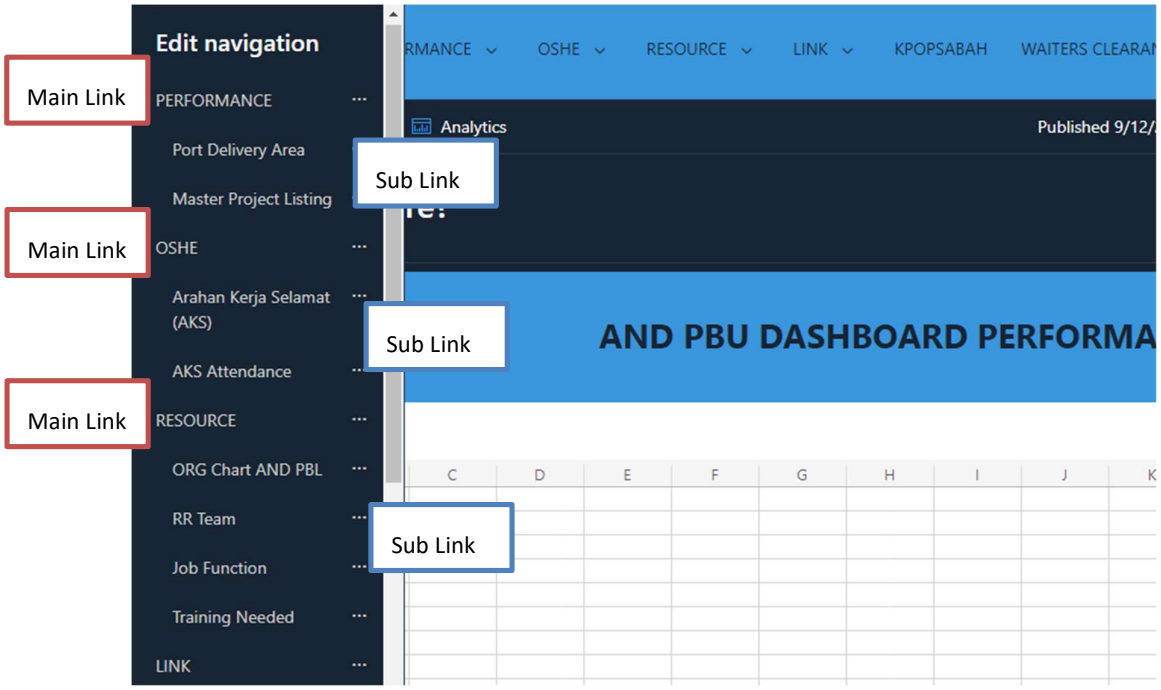


Figure 3.19: Main & Sub link on Editing part Navigation Bar

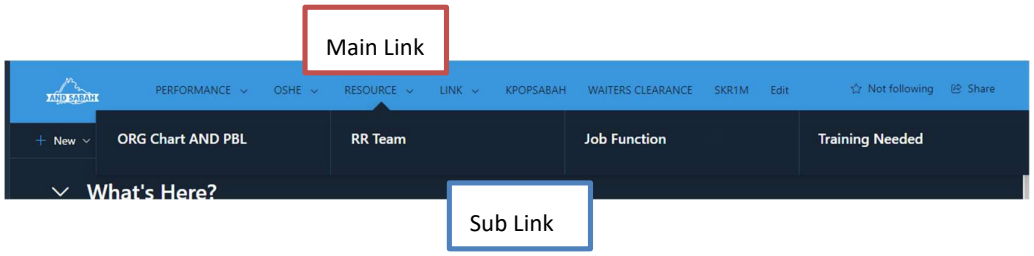


Figure 3.20: Main & Sub link on Home Page Navigation Bar

15. As can see in Figure 3.20, the sub-link will link to the Subsites pages. Hence, I need to do the same method by clicking New -> Page to do the Subsites pages.

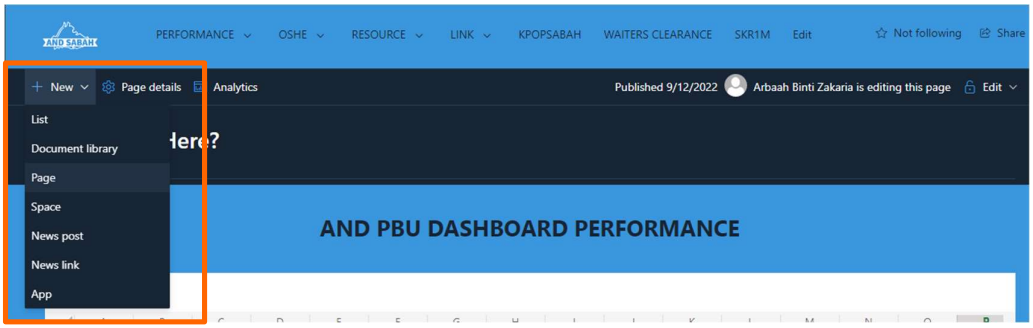


Figure 3.21: Create New Subsite Page

16. Repeating the same method from No.7 - No.12 to create the Subsite Page which is almost the same as the Homepage. A sample of the finished Subsite Page is shown below:

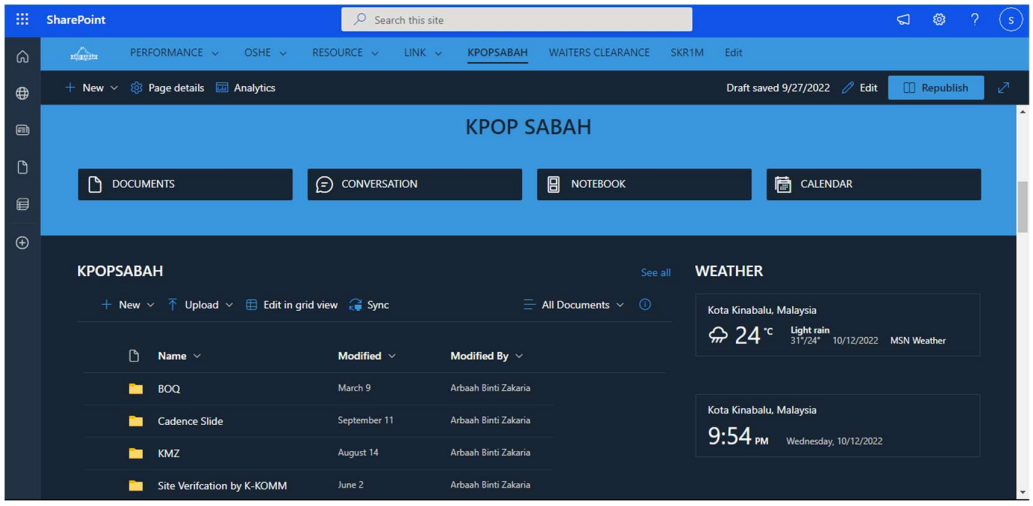


Figure 3.22: KPOP SABAH Subsite page

17. To link the Navigation Bar with the Subsite page, just press the edit button on the Navigation Bar and press the three-dot line and copy-paste the subsite page into the column box address of the navigation bar as shown below:

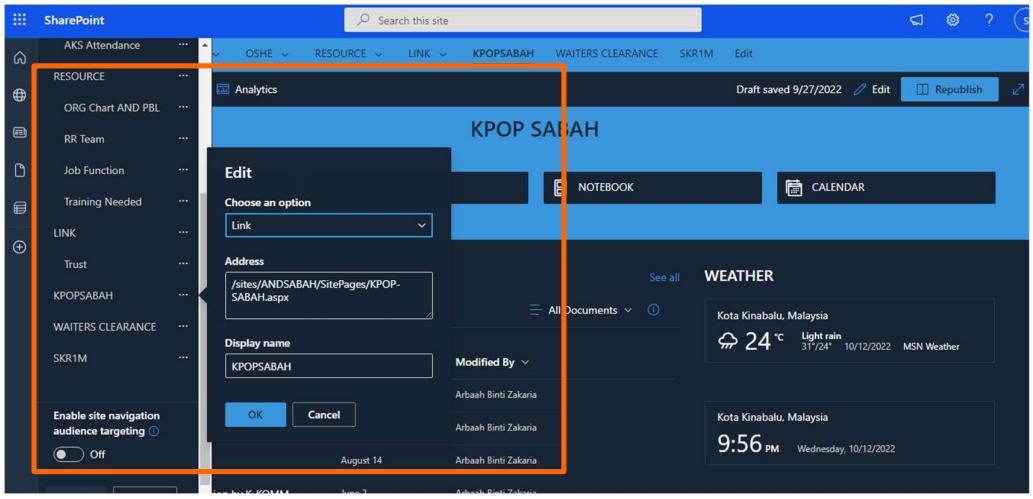


Figure 3.23: Link the Navigation Bar with Subsite Page

18. The same method will do for the other Subsite page.

19. After all the functions of the created SharePoint site are completed. Click the Publish/Republish button to officially publish the website to the team.

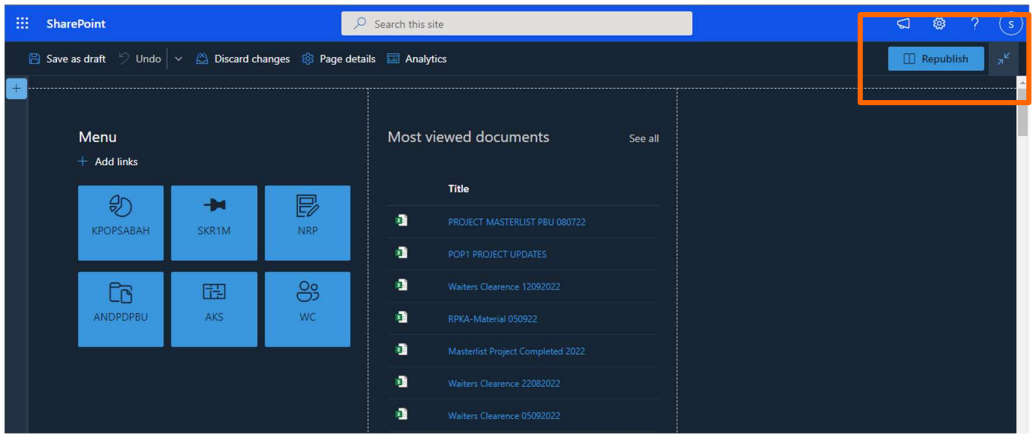


Figure 3.24: Publish the SharePoint site

20. After publishing the website, the host can edit back the SharePoint site without being affected while other users using the website.

