T-LEVELS | IfATE Institute for Apprenticeships and Technical Education

T Level Technical Qualification in Engineering, Manufacturing, Processing and Control (8730-13)

8730-034 Employer-Set Project Exemplar – E Grade

Summer 2024

City & Guilds | eal

Contents

Introduction **2**

Task 1 Research **5**

Task 2 Report **9**

Task 3 Design **14**

Task 4 Present **18**

Introduction

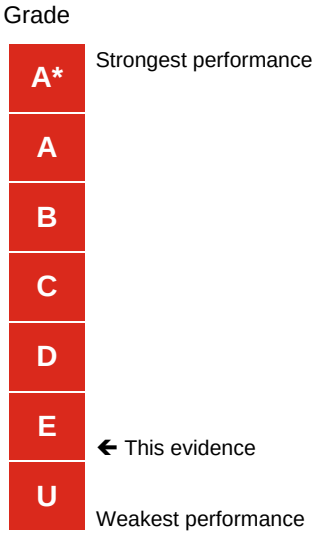
Summer 2024 Results

This document is aimed at providers and learners to help understand the standard that was required in the summer 2024 assessment series to achieve an E grade for the 8730-034 Engineering, Manufacturing, Processing and Control Employer-Set Project (ESP).

Providers and learners may wish to use it to benchmark the performance in formative assessment against this to help understand a potential grade that may be achieved if a learner was to attempt the next summative assessment series.

The Employer-Set Project is graded A* to E and Unclassified.

The exemplar evidence provided for the E grade displays the holistic standard required across the tasks to achieve **one mark above** the E grade boundary for the summer 2024 series. A slightly weaker performance would have resulted in an Unclassified (U) result being issued.



The Employer-Set Project brief and tasks can be downloaded from here.

Important things to note:

- We discussed the approach to standard setting/maintaining with Ofqual and the other awarding organisations before awarding this year. We have agreed to take account of the newness of qualifications in how we award this year to recognise that students and teachers are less familiar with the assessments (grading-arrangements-for-vtqsand-technical-qualifications-within-t-levels-in-the-academic-year-2023-to-2024) whilst also recognising the standards required for these qualifications.

- The exemplar evidence presented, as a whole, was sufficient to achieve the E grade. However, performance across the tasks may vary (i.e. some tasks completed to a higher/lower standard than an E grade).

Marking of this Employer-Set Project is by task and Assessment Objective, below is a summary of these along with the mark achieved by the evidence presented and the maximum mark available for each aspect.

Task	Assessment Objectives	Mark achieved	Max mark available
Task 1 Research	- AO1 Plan their approach to meeting the project brief - AO2a Apply core knowledge - AO3 Select relevant techniques and resources to meet the brief	3	9
	- AO2b Application of core skills	2	6
Task 2 Report	- AO1 Plan their approach to meeting the project brief - AO3 Select relevant techniques and resources to meet the brief	2	6
	- AO2a Apply core knowledge	2	6
	- AO2b Application of core skills	2	6
Task 3 Design	- AO1 Plan their approach to meeting the project brief - AO3 Select relevant techniques and resources to meet the brief	2	6
	- AO2a Apply core knowledge	2	6
	- AO2b Application of core skills	2	6
	- AO5a Realise a project outcome – was the right outcome achieved - AO5b Review how well the outcome meets the brief, how well the brief was met, the quality of the outcome in relation to the brief	2	6
Task 4 Present	- AO1 Plan their approach to meeting the project brief - AO3 Select relevant techniques and resources to meet the brief	2	6

	- AO2a Apply core knowledge	2	6
	- AO2b Application of core skills	2	6
	- AO5a Realise a project outcome – was the right outcome achieved - AO5b Review how well the outcome meets the brief, how well the brief was met, the quality of the outcome in relation to the brief	2	6
Maths	- AO4a Use of Maths skills	1	3
English	- AO4b Use of English skills	2	3
Digital skills	- AO4c Use of digital skills	2	3

What evidence was being assessed for the maths, English and digital skills:

Maths:

- Research Notes – the cost of the materials (Task 1)
- Relevant design calculations - the increase in the length of the valve and adaptor assembly compared to the manual valve and the cost of the materials (Task 3)

English:

- Research notes (Task 1)
- Report (Task 2)
- Reflective notes (Task 3)
- Video of presentation and materials to support presentation (e.g. slides etc) (Task 4)

Digital:

- Types of sources used for Research (Task 1)
- Report (Task 2)
- Drawings (Task 3)
- Presentation materials (slides, handouts, notes etc) (Task 4)

Task 1 Research

Assessment number (eg 1234-033)	8730-034
Assessment title	Employer-Set Project

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234

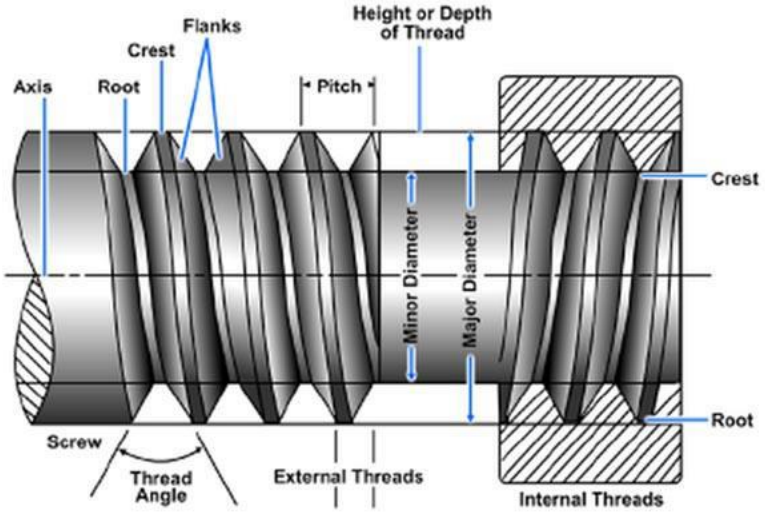
Provider name	<provider name>
City & Guilds provider No.	999999a

Task(s)	1
Evidence title / description	**Evidence expected for marking:** Research notes (typically 1500 words) List of references/sources **Evidence submitted for marking:** Research notes (typically 1500 words) List of references/sources
Date submitted by candidate	DD/MM/YY

Research.

