

T LEVEL

*Technical Qualification
in Design, Surveying and
Planning for Construction*

Student Exemplar Response Employer Set Project

Grade A

Version 1



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Introduction

This document contains a Student Exemplar Response portfolio of work and supporting documents for the Employer Set Project (ESP) for the T Level Technical Qualification. Included alongside the student portfolio submission are the question paper, mark scheme and mark grid.

The purpose of this material is to support providers and students in their understanding of the requirements of the ESP component and to prepare for future submissions. Providers may wish to use this publication to inform their teaching to cater for the ability range of candidates in their classes and the importance of teaching the practical skills and underpinning knowledge to ensure success in the ESP.

The student work submitted was marked and awarded at the grade documented in the mark grid for this document. It should be noted that the portfolio of work provided may include tasks (and elements of) which perform above, at and below the final awarded grade and the holistic grade for the portfolio is made up of the performance across all tasks. It is recommended that providers expose students to a wide range of scenarios that provide coverage of the outline content, so that students are well prepared for future series.

The portfolio provided is typical of a learner performing at the grade awarded for the Employer Set Project and should therefore indicate an indicative level of performance to achieve that grade.

The exemplar student responses for the Employer Set Project have been taken from the 2022 summer assessment series, during which Ofqual asked awarding organisations' awarding committees to award more generously given the context of the pandemic and because these are new qualifications.



**T Level Technical Qualification in Design, Surveying and Planning for
Construction (Level 3)**

Monday 16 May 2022 – Friday 20 May 2022

Paper
reference

19531

Core
Employer Set Project
Pre-release Research

You do not need any other materials.

Information

- This booklet contains material for the completion of the pre-release task under supervised conditions.
- This booklet is specific to each series and this material must only be issued to students who have been entered to undertake the task in the relevant series.
- This booklet should be kept securely until the start of the supervised assessment session.
- This pre-release task must be undertaken between Monday 16 May 2022 and Friday 20 May 2022.

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Instructions to teachers/tutors

This paper must be read in conjunction with information on conduct for the task in the unit specification and the Information for Conducting External Assessments (ICEA) document.

The pre-release task should be carried out under supervised conditions. This booklet is specific to each task and this material must be issued only to students who have been entered to take the assessment in the specified series. This booklet should be kept securely until the start of the supervised assessment.

This assessment should be undertaken in the window timetabled by Pearson.

Where work should be completed on a computer, internet access is permitted for this task.

During any breaks, materials must be kept securely.

All student work must be completed independently.

Students must not bring anything into the supervised environment or take anything out without your knowledge and approval.

Centres are responsible for putting in place appropriate checks to ensure that only permitted material is introduced into the supervised environment.

The time for printing for any digital work does not form part of the assessment duration.

The centre must ensure the student has access to all the required resources for the session. For this session, along with this task booklet, the student must have access to:

- a PC with internet access and word processing software.

Instructions for students

Read the assessment information carefully.

You must plan your time and submit all required evidence at the end of the supervised period. Your centre will advise you of the timings of the supervised period.

You will complete this assessment under supervision and your work will be kept secure during any breaks taken. Internet access is allowed.

You must work independently throughout the supervised assessment period and should not share your work with other students.

During your research, you need to produce no more than four sides of A4 notes that you will use during the project. The notes must be handwritten, or word processed in a font no smaller than 12 pt.

You must submit your research notes to your teacher/tutor at the end of the supervised period. These notes will be kept securely to be used in Task 1 and Task 2.

Pre-release task brief

You are working for an architects practice that is designing a new pet supplies superstore that will contain a veterinary practice.

The client has provided you with their vision and specification for the proposed building.

As part of your work you have been asked to assist with the concept design. You will complete tasks associated with civil engineering, surveying and design, building services design and hazardous materials surveying.

During the project you will be asked to:

1. complete reports and project management documentation
2. complete annotated sketches and CAD designs for internal and exterior detail
3. complete presentations to justify your designs
4. complete costing exercises
5. complete a group exercise.