Result:

Here is the attachment of the completed ANDSABAH SharePoint site.

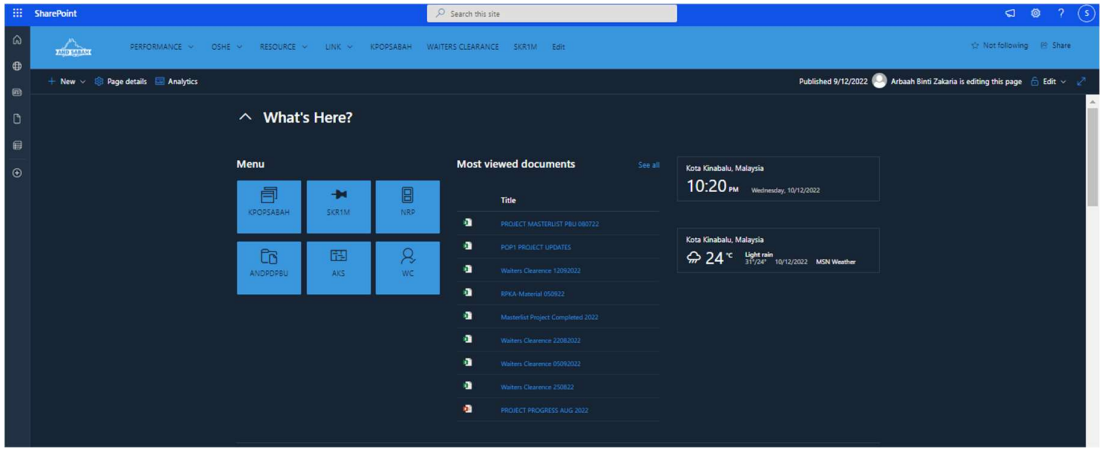


Figure 3.25: Home Page of Completed ANDSABAH SharePoint Site

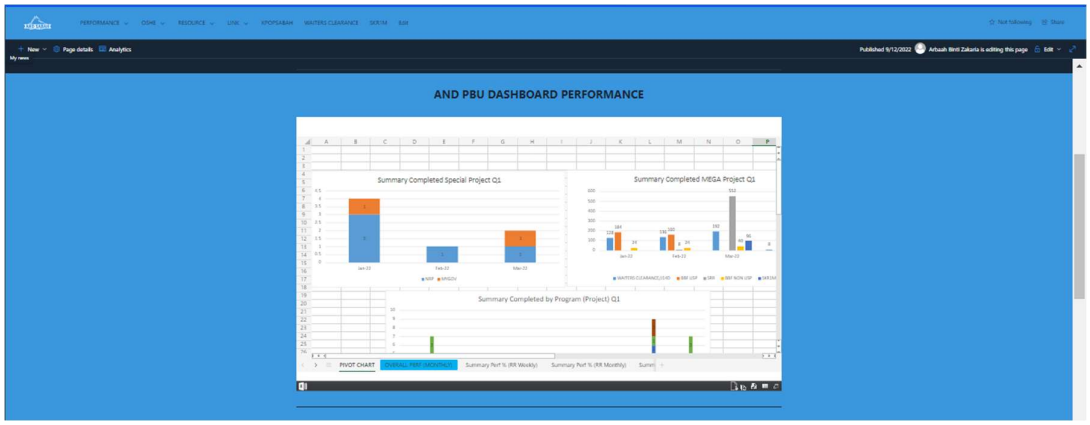


Figure 3.26: AND PB Utara Displayed Dashboard Performance at HomePage

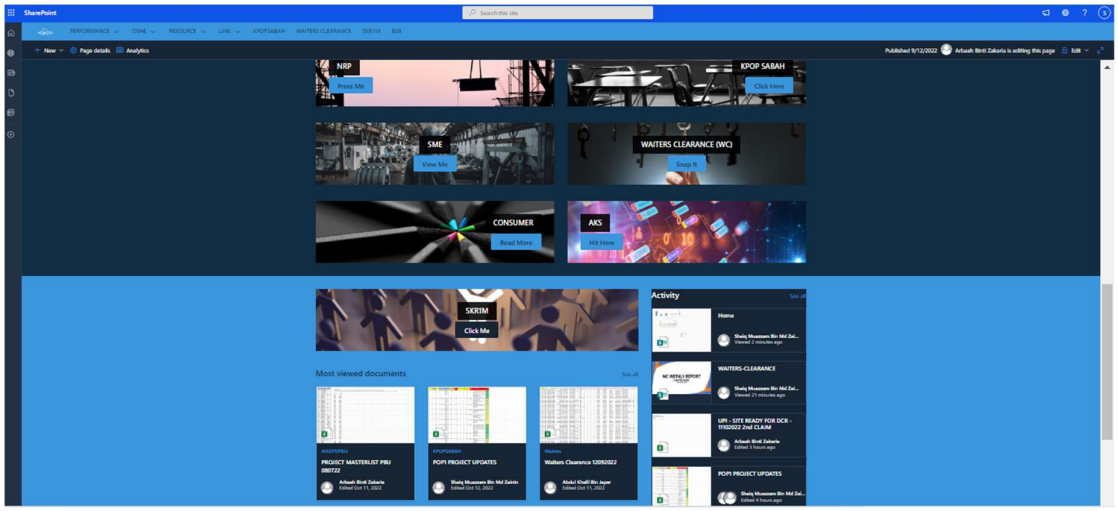


Figure 3.27: Other Completed Web Part at Home Page

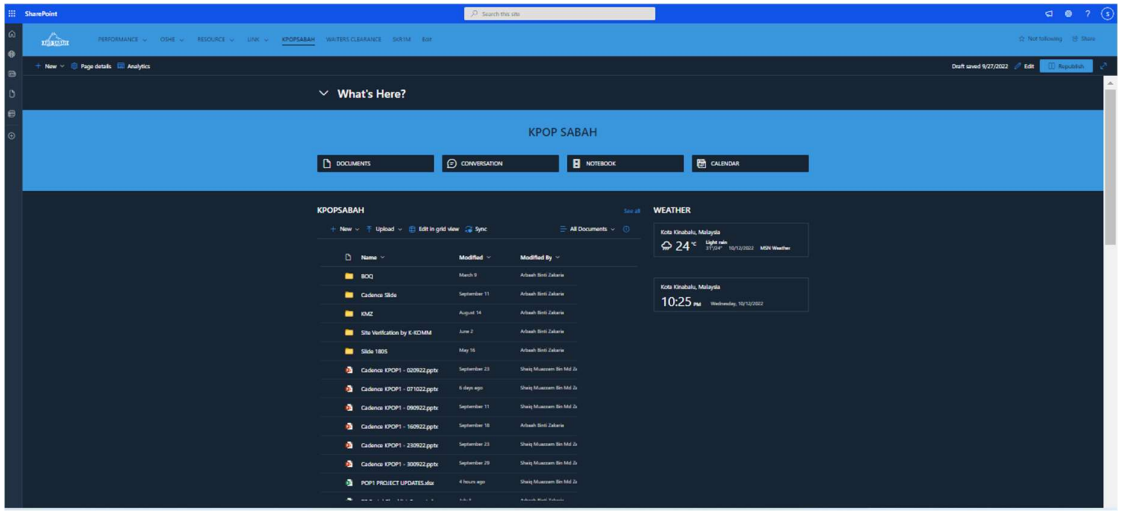


Figure 3.28: Subsite Page (KPOPSABAH) in ANDSABAH SharePoint site

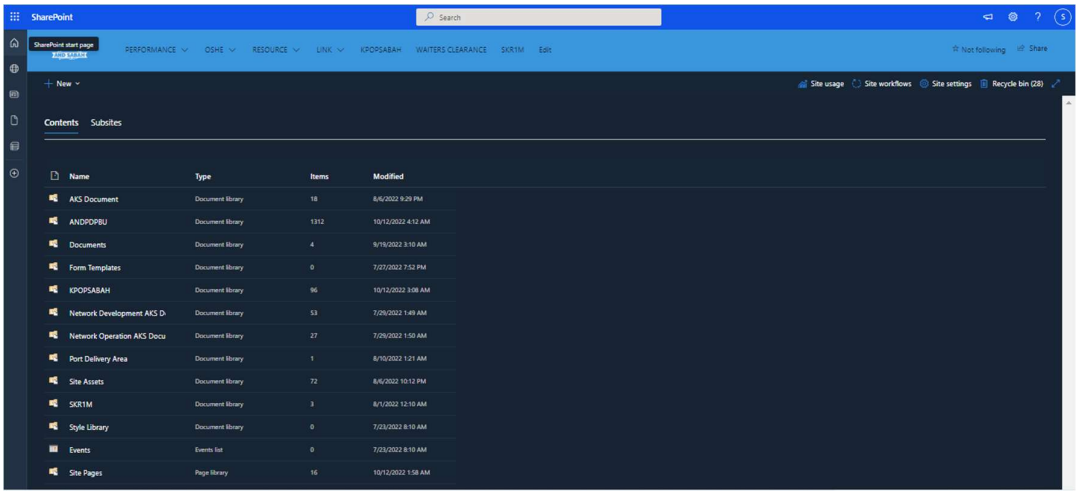


Figure 3.29: List of Content inside ANDSABAH SharePoint Site

Conclusion:

My contribution to the SharePoint site, which has become the main platform for Access Network Development Sabah (AND), has been a fantastic triumph for me. The connection to the results sections demonstrates that there are a lot of technical things that need to be done, even if they are simple to execute because the customisation features already exist. For a first-time user of Microsoft SharePoint, such as myself, it takes about a day just to do the single pages since I need to ensure that the SharePoint site appears appealing, readable, and quick to access. Not to mention fulfilling the requirements and expectations of my Industrial Supervisor. It takes me two weeks to get everything in order on the ANDSABAH SharePoint sites. I learned a lot about the basic needs of websites, even if it was just a ready-to-make website, because the steps are mostly the same.