What is needed to make a 1”BSP thread watertight= a sealing mechanism, preferably a pressure assisted one to prevent any leakage from getting to the threads, causing rust.

1. Picture of 2”7 thread.



• • I think that the 2”7 thread and the adaptor should be made from the material of stainless steel as this is as it is corrosion resistant easily formable with high tensile strength. So this is the best material to got for. It will also help with the adding the feature of the tool to hold the adaptor do to it being low maintenance. Other helpful properties of stainless steal include it being temperature resistant, and hygienic, this is another advantage to having stainless steal as it is going to be used in circumstances such as food manufacturing such as this case.

2. Bibliography

(2024, march 13th). Retrieved from https://en.wikipedia.org/wiki/British_Standard_Whitworth

The cost of stainless steal per kilogram is normally around £2-£3. You would need no more than 3kg of stainless steel to make the threads and the adaptor, for the pneumatic valves the best I could find in terms of quality was at a cost of £205, the thread size is 1-4inchs, is double acting, is a ball type and the maximum working pressure is 40 BAR. And most importantly it has an internal thread. (width 90mm).

I will need to change the threading of the pipes and shorten them as well to make them external, in order for them to fit the valve. I will ensure that the pipes are stainless steal. Ill change the threading from 2”7 to a 3”1/2 this will fit better with the 90mm interior thread for the valve. I would use up to 1/2 meter of stainless steal pipes, but I most likely wont need all of it.

The adaptor as I said will be made from stainless steel, it will be 3”1/2 threading, double sided and 50mm long (2 inches) both sides of the adaptor will be exterior threading as the adaptor and the pipes either side of it are interior.

The o seals will be black so they are easily identifiable, this will help whenever there is maintenance, it will also be easy to identify when the o seals need to be swapped out for a new set.

3. Picture of pneumatic valve.

Price.

Pneumatic valve (£205) 3kg of stainless steal (£7.50) a pressure assisted seal (£10.95) the stainless steal pipe (£15.72) and the stainless steel required to make the adaptor (£2.50) the price so far comes to £241.67.

4. Works Cited

(2024, march 13th). Retrieved from https://uk.rs-online.com/web/p/pneumatic-actuated-valves/7605582?cm_mmc=UK-PLA-DS3A-_-bing-_-PLA_UK_EN_Catch+All-_-Mechanical,+Fluid+Power+%26+Tools-_-7605582&matchtype=e&pla-4574999185500285&cq_src=google_ads&cq_cmp=554644865&cq_term=&cq_plac=&cq_net=o&c

(2024, march 13th). Retrieved from https://uk.rs-online.com/web/p/pneumatic-actuated-valves/7605582?cm_mmc=UK-PLA-DS3A-_-bing-_-PLA_UK_EN_Catch+All-_-Mechanical,+Fluid+Power+%26+Tools-_-7605582&matchtype=e&pla-4574999185500285&cq_src=google_ads&cq_cmp=554644865&cq_term=&cq_plac=&cq_net=o&c

5. Bibliography

(2023, march 13th). Retrieved from https://www.metals4u.co.uk/materials/stainless-steel/stainless-steel-pipe#:~:text=21.3mm%20OD%20x%202.1mm%20%281%2F2%22%20NB%20Sched%2010%29,Stainless%20Steel%20Pipe%20304%20%C2%A315.72%20p%2Fm%20%28ex%20VAT%29

(2024, march 13th). Retrieved from https://en.wikipedia.org/wiki/British_Standard_Whitworth

(2024, march 13th). Retrieved from https://uk.rs-online.com/web/p/pneumatic-actuated-valves/7605582?cm_mmc=UK-PLA-DS3A-_-bing-_-PLA_UK_EN_Catch+All-_-Mechanical,+Fluid+Power+%26+Tools-_-7605582&matchtype=e&pla-4574999185500285&cq_src=google_ads&cq_cmp=554644865&cq_term=&cq_plac=&cq_net=o&c
(2024, march 13th). Retrieved from https://uk.rs-online.com/web/p/pneumatic-actuated-valves/7605582?cm_mmc=UK-PLA-DS3A-_-bing-_-PLA_UK_EN_Catch+All-_-Mechanical,+Fluid+Power+%26+Tools-_-7605582&matchtype=e&pla-4574999185500285&cq_src=google_ads&cq_cmp=554644865&cq_term=&cq_plac=&cq_net=o&c

Task 2 Report

Assessment number (eg 1234-033)	8730-034
Assessment title	Employer-Set Project

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234

Provider name	<provider name>
City & Guilds provider No.	999999a

Task(s)	2
Evidence title / description	**Evidence expected for marking:** Written report (typically 2000 words) **Evidence submitted for marking:** Written report (typically 2000 words)
Date submitted by candidate	DD/MM/YY

Report

The adaptor:

The adaptor will be made from stainless steel and 50 mm long, double sided, interior and exterior threaded, I'm also going to have pipes running from the adaptor to the valve. The circumference of the adaptor on the external threading side will be 3.9 inches, however the internal threaded side of the adaptor will be connecting to the pipe leading to the valve will have a circumference of 4.1 inches. We can find out the OD (outer diameter) via dividing these figures by 3.1416. I will quench the adaptor in order to make it stronger, this is because quenching is the most beneficial when strengthening stainless steel. This process it slowly adding heat to the component and then rapidly dropping the temperature. I will weld a nut onto the interior threading side of the adaptor in order for it to be secured more tightly by a spanner. I will add the nut by heating the interior of the nut, sliding it onto the adaptor and letting it set and harden and become part of the adaptor.