The client's vision

The client, BgoodPets, operates a popular national chain of pet stores, and wishes to construct a large new outlet. The superstore is to be located on a development site in a market town.

The site is immediately adjacent to an outdoor market area, where stalls are erected every Wednesday and Saturday. The store will be built using a steel frame structure.

Project specification

Requirements for the project outcomes:

- The building will be a new pet supplies superstore that will contain a veterinary practice.
- The building will have a ground floor and a first floor.
- There must be stairs and a lift.

Ground floor

- The ground floor of the building will accommodate the retail space with displays selling pet products, a staff canteen, a training room, a warehouse and staff and customer toilets. The remaining floor space will be used for circulation space and the retail area.
- Two unisex toilets and one toilet with wheelchair access are required at ground level.

First floor

- The first floor will have a dog grooming salon and veterinary surgery for small pets (cats and dogs). There are unisex staff toilets, showers and a changing area. The remaining floor space will be used for circulation space, waiting and reception areas.
- The planning department of the local council has had a preliminary discussion with the client and explained that the local market is to continue on the adjacent site with minimal disruption from noise and construction dust.

The Lead Architect has asked you to analyse both the vision and specification and use this as a starting point for carrying out research that will help inform the design team when it is making decisions.

You have **2 hours** to complete your research.

The research must be conducted under supervised conditions and no material can be taken out of the assessment room.

Pre-release Task

Carry out independent research to gather further information that could be used by the Senior Project Manager.

You should research the following areas to inform your report:

- Accessibility for all to the proposed building:
 - Applicable legislation.
 - Building Regulations 2010 – Approved document M (current version), Volume 2 Section M1, relating to access and use of buildings other than dwellings.
- Similar projects in terms of size, building methods, location, interior fit-out and levels of finish.
- Framed construction techniques for building superstructures.
- Construction site practices to minimise the impact of noise and dust on the surrounding area during construction.
- Project planning for construction projects.

You need to produce no more than four sides of A4 notes that you will use during the project. Sketches and images may be included as part of the notes. The notes must be handwritten, or word processed in a font no smaller than 12 pt.

You must hand in your research notes to your teacher/tutor.

**T Level Technical Qualification in Design, Surveying and Planning for
Construction (Level 3)****May 2022**Paper
reference**19531****Core
Employer Set Project
Information Booklet****You do not need any other materials.****Information**

- This booklet contains resource material that will be used to complete the Employer Set Project.
- This booklet is specific to each series and this material must only be issued to students who have been entered to undertake the task in the relevant series.
- This booklet should be kept securely until the start of the supervised assessment session for Task 1.

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The client's vision

The client, BgoodPets, operates a popular national chain of pet stores, and wishes to construct a large new outlet. The superstore is to be located on a development site in a market town. The site is immediately adjacent to an outdoor market area, where stalls are erected every Wednesday and Saturday. The superstore will be built using a steel frame structure.

Outline specification

Figure 1 shows the dimensions of the proposed building.