3.2 Infrastructure Drawing & Diagram (IDD)

The Infrastructure Drawing & Diagram (IDD) is an overall summary of a project that involves interpreting & calculating data. The purpose of doing the Infrastructure Drawing & Diagram is to claim funds for the project through a process called Debt-Coverage-Ratio (DCR).

	A	B	C	D	E	F	G	H	I	J	K
1	NODE	SITE ID	TOTAL COPPER	TOT	CB YEAR	BATCH	SITE NAME	REGION	ND GROUP	STATE	STATUS
2	KBD	S2U2109303	1	45 CB 2017	BATCH 2 BBF	USP CB 2017 FTTH	KBD_0005 (KBD_002) KAMPUNG PIRASAN KOTA BELUD SABAH	SABAH	KK/PB/LB	SABAH	COMPLETE
3	KBD	S2U2109945	1	13 CB 2017	BATCH 2 BBF	USP CB 2017 FTTH	KBD_0037M (KBD_011) KAMPUNG PIRASAN, QUARTERS SESB KOTA BELUD	SABAH	KK/PB/LB	SABAH	COMPLETE
4	KBD	S2U2106978	1	1 CB 2018	BATCH 2 BBF	USP CB 2018 FTTH	KBD_0018 (KBD_F010) KG RATAU, KG RATAU, KG TAMU DARAT	SABAH	KK/PB/LB	SABAH	COMPLETE
5	KBD	S2U2108188	1	18 CB 2017	BATCH 2 BBF	USP CB 2017 FTTH	KBD_0027M (KBD_F311) KG BUNDU PAKA ,KG LINGKUBANG ,KG PORAK OGIS	SABAH	KK/PB/LB	SABAH	COMPLETE
6	KBD	S2U2109304	1	12 CB 2017	BATCH 2 BBF	USP CB 2017 FTTH	KBD_0028M (KBD_VF5001) KG KULAMBAI, KG SEMBIRAI, KOTA BELUD	SABAH	KK/PB/LB	SABAH	COMPLETE
7	KBD	S2U2110713	1	37 CB 2017	BATCH 2 BBF	USP CB 2017 FTTH	KBD_0039M (KBD_VF5003) KAMPUNG GAUR, KG BAKILONG	SABAH	KK/PB/LB	SABAH	COMPLETE
8	KDT	S2U2200083	1	9 CB 2018	BATCH 2 BBF	USP CB 2018 FTTH	KDT_0012 (KDT_999_0002) BLOK KEMBOJA QTRS POLIS KUDAT	SABAH	KK/PB/LB	SABAH	COMPLETE
9	KDT	S2U2106986	1	19 CB 2018	BATCH 2 BBF	USP CB 2018 FTTH	KDT_0020M (KDT_SV5003) KAMPUNG BANGAU	SABAH	KK/PB/LB	SABAH	COMPLETE
10	KDT	S2U2106987	1	2 CB 2018	BATCH 2 BBF	USP CB 2018 FTTH	KDT_0020M (KDT_SV5004) DKT RUMAH KAYU CAT GOKIAT, KG. ANDAP BANGA	SABAH	KK/PB/LB	SABAH	COMPLETE
11	KDT	S2U2106988	1	3 CB 2018	BATCH 2 BBF	USP CB 2018 FTTH	KDT_0011 (KDT_SV5005) DKT RUMAH HIJAU, KG. PINAWANTAI	SABAH	KK/PB/LB	SABAH	COMPLETE
12	KDT	S2U2109305	1	5 CB 2017	BATCH 2 BBF	USP CB 2017 FTTH	KDT_0031M (KDT_VC5001) FRIENDLY TOWN , KUDAT	SABAH	KK/PB/LB	SABAH	COMPLETE
13	KDT	S2U2104630	1	33 CB 2017	BATCH 2 BBF	USP CB 2017 FTTH	KDT_0012 (KDT_VC5005) BLOK RMH TERES KUDAT	SABAH	KK/PB/LB	SABAH	COMPLETE
14	KDT	S2U2109306	1	39 CB 2017	BATCH 2 BBF	USP CB 2017 FTTH	KDT_0018 (KDT_VC5006) TAMAN GEREJA PCS KUDAT	SABAH	KK/PB/LB	SABAH	COMPLETE
15	KDT	S2U2109307	1	3 CB 2017	BATCH 2 BBF	USP CB 2017 FTTH	KDT_0014 (KDT_VC5009) MARINA RESORT BARU MARINA JETTY KUDAT	SABAH	KK/PB/LB	SABAH	COMPLETE
16	KDT	S2U2106989	1	48 CB 2018	BATCH 2 BBF	USP CB 2018 FTTH	KDT_0017 (KDT_VC5015) TAMAN PAKKA FASA 1	SABAH	KK/PB/LB	SABAH	COMPLETE
17	KDT	S2U2104629	1	24 CB 2017	BATCH 2 BBF	USP CB 2017 FTTH	KDT_0016M (KDT_VC5018) SIMPANG KAMPUNG BANGAU	SABAH	KK/PB/LB	SABAH	COMPLETE
18	KDT	S2U2106991	1	34 CB 2018	BATCH 2 BBF	USP CB 2018 FTTH	KDT_0013 (KDT_VC5025) TAMAN SERI AWANA	SABAH	KK/PB/LB	SABAH	COMPLETE
19	KDT	S2U2106992	1	24 CB 2018	BATCH 2 BBF	USP CB 2018 FTTH	KDT_0011 (KDT_VF5005) DKT PADANG KG. MOMPIUS	SABAH	KK/PB/LB	SABAH	COMPLETE
20	KMU	S2U2106994	1	9 CB 2018	BATCH 2 BBF	USP CB 2018 FTTH	KMU_0002 (KMU_VF5006) JLN LOTONG PEKAN KOTA MARUDU	SABAH	KK/PB/LB	SABAH	COMPLETE
21	KMU	S2U2108198	1	10 CB 2017	BATCH 2 BBF	USP CB 2017 FTTH	KMU_0036M (KMU_VC5026) KG MARUDU ,KG RANAU	SABAH	KK/PB/LB	SABAH	COMPLETE
22	KMU	S2U2008557	1	61 CB 2018	BATCH 1 - BBF	USP CB 2018 FTTH	ADD KMU_0002 (KMU VC5002) KG LOTONG	SABAH	KK/PB/LB	SABAH	COMPLETE
23	KMU	S2U2107000	1	42 CB 2018	BATCH 1 - BBF	USP CB 2018 FTTH	KMU_0030M (KMU_VC5007) AKADEMI MEMANDU JSL	SABAH	KK/PB/LB	SABAH	COMPLETE
24	KMU	S2U2008558	1	33 CB 2018	BATCH 1 - BBF	USP CB 2018 FTTH	PIS G007M (KMU VC5008) KG PINGAN-PINGAN PITAS	SABAH	KK/PB/LB	SABAH	COMPLETE
25	KMU	S2U2104636	1	21 CB 2018	BATCH 1 - BBF	USP CB 2018 FTTH	KMU_0003M (KMU_VC5022) BLOK A2 FLAT GURU SMK MARUDU 2	SABAH	KK/PB/LB	SABAH	COMPLETE
26	KMU	S2U2109308	1	17 CB 2018	BATCH 2 BBF	USP CB 2018 FTTH	KMU_0029M (KMU_VC5004) KG RANAU, KG KANDAWAYON KOTA MARUDU	SABAH	KK/PB/LB	SABAH	COMPLETE
27	KMU	S2U2104633	1	16 CB 2018	BATCH 2 BBF	USP CB 2018 FTTH	KMU_0020 (KMU_VC5009) BLOK A, PEKAN TANDEK KOTA MARUDU	SABAH	KK/PB/LB	SABAH	COMPLETE
28	KMU	S2U2109309	1	25 CB 2017	BATCH 2 BBF	USP CB 2017 FTTH	KMU_0017 (KMU_VC5012) BANGUNAN URUSETIA KECIL KOTA MARUDU	SABAH	KK/PB/LB	SABAH	COMPLETE
29	KMU	S2U2109946	1	1 CB 2017	BATCH 2 BBF	USP CB 2017 FTTH	KMU_0036M (KMU_VC5013) KOMPLEKS PERHUTANAN KOTA MARUDU	SABAH	KK/PB/LB	SABAH	COMPLETE
30	KMU	S2U2109310	1	12 CB 2017	BATCH 2 BBF	USP CB 2017 FTTH	KMU_0032M (KMU_VC5014) FLAT GURU SK PEKAN KOTA MARUDU	SABAH	KK/PB/LB	SABAH	COMPLETE
31	KMU	S2U2108444	2	51 CB 2017	BATCH 2 BBF	USP CB 2017 FTTH	PIS_0002, PIS_0003 (KMU_VC5015, KMU_VC5016) RMH KERAJAAN PEKAN PITA	SABAH	KK/PB/LB	SABAH	COMPLETE
32	KMU	S2U2106997	1	4 CB 2018	BATCH 2 BBF	USP CB 2018 FTTH	KMU_0015 (KMU_VC5018) JALAN PINATAU BS108 KG PINATAU	SABAH	KK/PB/LB	SABAH	COMPLETE
33	KMU	S2U2106998	1	5 CB 2018	BATCH 2 BBF	USP CB 2018 FTTH	KMU_0015 (KMU_VC5019) KAMPUNG KANDAWAYON BATU 4	SABAH	KK/PB/LB	SABAH	COMPLETE
34	KMU	S2U2107023	1	2 CB 2018	BATCH 2 BBF	USP CB 2018 FTTH	KMU_0021M (KMU_VC5024) QUARTERS GURU	SABAH	KK/PB/LB	SABAH	COMPLETE
35	KMU	S2U2107024	1	1 CB 2018	BATCH 2 BBF	USP CB 2018 FTTH	KMU_0005M (KMU_VC5025) FLAT GURU SMK BENGKONGAN	SABAH	KK/PB/LB	SABAH	COMPLETE
36	TAA	S2U2108199	1	12 CB 2017	BATCH 2 BBF	USP CB 2017 FTTH	BGO_0002M (TAA_VC5001) KLINIK KESIHATAN TELAGA	SABAH	KK/PB/LB	SABAH	COMPLETE
37	TGS	S2U2107025	1	2 CB 2018	BATCH 2 BBF	USP CB 2018 FTTH	KBD_0040M (TGS_F301) TIMBANG MENGGARIS	SABAH	KK/PB/LB	SABAH	COMPLETE

Figure 3.30: 36 Project that need to its IDD

There are 36 DCRs that need to do some of the due dates on end of August & September. Thus, I need to do 36 Projects Infrastructure Drawing & Diagram (IDD) in total.