The pipes:

The pipes will have half a foot of new set of pipes welded on ill do this so that I can change the threading so that the two pipes so they shall fit into the pneumatic valve and the adaptor easier. Both ends of the pipe will have a threading measurement of 3"1/2 however the one connecting to the pneumatic valve will have an exterior threading and the pipe connecting to the adaptor will be interiorly threaded. The sizes of the pipes will be slightly different however, the pipe fitting externally onto the adaptor will have a circumference if 3.95 inches this is so that the pipe will actually fit onto the adaptor, they will not screw into each other if they are exactly the same size. The same will go for the pipe fitting on the internal side of the adaptor, the measurement will read 4.05 inches in order for it to fit properly. The reason I have chosen stainless steel as the material for my adaptor and pipes is because it's the most hygienic out of all of the metals, this is beneficial in a food factory where it will meet the regulations, its also quite strong and reliable.

Keeping it water tight;

O seals will be used on the rims of the pipes connecting to the adaptor and valve to ensure it being watertight and to prevent leakage. The material that the o seals will be made from will be silicone as it has high resistance to extreme cold and heat which is beneficial when connected to pipes that could fluctuate in temperature. Silicone also has low toxicity which is highly beneficial when it is connected to a pipe which is transporting /has food flowing through it, this will avoid the food getting infected. It is also quite long lasting so although you would have to eventually to change them, you wont have to for a while.

Tools

The tools ill be using will be a Milwaukee pipe cutter (to cut the pipes) these come at a cost of £175. Diamonds can be added to the cutter to ensure an easer and cleaner cut, you can by the pipe cutter like this at a higher price or you can add them yourself. Another tool I will be using will be a manual ratcheting tool to make the external threads to the pipes and one half of the adaptor, its fairly easy to use you just need to clamp down one end of the pipe and manually put the thread on the pipe. To make the internal threads I will use a tapper, this is another way of manually adding threads to your parts but far more reliable. You'd have to ensure that there are no metal shavings left on the tappers from a previous use so that there are no burrs, and so that the threads are done at the highest quality, you can use a fine but sturdy haired brush to ensure the tappers are metal shaving free. Id do this with the manual ratcheting tool also. When using both of these pieces of equipment ill ensure that I use a green paste type lubricant called pipe thread sealant. This will make sure that the tapper and the ratcheting tool flow easy enough when doing the threading and that they don't get stuck whilst I'm half way into doing the threading, this could damage both the equipment, the pipe and ruin the threading.

Suppliers:

I have decided to import my tools from a company called Rigid Tools. founded in 1923 they have over a century's worth of experience in making tools and equipment. I've read some reviews online and they are nothing but glowing customers that are pleased with they're purchase. And as it includes free shipping, affordable prices, and they sell all of the equipment that I'm looking for, ill definitely go with RIGID TOOLS. For the materials I've decided to go for metals4U ...when you need it! the pipes ill acquire off of them are really easy to find, cheap and have a good reputation for delivery times and good quality products. Furthermore they have the exact pipe sizes that I'm looking for.

Calculations:

I'll take the circumference of the pipe joining into the adaptor on the interior side (4.05 inches) and divide that by 3.1416 I will get the outer diameter which is 1.28 or 1.3 inches, that is how ill find the measurement for the pipe I need. And for the pipe leading into the adaptor on the exterior side (3.95 inches) after dividing that by 3.1416 you will geta outer diameter of 1.25 or 1.3 inches. Thus making it easer to gather the pipe size as they're both the same diameter. The end of the pipe that is slightly smaller (3.95 inches) will slim down to the exact size I need it after being threaded with the ratcheting tool. The total cost of the whole operation should be as follows: ratchet tool (£78.09) the tappers will come to a cost of (£38) the pipe cutter will cost (£26.26) the thread sealant (£19.20) the

materials for the adaptor (£4.30) for stainless steel pipes with an outer diameter of 1.3 inches or 33mm will come to a unit price of (£28.52) for a meter and that's all I believe I need to make the adaptor and the other pipes. The o seal will cost (£0.59p) this puts the final price up to £194.96.

Health and safety:

We must ensure that we are following the health and safety of food regulations act 2006. This is for when businesses are obliged to ensure that the food that they are producing and selling is clean, pure and hygienic.so I must make sure that the materials and tools I use before use are sanitised and clean before use.

Bibliography

(2024, march 15th). Retrieved from https://ridgidtoolshop.co.uk/
(2024, march 15th). Retrieved from https://ridgidtoolshop.co.uk/5-pipe-tube-cutting-preparation?page=5
(2024, march 15th). Retrieved from https://ridgidtoolshop.co.uk/manual-ratchet-threaders/ridgid-972-model-11-r-ratchet-handle-only-0095691377777.html

Bibliography

(2024, march 15th). Retrieved from https://ridgidtoolshop.co.uk/
(2024, march 15th). Retrieved from https://ridgidtoolshop.co.uk/5-pipe-tube-cutting-preparation?page=5
(2024, march 15th). Retrieved from https://ridgidtoolshop.co.uk/manual-ratchet-threaders/ridgid-972-model-11-r-ratchet-handle-only-0095691377777.html
(2024, march 15th). Retrieved from https://www.metals4u.co.uk/materials/stainless-steel/stainless-steel-pipe/pipe-grade-304/2951-p

Bibliography

(2024, march 15th). Retrieved from https://ridgidtoolshop.co.uk/
(2024, march 15th). Retrieved from https://ridgidtoolshop.co.uk/5-pipe-tube-cutting-preparation?page=5
(2024, march 15th). Retrieved from https://ridgidtoolshop.co.uk/manual-ratchet-threaders/ridgid-972-model-11-r-ratchet-handle-only-0095691377777.html
(2024, march 15th). Retrieved from https://www.metals4u.co.uk/materials/stainless-steel/stainless-steel-pipe/pipe-grade-304/2951-p
(2024, march 15th). Retrieved from https://www.quittance.co.uk/personal-injury/advice/general/the-food-hygiene-england-regulations-2006