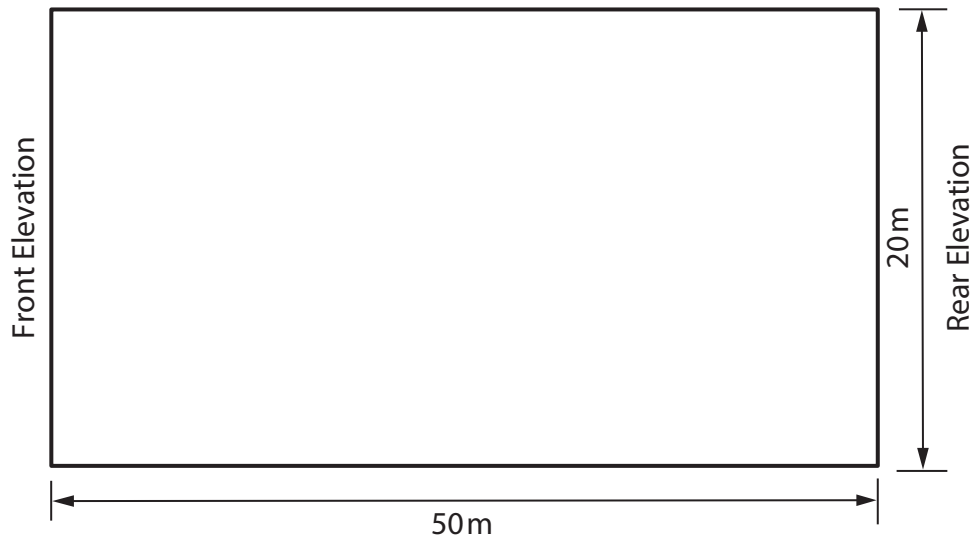


Figure 1: Overall dimensions of the building

Requirements for the project outcomes

- The building will be a new superstore selling pet supplies and contain a veterinary practice with overall dimensions 50 m long, 20 m wide and 6 m height at the eaves.
- The building will have two floors; a ground floor 50 m × 20 m and a first-floor 20 m × 15 m.
- The building will have a flat roof.
- There must be stairs and a lift.

Ground floor

- The ground floor of the building will accommodate the retail space with displays selling pet products, a staff canteen, a training room, a warehouse and staff and customer toilets. The remaining floor space will be used for circulation space and the retail area.
- The retail area is to be equipped with:
 - four cashier checkout counters
 - display shelving (including food, toys, bedding, pharmaceuticals and accessories)
 - a 12 m long × 0.6 m wide area for fish tanks
 - a 3 m long × 2 m wide pen for rabbits.
- The warehouse is to be 20 m × 15 m and accessed by a 2.7 m wide × 3 m high external door. Included in the warehouse is a plant room and a maintenance store that will together occupy 5 m × 4 m.
- The staff canteen will be 5 m × 3 m.
- The training room will be 5 m × 3 m.
- Two unisex toilets and one toilet with wheelchair access are required at ground level.

First floor

- The first floor will have a dog grooming salon and veterinary surgery for small pets (cats and dogs). There are unisex staff toilets, showers and a changing area. The remaining floor space will be used for circulation space, waiting and reception areas.
- The grooming area will comprise:
 - a grooming salon 5 m × 7 m with;
 - a 3 m × 7 m adjoining pet washing area.
- The veterinary practice will comprise:
 - three separate consulting rooms 3 m × 3 m each
 - a 3 m × 3 m office
 - a 3 m × 9 m operating theatre
 - a 1.8 m × 3 m medicine store
 - a room 2 m × 2 m to house the dog kennels
 - a room 2 m × 2 m to house the cat kennels.
- The unisex staff toilets, showers and changing area will occupy a total floor space of 4.5 m × 2 m.

Project budget and economic constraints

- The project has a 58-week duration for construction.
- The total budget for construction is £2 million.
- The building is intended to have a design life of 50 years.



(Source: © Ttatty/Shutterstock)

Figure 2: Surrounding area

Site information

- The development site is located in a market town. The site is rectangular and is 100 m × 40 m. A site plan is included in Figure 3.
- Access to the site is provided from the Eastern Drive.
- The site has been cleared, is fairly level and is ready for development.
- The planning department of the local council has had a preliminary discussion with the client and explained that the local market is to continue on the adjacent site with minimal disruption from noise and dust during construction.
- Vehicular access is only available from the Eastern Drive side of the site during and after construction.