Location: At main office or Home

Procedure:

1. To do the Infrastructure Drawing & Diagram, we need a supporting document that can be downloaded from the vPRIME+ website. We need a Telekom Malaysia ID to log in. I'm using my Industrial Supervisor user ID to log in.

Figure 3.31: Login vPRIME+ Website

Source: ND TM (2022)

2. Go to Completed QC Navigation Bar.

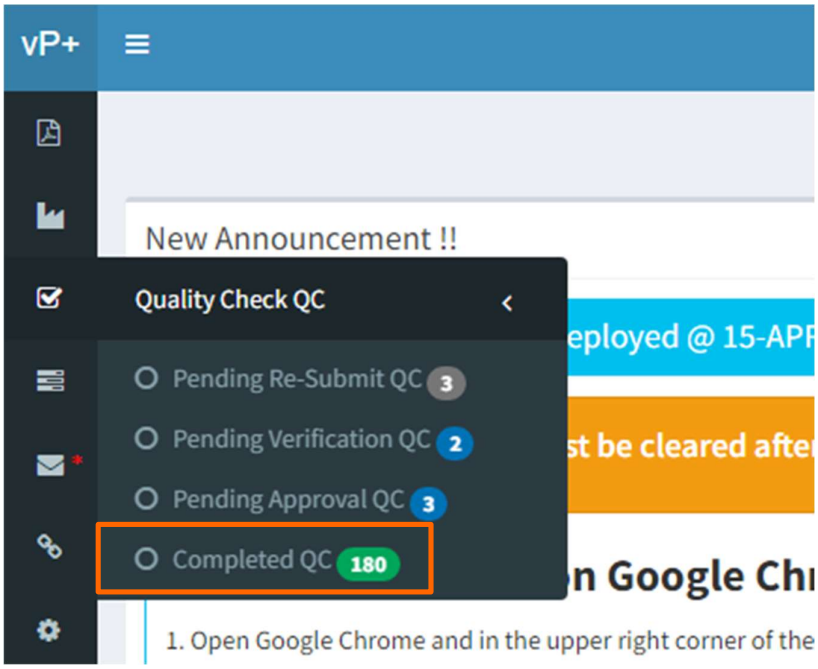


Figure 3.32: Completed QC Options

3. Search the project you want to do Infrastructure Drawing & Diagram (IDD). I recommend searching it by project number instead to find it instantly.

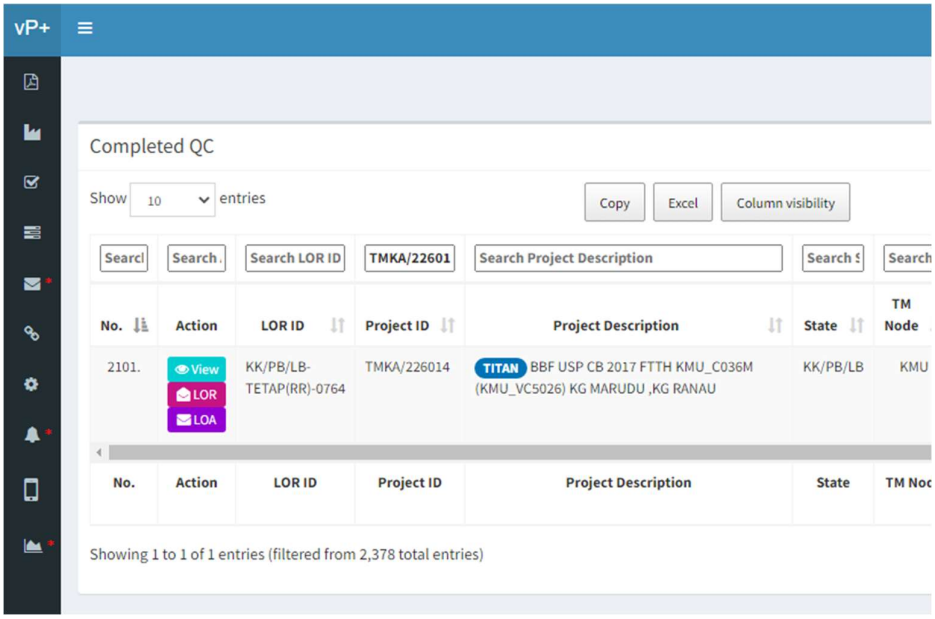


Figure 3.33: Search the Project

4. Click the view button and scroll down to the Supporting Documents sections.

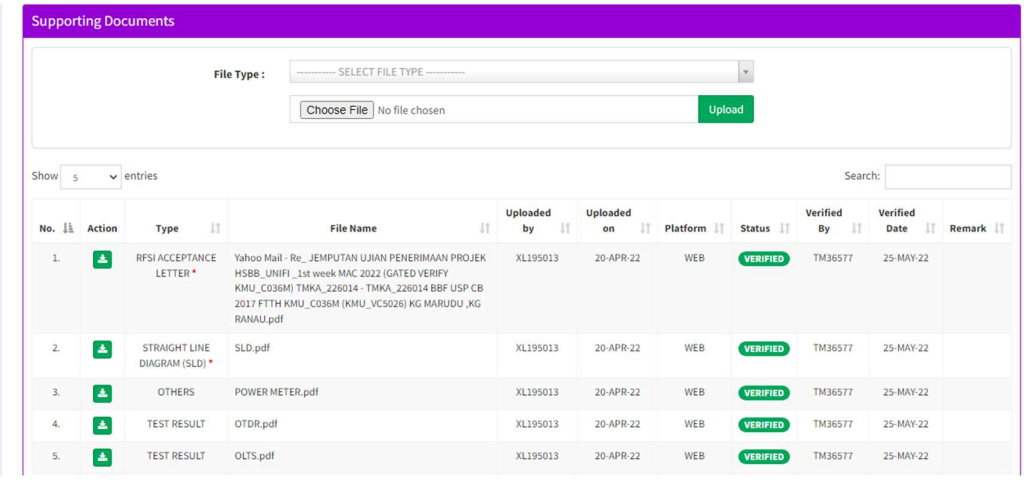


Figure 3.34: Supporting Documents Section

5. Search & download the documents name: -

- Straight Line Diagram (SLD)
    - Summary of PLAN (ASB) cable connections
- Final Measurement Report (FMR)
    - Overall quantity equipment's total & details
- AS – Built Diagram (ASB)
    - A very Detail PLAN which includes (Distance, Core, Pole)

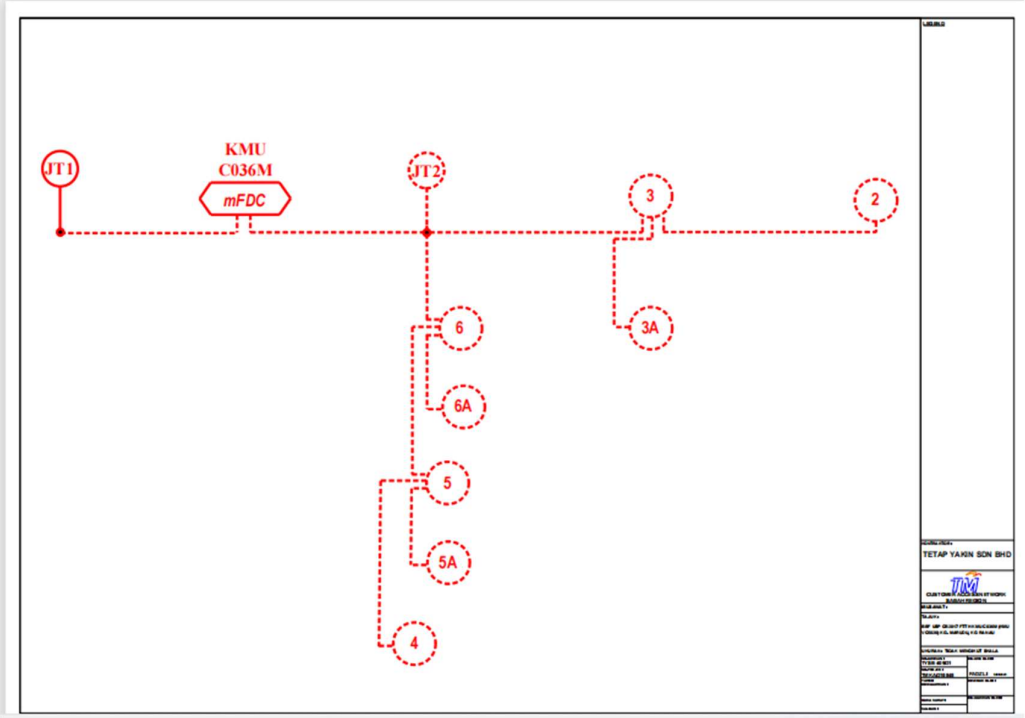


Figure 3.35: Straight Line Diagram (SLD)

TETAP YAKIN SDN. BHD.