Task 3 Design

Assessment number (eg 1234-033)	8730-034
Assessment title	Employer-Set Project

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234

Provider name	<provider name>
City & Guilds provider No.	999999a

Task(s)	3
Evidence title / description	**Evidence expected for marking:** Part A – Dimensioned adapter drawing (A3 size) and a drawing showing pipework modifications (A3 size) Part B – Supporting design calculations and reflection notes (typically two sides of A4) **Evidence submitted for marking:** Part A – Dimensioned adapter drawing (A3 size) and a drawing showing pipework modifications (A3 size) Part B – Supporting design calculations and reflection notes (typically two sides of A4)
Date submitted by candidate	DD/MM/YY

DESIGN

The threading ive chosen to go with is 3'1/4 (3 threads per quater inch) which would work out to be 12 threads per inch. The reason ive chosen to go for a higher thread volume is because the adaptor can be screwed in with more presision, and has higher strength and grip due to the greater surface area. I felt I had to cut half a foot from each of the existing pipes so that the new pipes that I'd add would fit a lot better into the valve and the adaptor after I'd modified them. This being changing the threads to 3'1/4. I also added a pipe to run between the valve and the adaptor other than the adaptor being screwed straight onto the valve. This is better so it leaves more room for a possible filter to be fitted into the pipe, as it is a food manifacting site this would be very plusable. By the end I exended the pipe work by 0.75 meters, mainly from adding the pipe between the valve and the adaptor. I'll add that the nut I weldded onto the adaptor was also made from stainless steel. I know my design is fit for purpose mainly due to the added food hygene benifits, all of the matirals i added where stainless steel and I even left room for a filter to be added to catch any harmful substances that could slip through. I also replaced the manual valves to an pneumatic one thus making it easier for workers.

THE COST

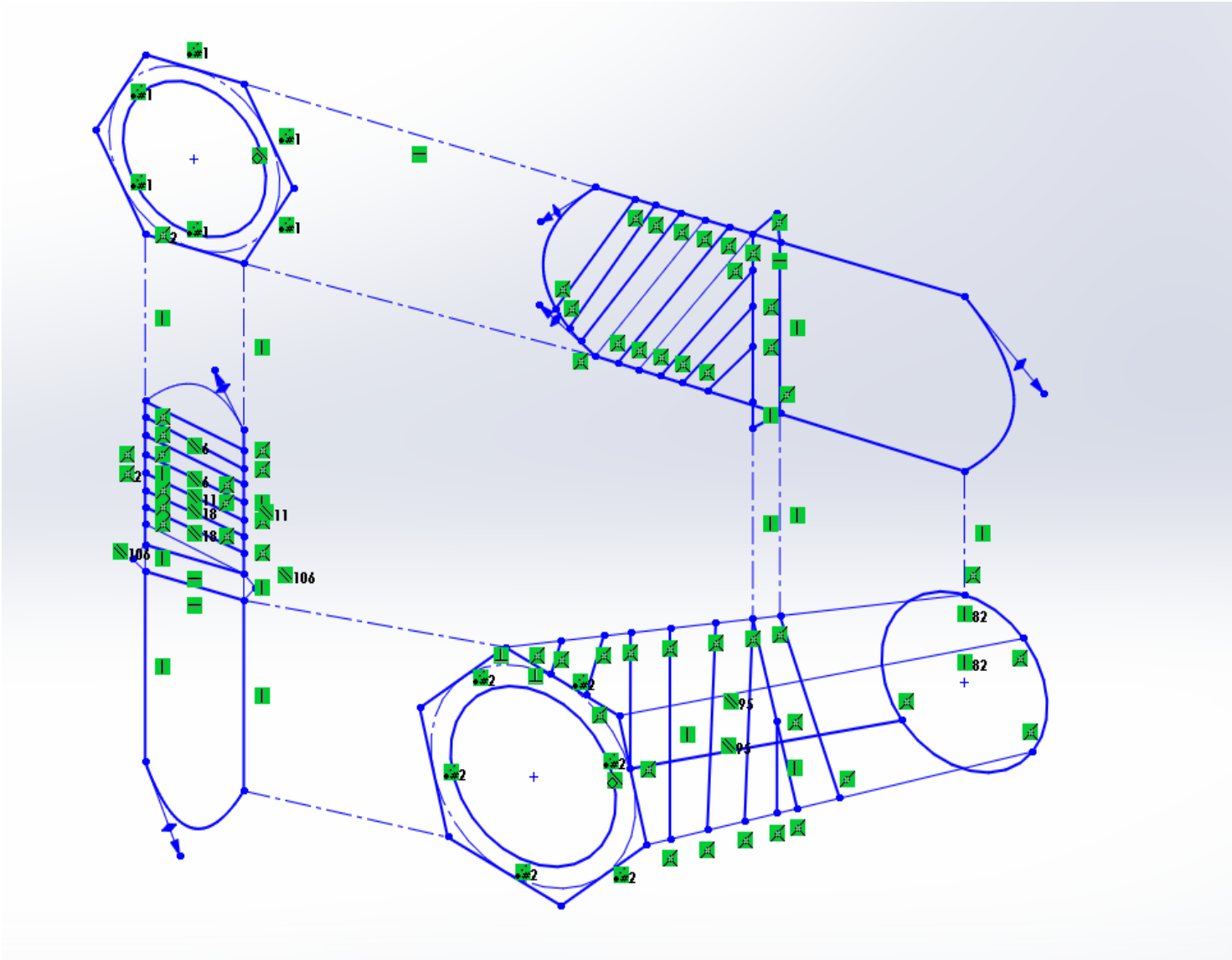
The final cost of matirals exluding tools should come to £4.30 for the adaptor + £28.26 for the pipeage, although I dout I'd use all of the pipes. Including the tools being added to the cost puts us a total of £194.96. The tools include the manual ratcheting pipe (for threads) , the pipe cutter, the tapper (for internal threads) the oil paste for threading so there are no damages, or risk of the tapper getting stuck. If of course I could be lended the tools or matirals by another party that would make the ordeal cheaper.