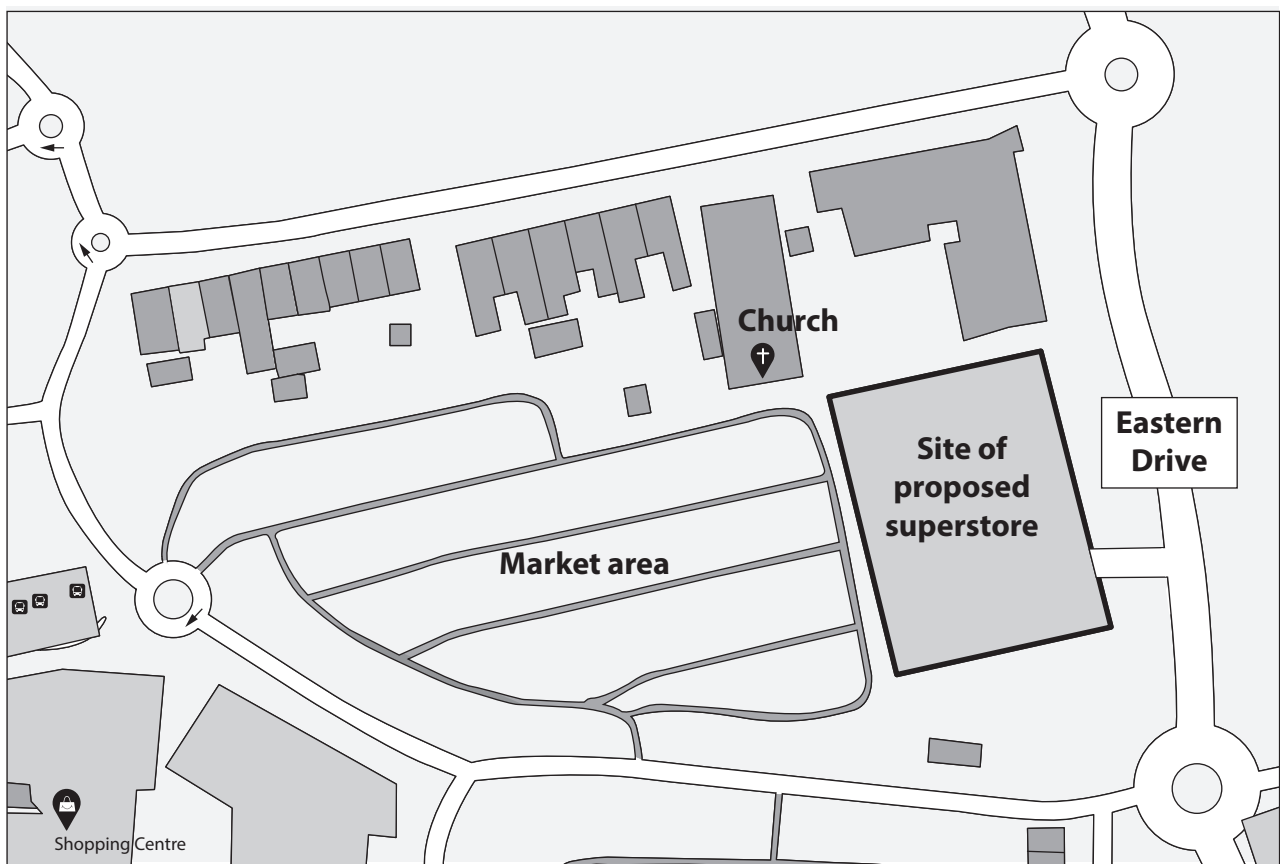


Figure 3: Site plan

Planning conditions

The site is designated as A1 for retail within the local plan. The local planning authority has indicated that that the existing outdoor market should not be disrupted during construction.

Statutory constraints and requirements

The new store must be designed and built taking into account:

- Building Regulations 2010 – Approved document M (current version), Volume 2 Section M1, relating to access and use of buildings other than dwellings.

**T Level Technical Qualification in Design, Surveying and Planning for
Construction (Level 3)****Window for supervised period: Monday 23 May 2022 – Thursday 9 June 2022****Time** 2 hours 30 minutes**Paper
reference****19531****Core****Employer Set Project****Teacher Guidance****Task 1: Project Planning Report/Gantt Chart****You do not need any other materials.****Information**

- This document contains teacher guidance for the assessment due to take place for the above task.
- The set task must be taken under supervised conditions.
- This set task must be undertaken between Monday 23 May 2022 and Thursday 9 June 2022.

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Instructions to teachers/tutors

This paper must be read in conjunction with information on conduct for the task in the unit specification and the Information for Conducting External Assessments (ICEA) document.