FINAL MEASUREMENT REPORT

EXCHANGE : KDT | PROJECT NO : TMKA/226014

SCHEME : BBF USP CB 2017 FTTH KMU_C036M (KMU_VC50) | P.O. NO : 4901861237 | PAGE : 1 OF 1

MAIN PURCHASE ORDER & VARIATION ORDER

NO.	RR JKH ID	DESCRIPTION OF PLANT UNIT	UNIT	AT JT 1	JT 1 TO mFDC	mFDC TO JT 2	JT 2 TO (C-C) DP 6 DP 6A	DP 6 TO DP 5 DP 5A	DP 5 TO DP 4	JT 2 TO (E-E) DP 3 DP 3A	DP 3 TO DP 2	TOTAL INSTALL	PO QTY	1ST CLAIM QTY	BALANCE TO CLAIM (FINAL)	+V.O.	SI REF NO.
		PO: 4901861237															
01.	108689	ERECT OFC OH LOOSE IB 12C	M		1628	105	625	900.5	821	1762	296	6,137.50	4,500.00	-	4,500.00	1,637.50	1
02.	108692	ERECT OFC OH LOOSE IB 24C	M									-	510.00	-	-	-	
03.	108728	INSTALLATION OF POLE WITH ACCESSORIES	EA							1		1.00	1.00	-	1.00	-	
04.	108887	INST FIBER DP AERIAL C/W SP 1X1:8 (INCL PREP END CABLE)	EA				1	1	1	1	1	5.00	5.00	-	5.00	-	
05.	108890	INST FIBER DP W/O SPLITTER AERIAL/WALL (INCL PREP END CABLE)	EA				1	1		1		3.00	3.00	-	3.00	-	
06.	108905	INST FIBER DP WALL C/W SP 4X2:4 (INCL PREP END CABLE)	EA		1							1.00	1.00	-	1.00	-	
07.	108947	TESTING FDP (SETUP EQUIP, IL & ORL, OTDR, ONU) SINGLE LEG	EA				2	2	1	2	1	8.00	8.00	-	8.00	-	
08.	108950	TESTING FIBER CORE (SETUP EQUIP, END-TO-END, OTDR)	CORE		4							4.00	4.00	-	4.00	-	
09.	108953	FIBRE SPLICING LOOSE FIBRE (PER CORE)	CORE	4		10	12	11		12	3	52.00	36.00	-	36.00	16.00	1
10.	108962	JOINTING AERIAL OFC 24C	EA	1		1						2.00	2.00	-	2.00	-	
11.	109100	CABLE PREPARATION AT FDC/ODF	EA		2							2.00	2.00	-	2.00	-	
12.	109589	SPLICE & TERM OFC 1C TO/FROM FDC/FIBER DP/HOUSE	CORE		10		1	1	1	1	1	15.00	10.00	-	10.00	5.00	1
		ADDITIONAL WORK (VO) - NOT IN PO															
01.	108452	CUTTING TREES	EA								4	4.00	-	-	-	4.00	1
02.												-	-	-	-	-	
03.												-	-	-	-	-	

Figure 3.36: Final Measurement Report (FMR)

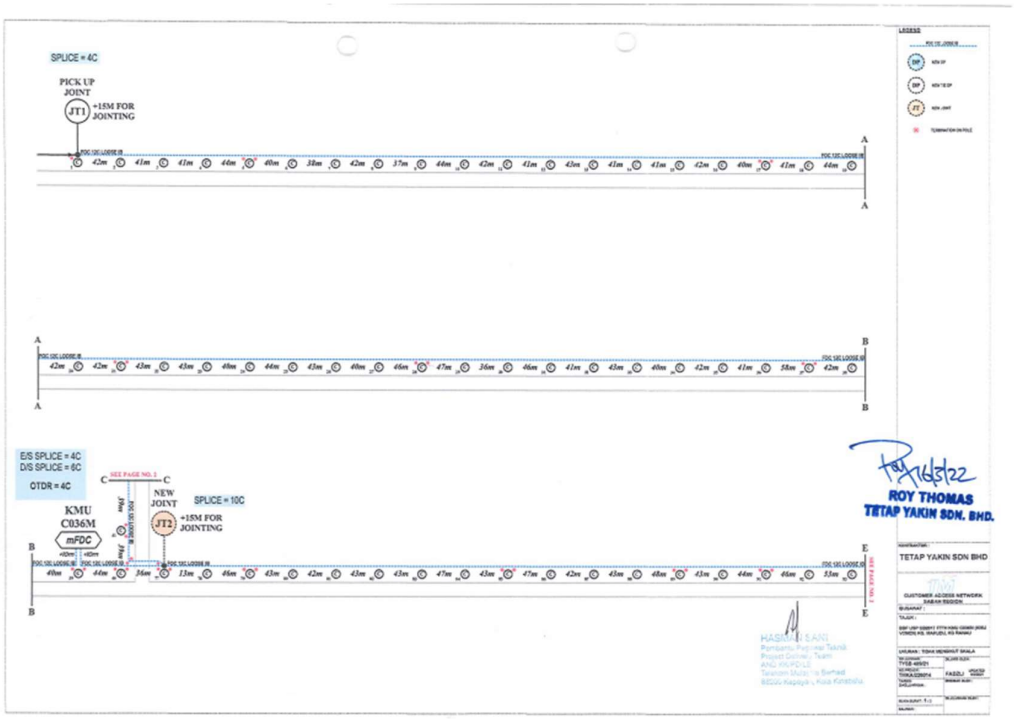


Figure 3.37: AS – Built Diagram (ASB)

6. After downloading the supporting documents, we can now start doing the Infrastructure Drawing & Diagram. First, we need to know about E-SIDE & D-SIDE of the Diagram.

    - E-SIDE: From OLT to FDC
    - D-SIDE: From FDC to DP

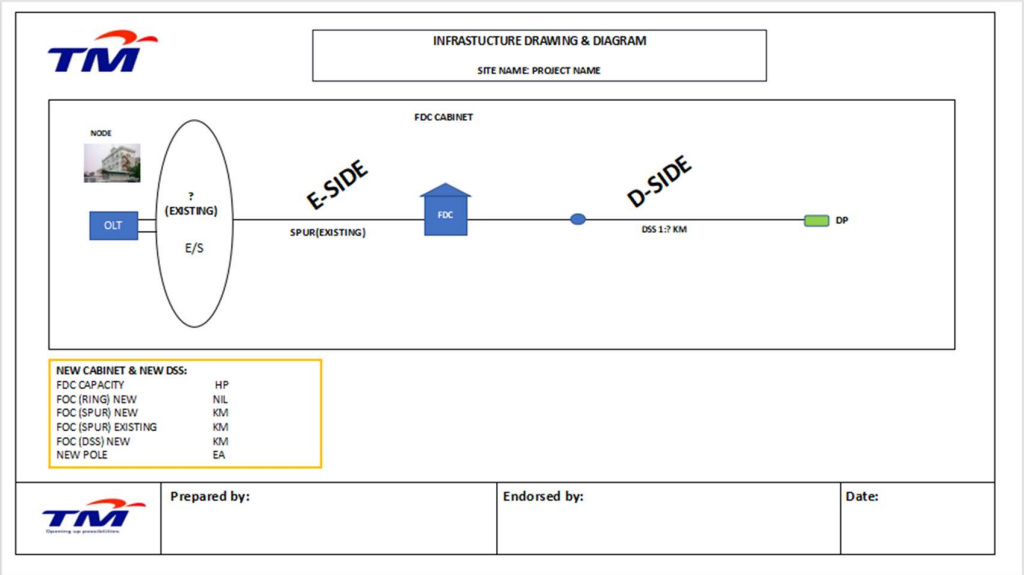


Figure 3.38: Infrastructure Drawing & Diagram Template

7. On the SLD, for easier interpreting the IDD, the cable from JT1 to mFDC will be the E-SIDE, while mFDC to DP will be the DSIDE.

8. Calculate the ASB (total distance of cable) manually and compared it to the overall total distance on the FMR. The total distance of the cable should be the same for both documents.

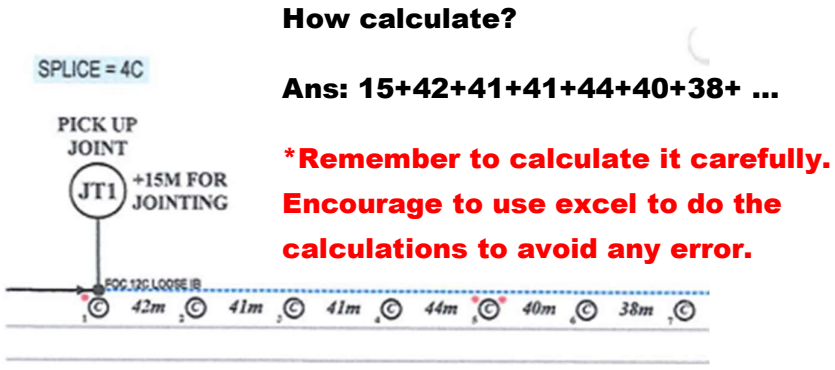
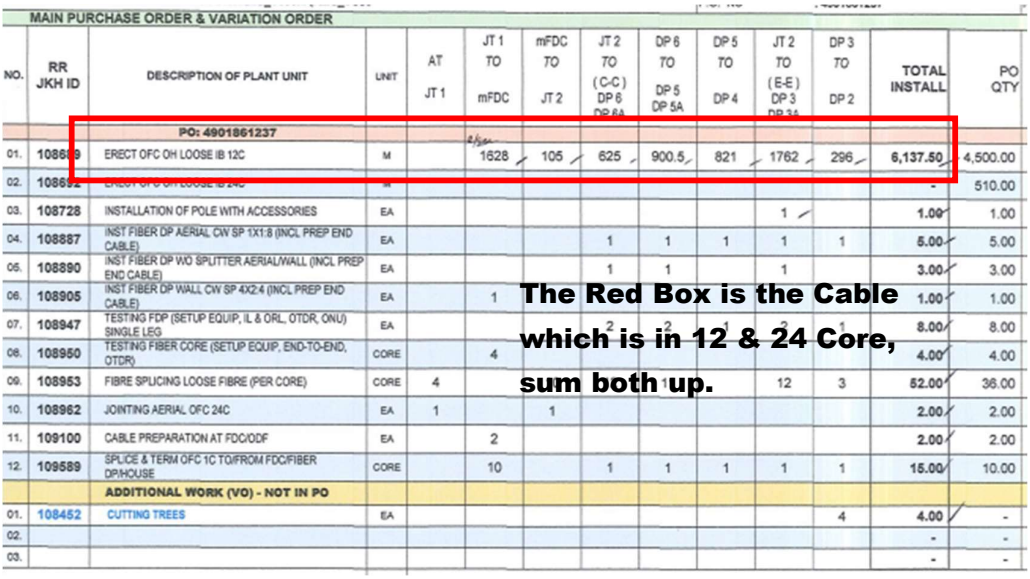