CALCULATIONS

The calculations i needed to work out was finding the outer diameter. I did this by measuring the optimal circumferance for the adaptor, on one side it was 3.9 inches round, the other side being 4.1 inches round in circumferance and divied that by 3.1416. for both measurments i got 1.3 inches which made it easy to find the right pipe size to fit on each end (one going from the valve to the adaptor and the other going from the adaptor to another piece of machinery). I took these measurments from the adaptor and the

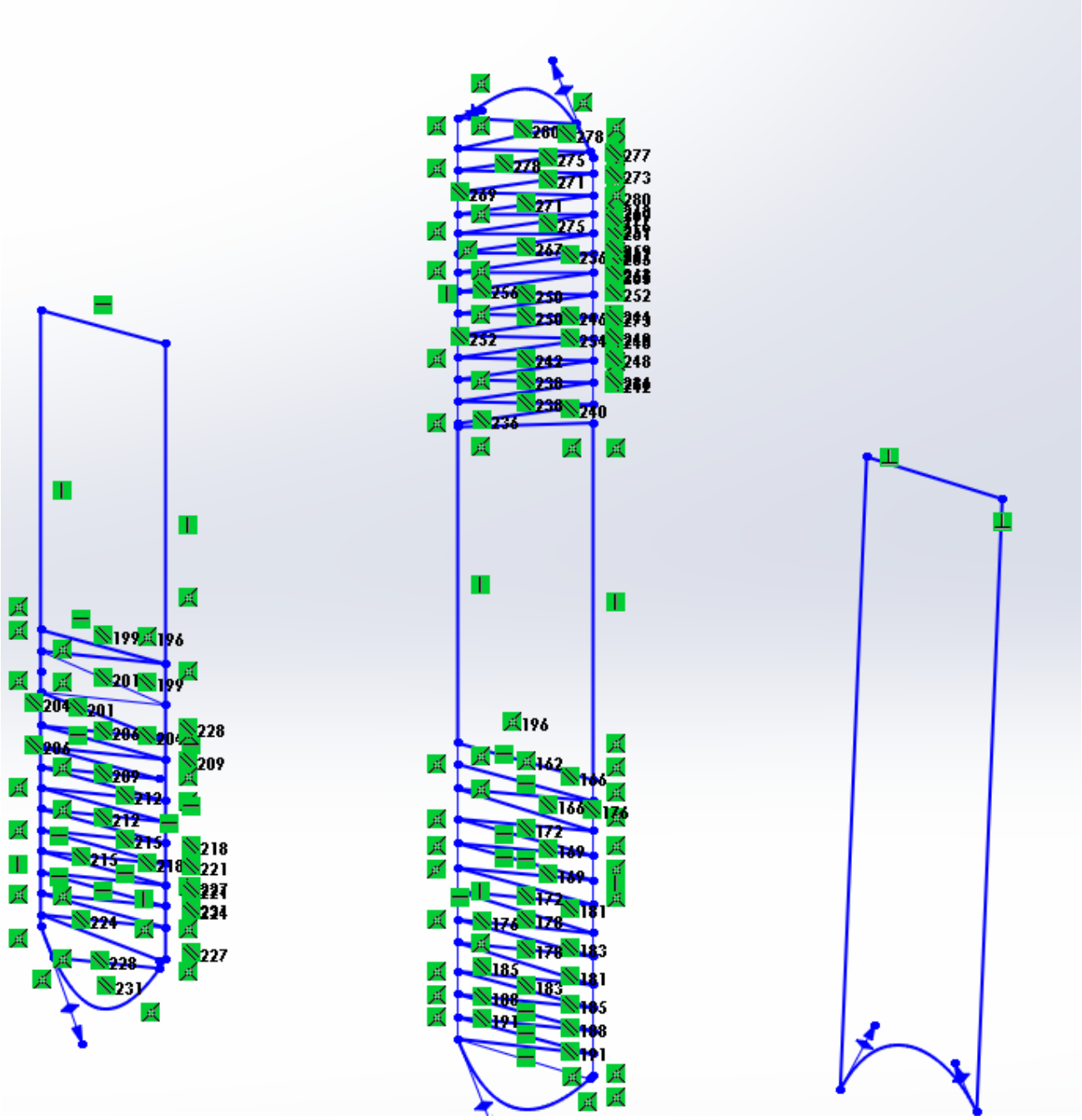
valve and decreased the pipes outer diameter by 0.5 mm so that they would fit properly, if both the pipe and the adaptor where the same size they would not screw into eachother even if the pipe was externally threaded (making it slighly slimmer) I also had to ensure that the pipe with external threads either sure was long enough to reach both the adaptor, the length if the middle pipe in the end was one quater of a meter.

The top left is the front view of the adaptor, the view below that is the top view and the side view is top right. Ive also done a 3D representation of the adaptor in the bottom right.



PIPE DESIGN

The pipe on the left is the pipe that will run from a seperate piece of machinary into the valve internaly as the valve has exteriour threading. The second pipe has exteriour threading on each side, this pipe will joined between the valve and the adaptor, both of which have interiour threads. and the third pipe has interiour threading only, this will fit onto the side of the adaptor that has the exteriour threading, and will run to a seperate machine.