The set task should be carried out under supervised conditions. This booklet is specific to each task and this material must be issued only to students who have been entered to take the assessment in the specified series. This booklet should be kept securely until the start of the supervised assessment. This assessment should be undertaken in the window timetabled by Pearson.

Where work should be completed on a computer, internet access is not permitted for this task.

During any breaks, materials must be kept securely.

All student work must be completed independently and submitted to Pearson by the teacher/tutor.

Students must not bring anything into the supervised environment or take anything out without your knowledge and approval.

Centres are responsible for putting in place appropriate checks to ensure that only permitted material is introduced into the supervised environment.

The time for printing for any digital work does not form part of the assessment duration.

The centre must ensure the student has access to all the required resources for the session. For this session the student must have access to:

- the pre-release research notes
- a PC with word processing and spreadsheet/project management software
- the information booklet.

Maintaining security

- User areas must only be accessible to the individual students and to named members of staff.
- Students can only access their work under supervision.
- Internet access is not permitted.
- Student work must be backed up regularly. Students will save their work to their folder using the naming instructions indicated in each activity.
- Any work students produce under supervision must be kept secure.
- Any materials being used by students must be collected in at the end of each session and stored securely.

Outcomes for submission

The following will need to be submitted by each student:

- report to the Lead Architect
- an outline project plan in the form of a Gantt chart.

**T Level Technical Qualification in Design, Surveying and Planning for
Construction (Level 3)****Window for supervised period: Monday 23 May 2022 – Thursday 9 June 2022****Time** 2 hours 30 minutes**Paper
reference****19531****Core****Employer Set Project****Task 1: Project Planning Report/Gantt Chart****You must have:**

Information Booklet, Pre-release research notes

Information

- This booklet contains material for the completion of the set task under supervised conditions.
- This booklet is specific to each series and this material must only be issued to students who have been entered to undertake the task in the relevant series.
- This booklet should be kept securely until the start of the supervised assessment session.
- This set task must be undertaken between Monday 23 May 2022 and Thursday 9 June 2022.

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Instructions for students

Read the assessment information carefully.

You must plan your time and submit all required evidence at the end of the supervised period.

Your centre will advise you of the timings of the supervised period.

You will complete this assessment under supervision and your work will be kept secure during any breaks taken. Internet access is not allowed.

You must work independently throughout the supervised assessment period and should not share your work with other students.

This booklet contains assessment tasks as follows:

- Task 1: Report and Gantt chart – 18 marks.

Set Task Brief

You must complete the task.

Read the project brief in the information booklet before attempting the task.

Task 1

You have 2 hours 30 minutes to complete this task.

You are assisting the Lead Architect. Part of your role is to collate information and present this to other members of the design team in a concise format.

As part of the design process the Lead Architect has asked you to complete an initial report on the proposed development outlined in the client's vision and specification. This formal report should be based on your research notes and discuss your initial concept ideas for the project. It should also give a brief assessment of the potential risk and challenges of the project.

The Lead Architect has also asked you to produce a Gantt Chart for the development of the new superstore that sells pet supplies and contains a veterinary practice.

You should use your research to support your report and Gantt Chart.

Tasks

Produce a formal report for the Lead Architect that presents the findings of your research.

The report must be produced using an appropriate IT package.

You should use the information within the project specification and your research to produce a formal report to the Lead Architect.

The report should include:

- an introduction
- an initial summary with information about the scope of the project
- framed construction techniques for building superstructure including walls and floors
- accessibility
- site practices to minimise the impact of noise and dust on the surrounding area during construction
- suggestions for the design of the new superstore making comparisons to similar projects.

Your report should include justifications for decisions you have made, and how your research has been used to inform decisions.

(12)

The Lead Architect would also like you to include a Gantt Chart, so the client has an understanding of the activities that will take place during the project and how these related to each other.

The Gantt Chart must be produced using an appropriate IT package. The Gantt Chart should show:

- the time that each stage of the project should take
- the key activities in each stage of the project
- the overall duration of the project
- dependencies between the different activities.