Figure 3.39: Calculate the ASB



MAIN PURCHASE ORDER & VARIATION ORDER

NO.	RR JKH ID	DESCRIPTION OF PLANT UNIT	UNIT	AT JT 1	JT 1 TO mFDC	mFDC TO JT 2	JT 2 TO (C-C) DP 6 DP 6A	DP 6 TO DP 5 DP 5A	DP 5 TO DP 4	JT 2 TO (E-E) DP 3 DP 3A	DP 3 TO DP 2	TOTAL INSTALL	PO QTY
		PO: 4901861237											
01.	108689	ERECT OFC OH LOOSE IB 12C	M		1628	105	625	900.5	821	1762	296	6,137.50	4,500.00
02.	108692	ERECT OFC OH LOOSE IB 24C	M									-	510.00
03.	108728	INSTALLATION OF POLE WITH ACCESSORIES	EA							1		1.00	1.00
04.	108887	INST FIBER DP AERIAL CW SP 1X1:8 (INCL PREP END CABLE)	EA				1	1	1	1	1	5.00	5.00
05.	108890	INST FIBER DP W/O SPLITTER AERIAL/WALL (INCL PREP END CABLE)	EA				1	1		1		3.00	3.00
06.	108905	INST FIBER DP WALL CW SP 4X2:4 (INCL PREP END CABLE)	EA		1							1.00	1.00
07.	108947	TESTING FDP (SETUP EQUIP, IL & ORL, OTDR, ONU) SINGLE LEG	EA				2	2	1	2	1	8.00	8.00
08.	108950	TESTING FIBER CORE (SETUP EQUIP, END-TO-END, OTDR)	CORE		4							4.00	4.00
09.	108953	FIBRE SPLICING LOOSE FIBRE (PER CORE)	CORE	4						12	3	52.00	36.00
10.	108962	JOINTING AERIAL OFC 24C	EA	1		1						2.00	2.00
11.	109100	CABLE PREPARATION AT FDC/ODF	EA		2							2.00	2.00
12.	109589	SPLICE & TERM OFC 1C TO/FROM FDC/FIBER DP/HOUSE	CORE		10		1	1	1	1	1	15.00	10.00
		ADDITIONAL WORK (VO) - NOT IN PO											
01.	108452	CUTTING TREES	EA								4	4.00	-
02.												-	-
03.												-	-

The Red Box is the Cable which is in 12 & 24 Core, sum both up.

Figure 3.40: Calculate the FMR

9. From Figure 3.36, we need several details for the diagram which are Node, OLT Code, ODF Code, Mini FDC or FDC, FDC Code, DP Number, FDC Capacity, FOC (RING) New, FOC (SPUR) New, FOC (SPUR) Existing, FOC (DSS) New & New Pole.

10. The Node name can be searched at the Project Name. For this project, the name is BBF USP CB 2017 FTTH KMU_C036M (KMU_VC5026) KG MARUDU, KG RANAU. Hence the Node name is NODE KMU.

11. The OLT Code and the ODF Code can be searched on the SPANMS TM website. Unfortunately, only my Industrial Supervisor can access it since the customer details are private for me to access. Hence, I will ask for the CODE name from my boss. The OLT Code given is KMU_G801 and ODF Code is KMU_F32.

12. To determined whether the FDC is mini or not, we can check from the project name. KMU_C036M, the M stands for mini, hence the FDC type is Mini FDC (mFDC).

13. From step 12., the KMU_C036M is the FDC Code.

14. The DP number can be determined from the SLD, FMR, or ASB. From SLD, we can see the DP involves are:

    - Main DP: DP2, DP3, DP4, DP5, DP6
    - TIE DP: DP3A, DP5A, DP6A

15. FDC Capacity can be calculated by multiplying the Main DP by 8. Hence,
    - FDC Capacity = Total Main DP x 8 = 5x8 = 40 HP.

16. FOC Ring (NEW) is the distance from OLT to ODF. For this project, there's no FOC Ring (NEW) involved.

17. FOC Spur (NEW) is the total distance cable from JT1 to mFDC which is 1.628 KM.

18. FOC Spur (EXISTING) will be nil since there's no statement on the FMR.

19. FOC DSS (NEW) is the total distance cable from mFDC to DP with a total distance of 4.5095 KM.

20. New Pole can be searched at the FMR under the name (*Installation Pole with Accessories*) which is the quantity is 1EA.

21. With the same method from (no.1 – no.20) we can do the IDD for another project that need to be completed.

Result:

The complete Infrastructure Drawing & Diagram (IDD) for project number TMKA/226014 is shown below:

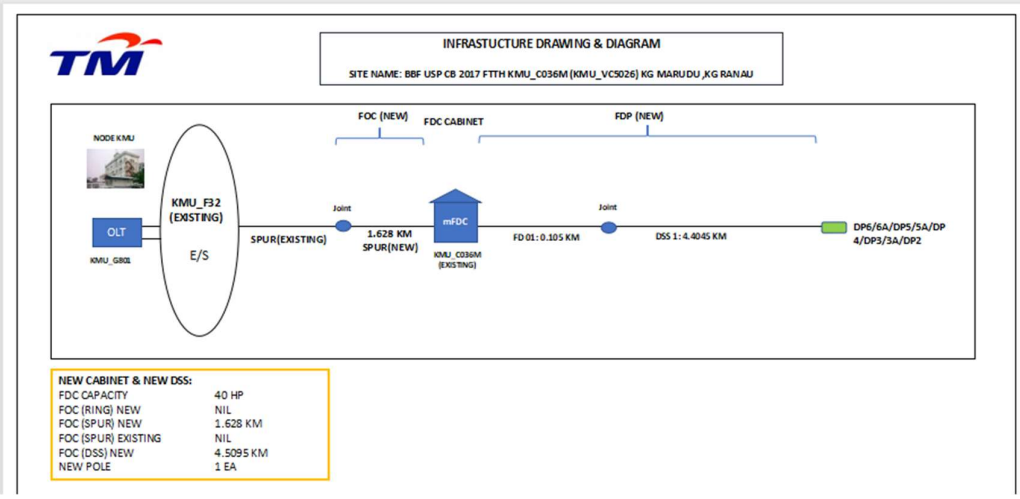


Figure 3.41: Complete Infrastructure Drawing & Diagram (IDD)

After completing the Infrastructure Drawing & Diagram, I need to recheck by giving the PowerPoint of the IDD to Technical Support & my Industrial Supervisor. After rechecking it, the IDD will be uploaded to the TM SPHERE website for Debt-Coverage-Ratio (DCR) submission.

Conclusion:

The Infrastructure Drawing & Diagram is a fun way to pass the time while waiting for work hours to end. The time-consuming component is manually calculating on the AS - Built Drawing (ASB), where it is easy to make a mistake while clicking the

calculator and needing to calculate again. The more complex the SLD, Final Measurement Report (FMR), and ASB, the more challenging it is to complete the Infrastructure Drawing & Diagram. These activities teach me to be more meticulous when doing my task in order to save time.

CHAPTER 4

CRITICAL ANALYSIS

4.1 Telekom Malaysia Sustainability

Considering how likely we all are to be blown to pieces within the next 10 years or more, the living cost getting higher and pollution on electrical waste which leads to social issues that have so much discussion as might have been expected. The media social have published numerous news, not very helpful to the average man, of the reality of sustainability, doing their stuff, and there have been many reiterations of the useless statement that sustainability "we have a better system to maintain sustainability?". But curiously little has been said, at any rate in print, about the question that is of most urgent interest to all of us, namely: "How difficult are these things to be solved?"

During my Industrial training, I have been considering how Telekom Malaysia will impact sustainability from now to 10 years that will be coming since I saw a lot of old electrical equipments abandoned. New network technology keeps evolving hence electrical equipment also needs to be upgraded or updated. If the electrical equipment is outdated where it will go if being thrown away? It's being estimated for 3.4 million customers around the globe for unifi services only. Consider how many new types of equipment would be installed if another service came out. We can take some example where Streamyx change to unifi services.

At Telekom Malaysia, their approach to sustainability is founded on TM's vision of making Life Easier for a Better Malaysia. Telekom Malaysia has also aligned its activities to the United Nation's Sustainable Development Goals, or UN SDGs so that TM can play a role in providing action plans to address challenges that have been identified by the global community. TM sustainability divides into 3 which are Economic, Environmental, and Social (TM Sustainability,2022).