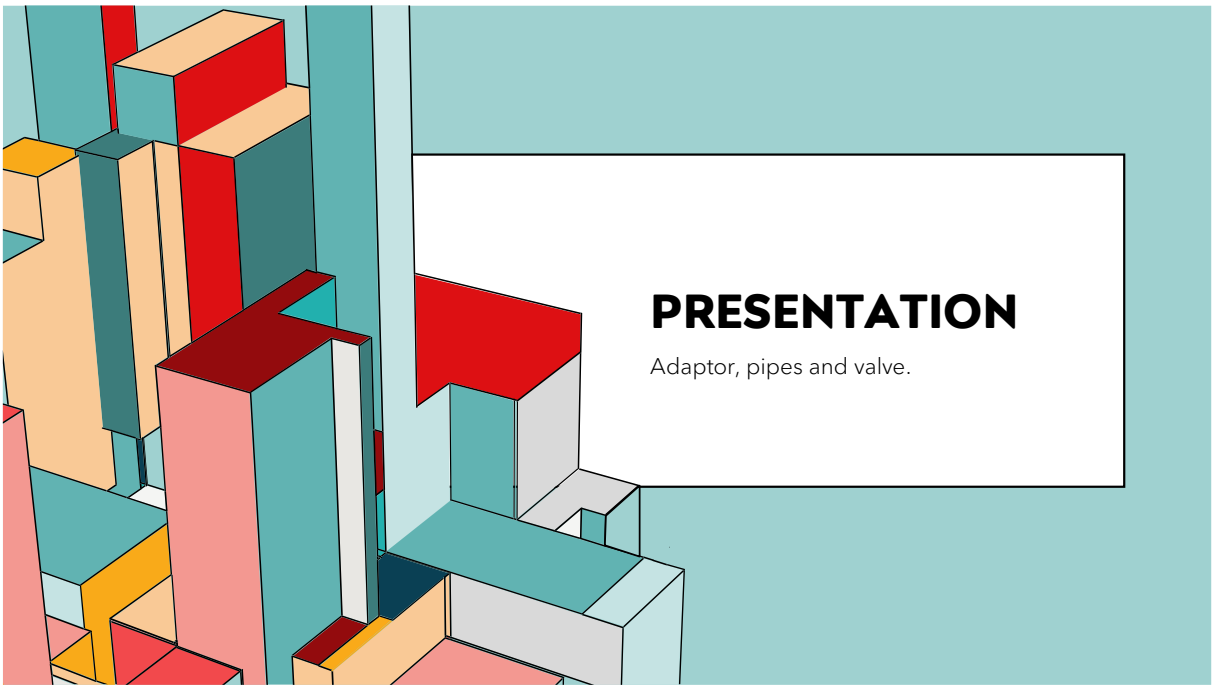
Task 4 Present

Assessment number (eg 1234-033)	8730-034
Assessment title	Employer-Set Project

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234

Provider name	<provider name>
City & Guilds provider No.	999999a

Task(s)	4
Evidence title / description	**Evidence expected for marking:** Presentation materials **Evidence submitted for marking:** Presentation materials
Date submitted by candidate	DD/MM/YY



MATERIALS.

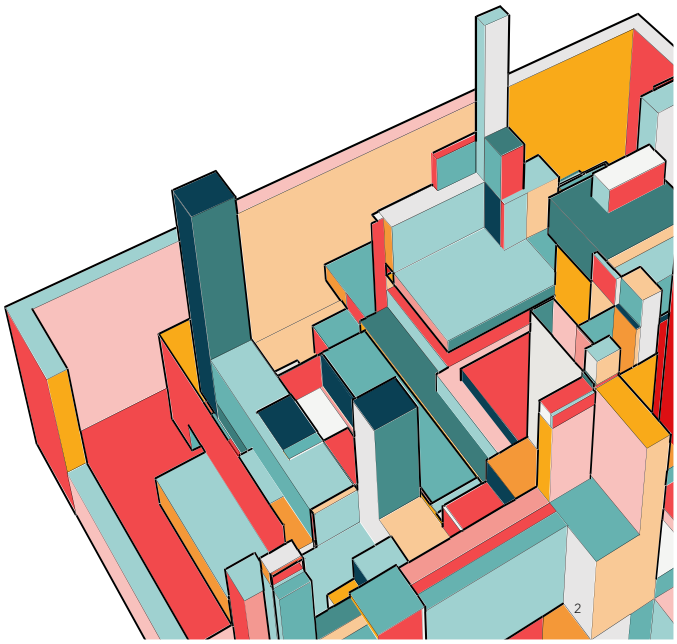
The materials I will be using are as follows:

one meter of stainless steel piping plus a separate ¼ of a foot of stainless steel to make the adaptor, one nut and one silicone O seal.

TOTAL COST OF MATIEALS:

The cost for the adaptor will be £4.30 and for the metal pipes £28.52, total cost: £32.82

7/1/20XX



2

THE TOOLS

Tappers

The tappers are used to create the interior threading of a pipe or a hole, in this case I'll be using 3'1/4 tapper to thread the interior of one of the pipes and one half of the adaptor (nut side)

Milwaukee Pipe Cutter

I'll clamp one half of the pipe with the pipe cutter and the other half will be clamped down to a table or welded to the machinery, I then rotate the the pipe cutter to cut the pipe with ease. Some of these pipe cutters come with diamonds encrusted along the blade to ensure a clean and precise cut.

Thread Sealant

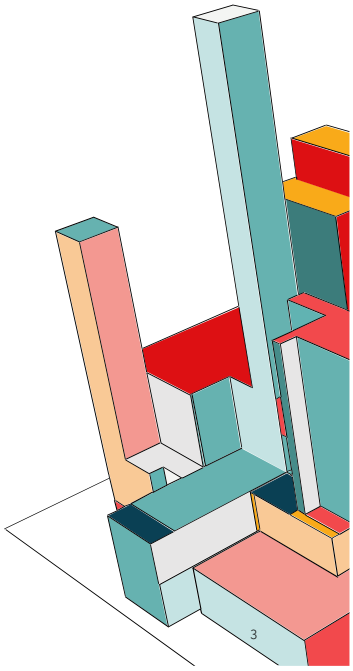
Thread sealant is used to lubricate the threaders and the pipes to make it easier to thread the martials and to also ensure that there is no damage done to the threads.

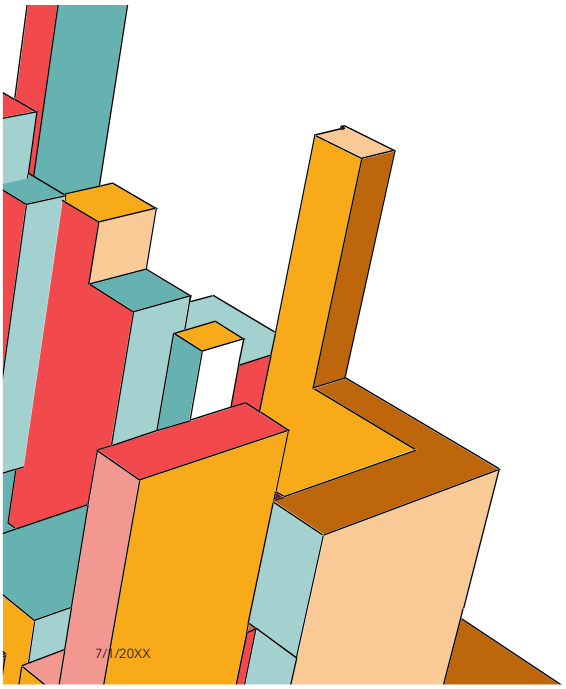
Manuel Ratcheting Tool

This is used to do the exterior threading on the pipes and one half of the adaptor. To use this I'll clamp down one half of the pipe or the adaptor and rotate along the pipe until you have reached the desiredthreadage

The O seal

ill use the o seal to keep the parts that connecting to each other water tight, i.e. pipe to adaptor or pipe to valve. It is made from silicone which is best for leak prevention.