You should use the information given in the project specification, your knowledge of construction process, and include these stages of the project:

- Erect site hoarding and compound (6 weeks)
- Install piles (12 weeks)
- Install concrete ground floor (8 weeks)
- Erect crane (2 weeks)
- Install superstructure frames (12 weeks)
- Cladding (8 weeks)
- Internal finishings (10 weeks)
- Landscaping (6 weeks)
- Handover (2 weeks)

The Gantt chart should be split into weeks.

(6)

Outcomes for Submission

You need to submit:

- a report to the Lead Architect
- a Gantt Chart.

You will be awarded marks for the:

- report to the Lead Architect – 12 marks
- Gantt Chart – 6 marks.

The report and Gantt chart must be saved in PDF format, using these naming conventions:

Task_1_report_[Registration number #]_[surname]_[first letter of first name]

Task_1_ganttchart_[Registration number #]_[surname]_[first letter of first name]

**T Level Technical Qualification in Design, Surveying and Planning for
Construction (Level 3)****Window for supervised period: Monday 23 May 2022 – Thursday 9 June 2022****Time** 10 hours**Paper
reference****19531****Core****Employer Set Project****Teacher Guidance****Task 2: Design Sketches (CAD)/Presentation****You do not need any other materials.****Information**

- This document contains teacher guidance for the assessment due to take place for the above task.
- The set task must be taken under supervised conditions.
- This set task must be undertaken between Monday 23 May 2022 and Thursday 9 June 2022.

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Instructions to teachers/tutors

This paper must be read in conjunction with information on conduct for the task in the unit specification and the Information for Conducting External Assessments (ICEA) document.

The set task should be carried out under supervised conditions. This booklet is specific to each task and this material must be issued only to students who have been entered to take the assessment in the specified series. This booklet should be kept securely until the start of the supervised assessment. This assessment should be undertaken in the window timetabled by Pearson.

Where work should be completed on a computer, internet access is not permitted for this task.

During any breaks, materials must be kept securely.

All student work must be completed independently and submitted to Pearson by the teacher/tutor.

Students must not bring anything into the supervised environment or take anything out without your knowledge and approval.

Centres are responsible for putting in place appropriate checks to ensure that only permitted material is introduced into the supervised environment.

The time for printing for any digital work does not form part of the assessment duration.

The centre must ensure the student has access to all the required resources for the session. For this session the student must have access to the following:

- Pre-release research notes
- Drawing materials
- a PC with CAD, presentation and word processing software
- Building Regulations 2010 – Approved document M (current version), Volume 2 Section M1, relating to access and use of buildings other than dwellings.

Maintaining security

- User areas must only be accessible to the individual students and to named members of staff.
- Students can only access their work under supervision.
- Internet access is not permitted.
- Student work must be backed up regularly. Students will save their work to their folder using the naming instructions indicated in each activity.
- Any work students produce under supervision must be kept secure.
- Any materials being used by students must be collected in at the end of each session and stored securely.

Outcomes for submission

The following will need to be submitted by each student:

- Annotated sketch of the site and the external outline of the building including paved areas for pedestrian access.
- Annotated sketch showing the front elevation of the new store.
- Annotated 2D CAD drawing showing the first floor plan.
- A presentation justifying the external and internal design decisions.
- Speaker notes.

**T Level Technical Qualification in Design, Surveying and Planning for
Construction (Level 3)****Window for supervised period: Monday 23 May 2022 – Thursday 9 June 2022****Time** 10 hours**Paper
reference****19531****Core****Employer Set Project****Task 2: Design Sketches (CAD)/Presentation****You must have:**
Information Booklet.**Information**

- This booklet contains material for the completion of the set task under supervised conditions.
- This booklet is specific to each series and this material must only be issued to students who have been entered to undertake the task in the relevant series.
- This booklet should be kept securely until the start of the supervised assessment session.
- This set task must be undertaken between Monday 23 May 2022 and Thursday 9 June 2022.

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Instructions for students

Read the assessment information carefully.

You must plan your time and submit all required evidence at the end of the supervised period.

Your centre will advise you of the timings of the supervised period.