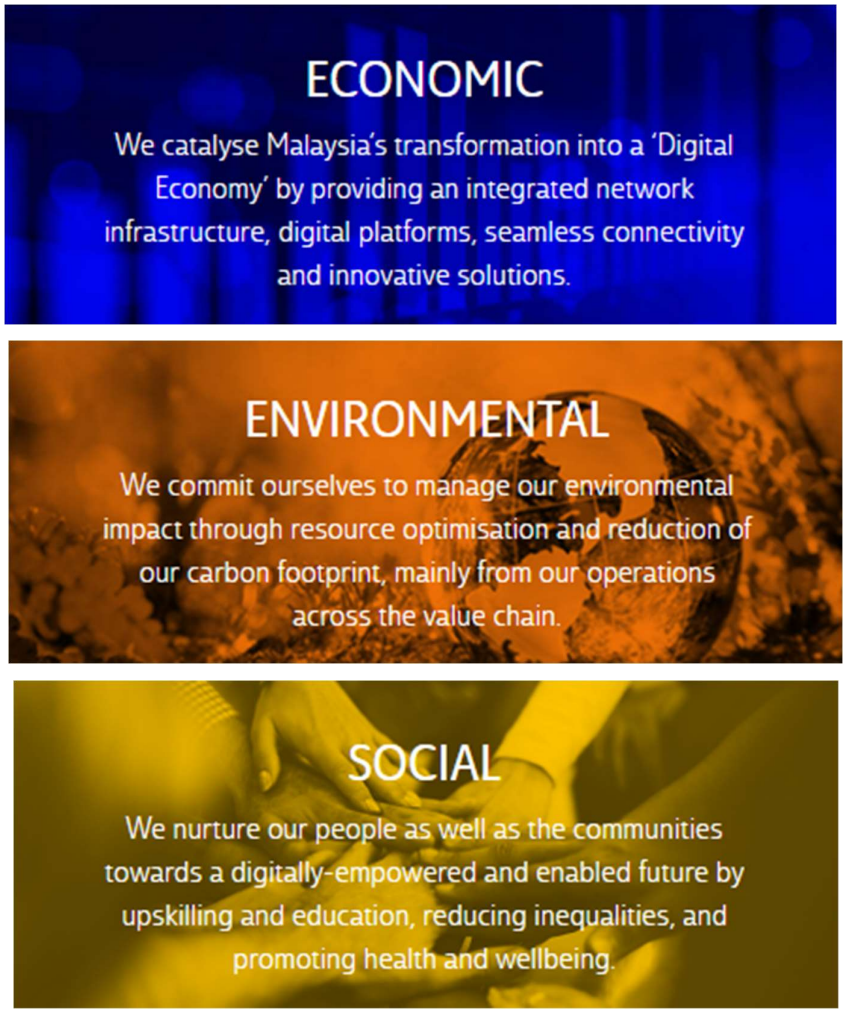


Figure 4.1: Telekom Malaysia Sustainability Approach

Source: TM Sustainability (2022)

A big part of doing business is about profit. Telekom Malaysia is the largest network provider in Malaysia. The service they provided for this past year is affordable for its price. This can relate to the Economic approach overall. The environmental approach will greatly help preserve and conserve the world for the

future generation. On the other hand, the Social approach of helping people will help a sustainable environmental that will benefit everyone.

The critical factor is how effective Telekom Malaysia's messaging was. For the time being, it has managed to demonstrate it with some bargains, films, or images all over the place. Unfortunately, we must consider the long-term effects of our actions. Since the economic strategy does not make use of all of the human senses and talents, it might not be as significantly impacted as the environmental and social approaches. The message concerning electrical waste should be very serious for future generations. The Environmental approach, as described by TM, will have an impact on the Social approach, whether it is positive or negative.

The news and false promises made by any organisation should not blind humanity. To provide a better living for society, we must speak out correctly. The most important aspect of starting a business is sustainability. A better mechanism should be devised right away so that regret does not occur later. Small chat and a short-term commitment will not suffice. Every organisation should raise awareness about the measures involved in implementing a sustainable approach for future generations' reference.

CHAPTER 5

SUGGESTION/RESOLUTION & CONCLUSION

5.1 Suggestion/Resolution on the Industrial Training

I strongly advise any engineering student who is going for Industrial Training to prepare more on networking subjects because those who wish to apply at Telekom Malaysia will be exposed to telecommunication things. It also allows you to use, understand, and recognise the material's engineering applications. They are also appropriate for any form of engineering, not only electrical. There are many interesting activities to do at Telekom Malaysia Berhad, not only work but also fun times like sports competitions, exercise sessions, and so on after work.

I appreciate my internship at TM, and it is an excellent training facility for hands-on experience. Unfortunately, there is also some advice for Telekom Malaysia Berhad to help internship students fill their time with important technical skills and knowledge. Last but not least, the student's supervisor should set plans for them as soon as possible so that they can learn something new while the supervisor is busy or absent.

5.2 Conclusion on the Industrial Training

It was a nice memory to work for Telekom Malaysia Berhad for ten weeks. I had seen numerous things I had never seen before and gained a great deal of information

about the Network Development industry. I saw that there were no boundaries to learning; every time, things will change to adapt to new technology in order to keep up with society, and different methods will be employed to solve the problem, and the problem will not be the same every day.

Furthermore, I see that no matter how big or small the task, we will never complete it correctly unless we have good responsibility, discipline, wholeheartedness, and the right attitude and character. In addition to learning about the network sector, I improved my communication skills, leadership abilities, and teamwork. As an Engineer, I also learn from my Industrial Supervisor how to be more confident in order to survive in the industry.