COSTS

The Threading Tools

The manual ratcheting tool costs £78.09 and the tappers will come at a cost of £38 (depending if I have to get them in a set or not).

Pipe Cutter

Will come to cost of £26.26

Thread Sealant

The thread sealant will cost £19.20

Total cost of Tools

The total cost of all tools together is £161.55

PLAN OF ACTION

Removal

I'm going to remove the existing manual valves and pipes, I'll remove all together about 0.75 meters of pipeage.

Pneumatic valve

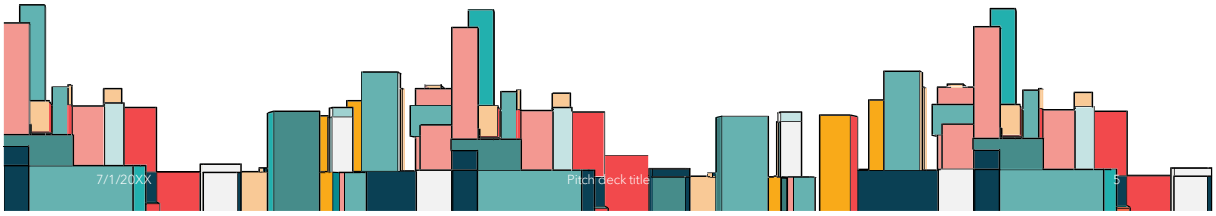
Ill also add the pneumatic valve which will also have the same threading as the pipes, replacing it with the manual valves.

Replacement

I will then replace the old set of pipes with a new set of stainless steel pipes that I have threaded with the 3'1/4 tappers and ratcheting tool.

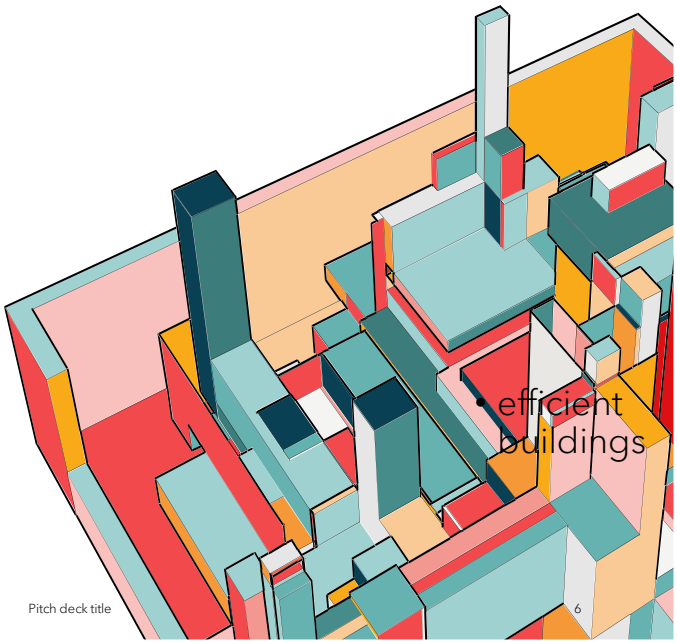
Adaptor

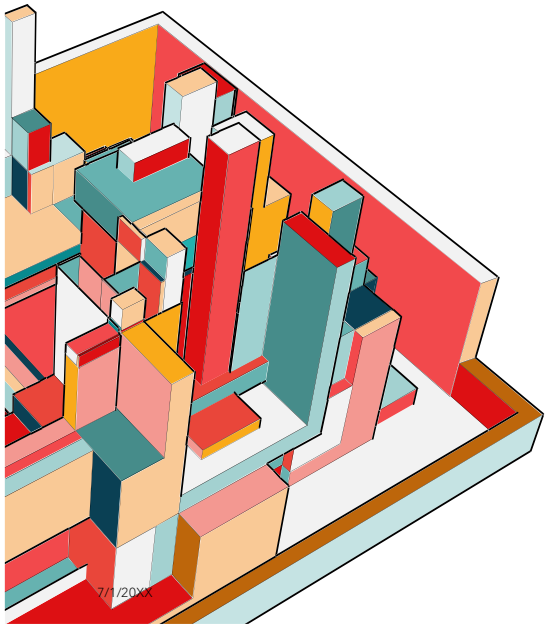
I'll add the adaptor between two pipes, one of which connects to the valve and another that connects to another piece of machinery.



THE THREADS

I decided to use 3'1/4 threads on the pipes, adaptor and valve due to the high strength and security they provide. Due to them having so many threads per inch (12 per inch) this offers up alot more surface area for it to grip onto. This also allows for it to be screwed on and tightened with a lot more precision.