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APPENDIX

Appendix A

Web Part List & Summary

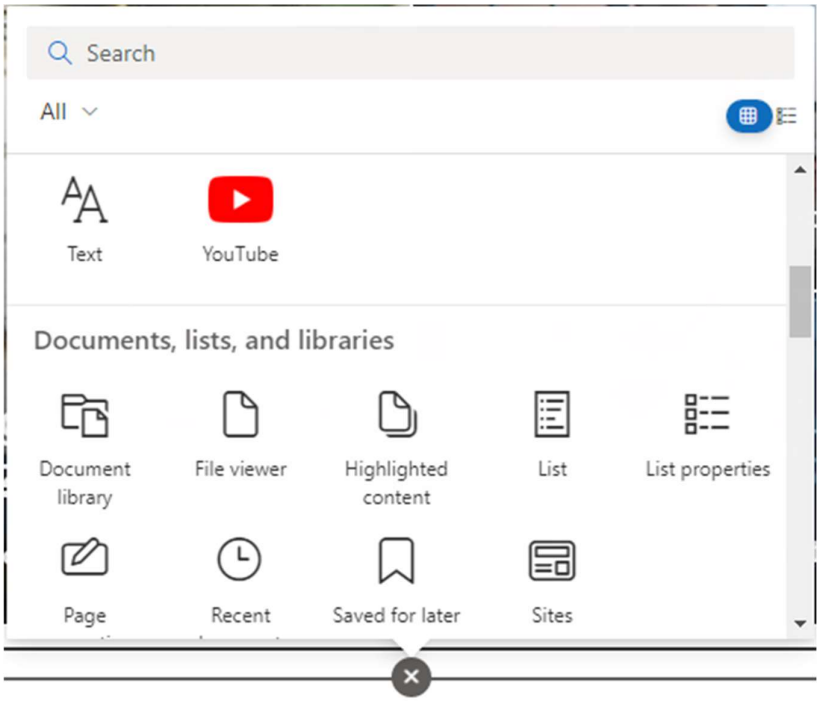

Figure A.1: Web Part -2

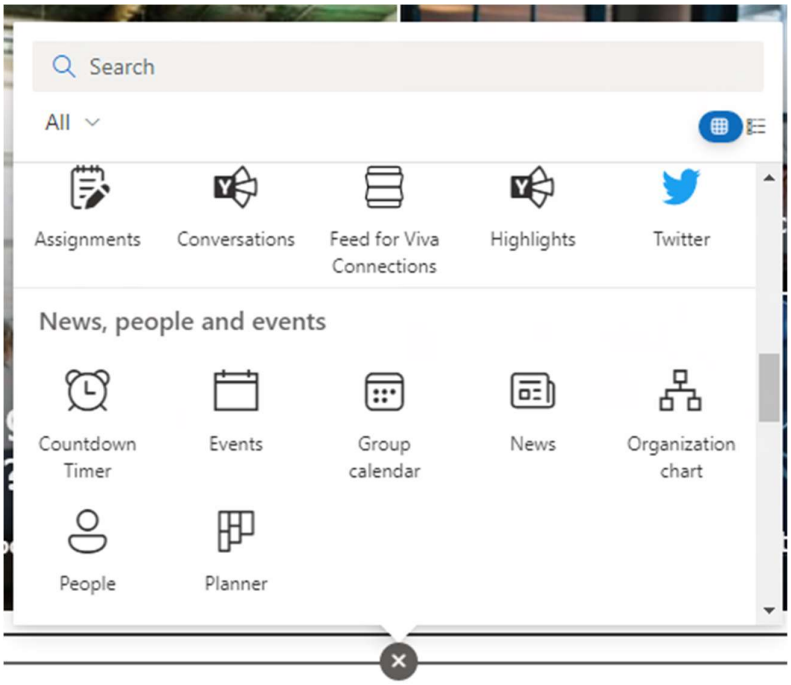

Figure A.2: Web Part -3

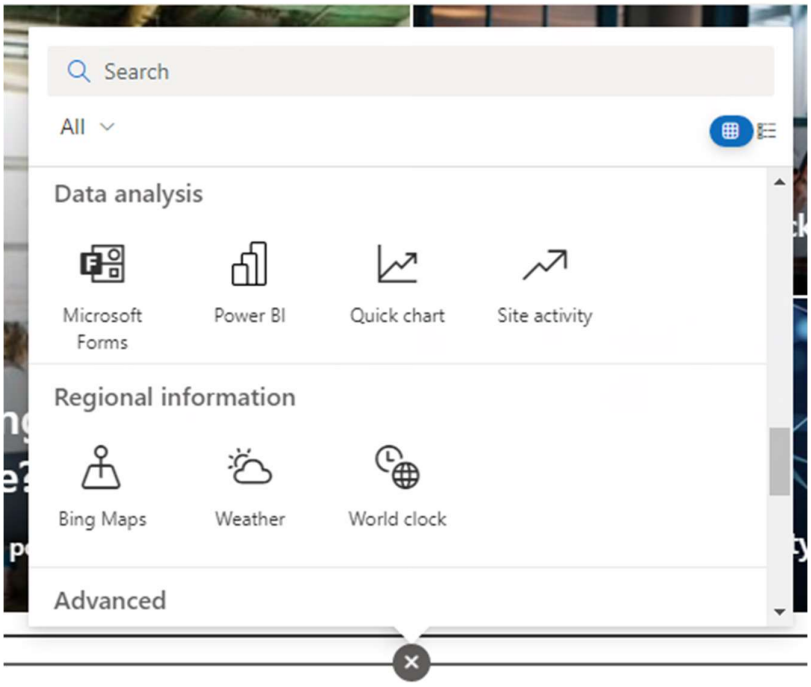

Figure A.3: Web Part -4

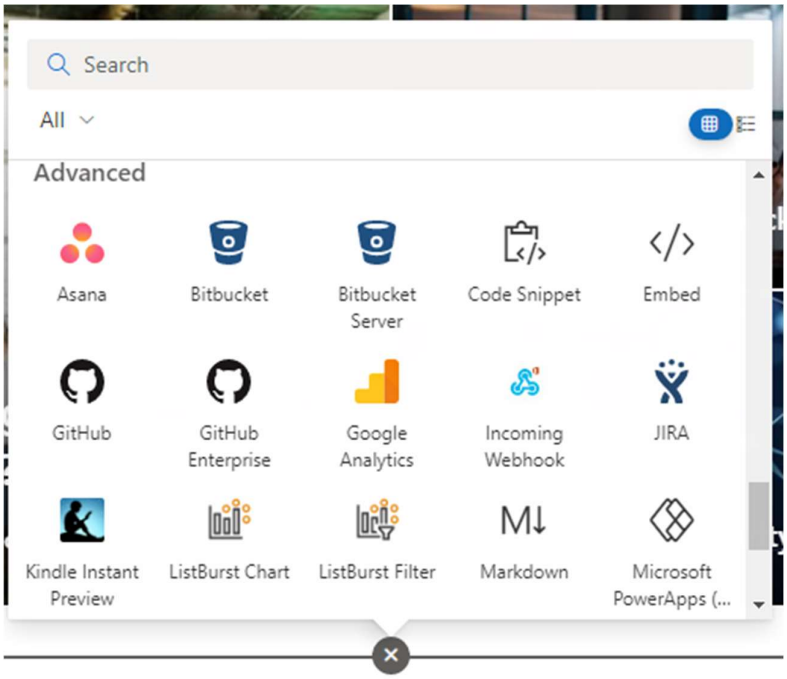

Figure A.4: Web Part -5

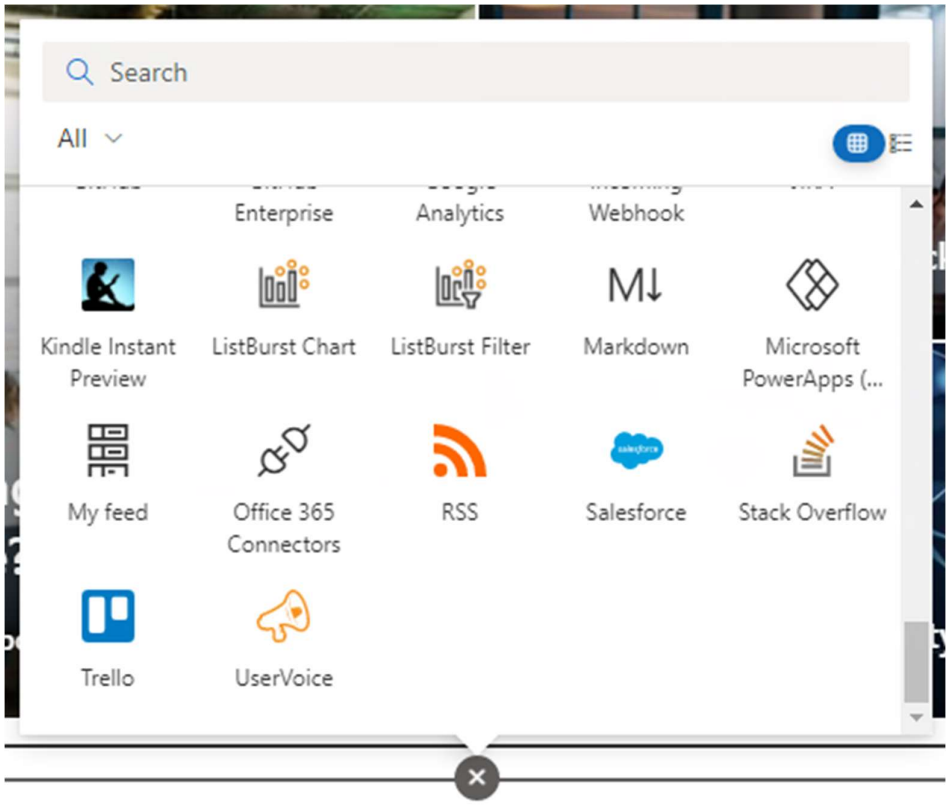

Figure A.5: Web Part -6

Table A.1: Web Part type & Descriptions Part 2

Type	Descriptions
Text	Add and format text and tables.
YouTube	Show a YouTube video on the page.
Document Library	Show a document library from this site.
File Viewer	Display a document or file on your page including Word, Excel, PowerPoint, PDF, 3D models, videos, and more.
Highlighted Content	Dynimically roll up documents, pages, videos, or other content based on search and filtering options.
List	Display a list from this site.
List Properties	Connect to a list web part on the same page and dynamically display a selection from the list.
Page Properties	Show details about your page like date, content type, or custom properties.
Recent documents	Display recent documents for the current user.
Saved for later	Show the current page viewer's documents, videos, and pages that they for later.
Sites	Show important or interisting sites on your page.
Assigments	Web part that shows upcoming and past assignments.
Conversations	Show conversations from a Yammer group, user, topic, or home.
Feed for Viva Connections	Show a feed with conversations, news, and Stream videos personalized to users based on the communities and sites they follow.
Highlight	Show highlights of Yammer conversations.
Twitter	Display a twitter feed.
Countdown Timer	Count down or count up to an important event.
Events	Display upcoming event from your sites in a layout you choose.
Group Calander	Display a calander from one of your Office 365 groups.
News	Show news posts from one or more sites in a variety of layouts. You can filter news and target news to key audiences.

Organization Chart	Show an organization chart (org chart) with structure and connections for a selected person.
People	Display selected people and their profiles.
Planner	Show and work with a Planner board or charts.
Microsoft Forms	Add a survey to collect responses and show results.
Power BI	Display a power BI report.
Quick chart	Show data in a simple bar or piec chart.
Site Activity	Show site activity such as files uploaded or edited, lists created, and more.
Bing Maps	Display a location on a map using Bing Maps.
Weather	Show the current weather in a location you choose.
World Clock	Show one or more clocks with time zone you choose.
Asana	Track projects from start to finish.
BitBucket	Manage and collaborate on your code projects.
BitBucket Server	Manage and collaborate on your code projects.
Code Snippet	Add a Code Snippet to the page.
Embed	Embed content from other sites such as Sway, Youtube, Vimeo, and more.
GitHub	Manage and collaborate on code projects.
GitHub Enterprise	Manage and collaborate on code projects hosted on a Github Enterprise instance.
Google Analytics	Get Google Analytics summary reports.
Incoming Webhook	Send data from a service to your Microsoft 365 Group in real time.
JIRA	Gather, organize, and assign issues deteceted in your software.
Kindle Instant Preview	Show a preview of a Kindle book.
ListBurst Chart	Display a dynamic chart based on List data.
ListBurst Filter	Add filters to a ListBurst chart.
Markdown	Use Markdown language to add and format text.
Microsoft PowerApps	Show a custom app created with PowerApp.
My feed	Display a personalized feed of content and activities.

Office 365 Connectors	Connect with other services to show updates and notifications from them.
RSS	Get RSS feeds for your group.
Salesforce	Build relationships with your customer.
Stack Overflow	Ask and answer programming questions.
Trello	Manage Trello cards and tasks all in one place.
UserVoice	Collect new customer ideas, and track and respond to customers problems.

APPENDIX B

Internship Farewell Party

Figure B.1: Access Network Development PB Utara Team

Figure B.2: My Industrial Supervisor Mrs. Arbaah

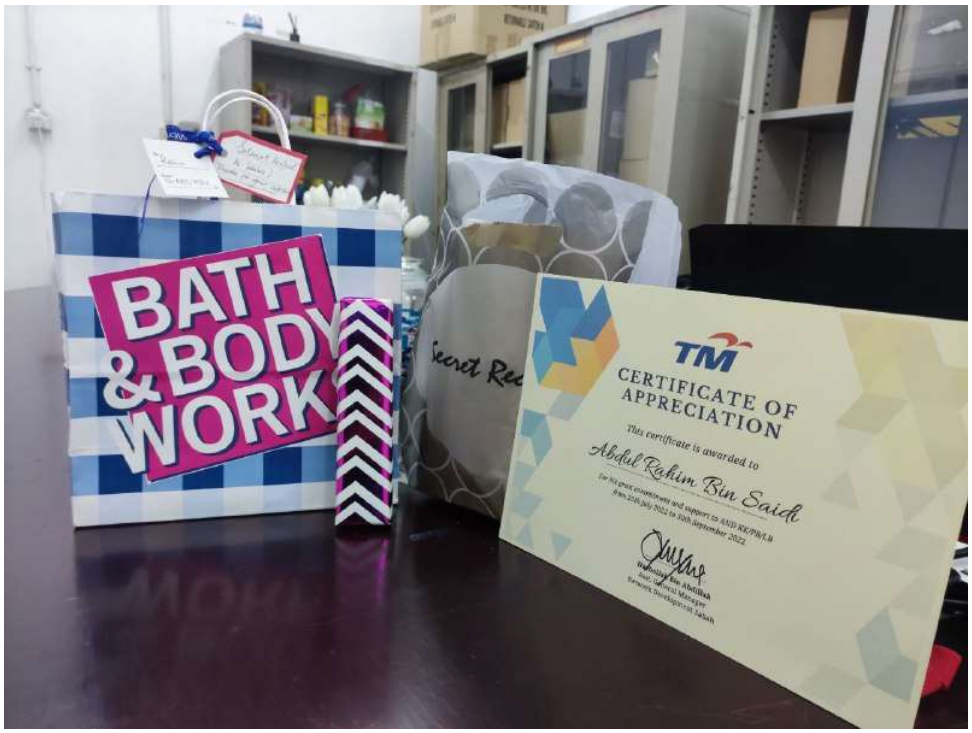

Figure B.3: Gifts & Certificates of Appreciation from AND Project Delivery PB Utara team