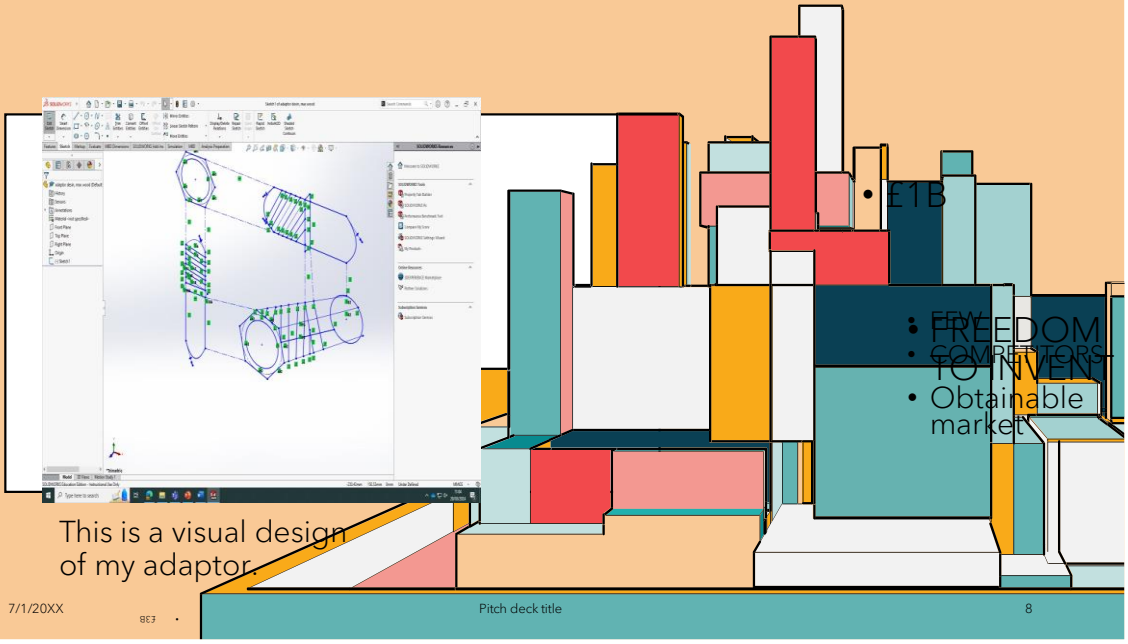




CALCULATIONS

In order to find the outer diameter on the adaptor and valve which had a circumference of 3.9 inches, I divied this by 3.1416 this got me 1.3 inches rouned up, i got the same figure when I divided 4.1 which was the interour threaded side of the adaptor inches by 3.1416. I needed to find the outer diameter so I could find the correct pipe diameter to fit the adaptor.

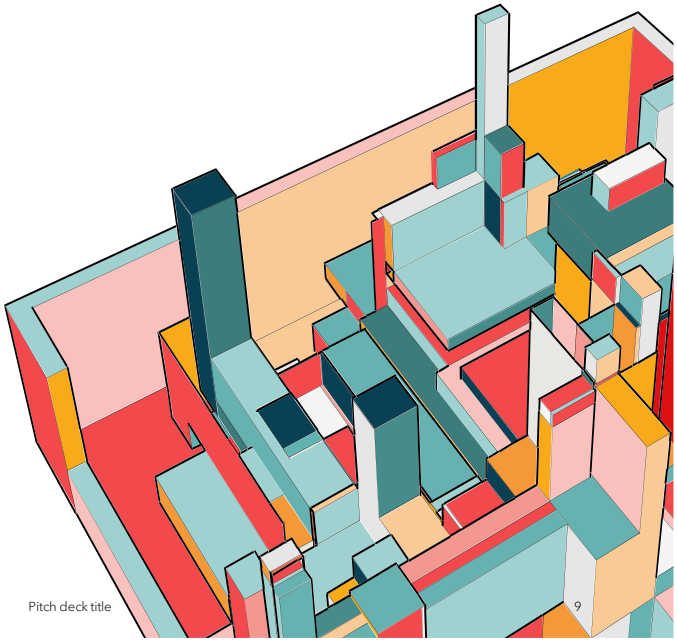
However i also had to ensure that the pipes that where being fitted interourily are 0.5mm smaller than the valve and adaptor so that they would fit. And the same when the pipe was being fitted on the exteriour side of the adaptor, it had to be 0.5 mm bigger



This is a visual design of my adaptor.

SUPPLIERS

- Im going to be getting my supplys from RIGID TOOLS and METAL4U.
- Rigid Tools are over a century old and have plenty of experience in making high quality tools, along with this they have great online reviews.
- METALS4U have great quality matirals. the exact measurements I needed and good prices, they also had low prices for what you get.



Employer-Set Project – Presentation Q & A Record (Task 4)

8730-13 T Level Technical Qualification in Engineering, Manufacturing, Processing and Control

8730-034 Employer-Set Project (Summer 2024)

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234
Date	DD/MM/YY

Provider name	<provider name>
City & Guilds Provider No.	999999a

Record observation notes below to inform external marking. **Notes must be detailed, accurate and differentiating.**

Tutor questions to candidate	Candidate responses
Define 1 bar?	N/A
What is a ratchet?	making thread
Why do we use ‘o’ rings?	Stop leaks

Any other comments

Tutor signature	Date
X_____	DD/MM/YY

If completing electronically, double click next to the ‘X’ to add an electronic signature once the record is **finalised**.

Get in touch

The City & Guilds Quality team are here to answer any queries you may have regarding your T Level Technical Qualification delivery.

Should you require assistance, please contact us using the details below:

Monday - Friday | 08:30 - 17:00 GMT

T: 0300 303 53 52

E: **technicals.quality@cityandguilds.com**

W: **http://www.cityandguilds.com/tlevels**

Web chat available **here**.

The T Level is a qualification approved and managed by the Institute for Apprenticeships and Technical Education.

Copyright in this document belongs to, and is used under licence from, the Institute for Apprenticeships and Technical Education, © 2024. 'T-LEVELS' is a registered trademark of the Department for Education. 'T Level' is a registered trademark of the Institute for Apprenticeships and Technical Education. 'Institute for Apprenticeships & Technical Education' and logo are registered trademarks of the Institute for Apprenticeships and Technical Education.

Every effort has been made to ensure that the information contained in this publication is true and correct at time of publication. However, City & Guilds products and services are subject to continuous development and improvement, and the right is reserved to change products and services from time to time. City & Guilds cannot accept responsibility for any loss or damage arising from the use of information in this publication.

City & Guilds is a trademark of City & Guilds Limited, a company registered in England and Wales (company number 16513878). City and Guilds Group, Giltspur House, 5–6 Giltspur Street, London EC1A 9DE