You will complete this assessment under supervision and your work will be kept secure during any breaks taken. Internet access is not allowed.

You must work independently throughout the supervised assessment period and should not share your work with other students.

This booklet contains assessment tasks as follows:

- Task 2: Design – 66 marks.

Outcomes for Submission

The evidence for the tasks will include the following:

- Annotated sketch of the site and the external outline of the building including paved areas for pedestrian access.
- Annotated sketch showing the front elevation of the new store.
- Annotated 2D CAD drawing showing the first floor plan.
- A presentation justifying the external and internal design decisions.
- Speaker notes.

Set Task Brief

You must complete the task.

Read the project brief before attempting the task.

Task 2

You have 10 hours to complete this task.

You have been asked by the Lead Architect to produce an initial design for the site and the building.

The Lead Architect has also asked you to prepare a presentation to justify your proposal.

You should refer to the information booklet for the project specification and information about the site.

Tasks

Produce annotated sketches of:

- a site plan
- the front external elevation.

Use CAD software to produce a 2D annotated plan showing the first floor layout.

(48)

Prepare a presentation using an appropriate presentation software.

(18)

The designs must meet the client's vision and the project specification.

The annotated sketch of the site plan and the building should show the:

- extent of paved areas to provide pedestrian access to the superstore (materials and dimensions)
- position of the main entrance
- position of the warehouse entrance
- delivery vehicle access from Eastern Drive.

The annotated sketches of the front external elevation should show:

- the external walls (materials and finishes)
- the main entrance and any windows and doors
- the building signage
- any other relevant feature.

The CAD plan of the first floor should show:

- the stairs and lift
- the grooming salon
- the pet washing area
- the veterinary waiting area
- the veterinary consulting rooms
- the veterinary office
- the operating theatre
- the medicine store
- the kennels for cats and dogs
- the tea and coffee point
- the toilets
- the room dimensions
- any other relevant feature.

The presentation should include:

- introduction to the presentation
- an explanation and justification for each of the design decisions:
 - layout of the site
 - layout of first floor
 - features of the front elevation
- detailed supporting/speaker notes for the Lead Architect to use for presenting.

Remember to plan your time carefully, so that you have enough time to complete all parts of this task.

Outcomes for Submission

You need to submit annotated sketches of:

- a site plan
- the front external elevation of the building
- an annotated 2D CAD drawing plan showing the first floor layout
- a presentation and speaker notes.

You will be awarded marks for:

- Site plan sketch – 12 marks.
- Elevation design sketch – 12 marks.
- Internal CAD drawing – 12 marks.
- Quality of sketch drawings – 6 marks.
- Quality of CAD drawing – 6 marks.
- Technical content of presentation and speaker notes – 12 marks.
- Quality of digital communication – 6 marks.

The sketches must be scanned and saved in PDF format using this naming convention:

Task_2_Sketch_Design_[Registration number #]_[surname]_[first letter of first name]

The CAD drawings must be saved in PDF format using this naming convention:

Task_2_CAD_Design_[Registration number #]_[surname]_[first letter of first name]

The presentation and speaker notes must be saved in .pptx format using this naming convention:

Task_2_Presentation_and_Speaker_Notes_[Registration number #]_[surname]_[first letter of first name]

**T Level Technical Qualification in Design, Surveying and Planning for
Construction (Level 3)****Friday 10 June 2022**

Time 1 hour

Paper
reference**19531****Core****Employer Set Project**

Teacher Guidance

Task 3: Calculations**You do not need any other materials.****Information**

- This document contains teacher guidance for the assessment due to take place for the above task.
- The set task must be taken under supervised conditions.
- This set task must be undertaken on Friday 10 June 2022.

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Instructions to teachers/tutors

This paper must be read in conjunction with information on conduct for the task in the unit specification and the Information for Conducting External Assessments (ICEA) document.

The set task should be carried out under supervised conditions. This booklet is specific to each series and this material must be issued only to students who have been entered to take the assessment in the specified series. This booklet should be kept securely until the start of the supervised assessment. This assessment will be undertaken in a single session timetabled by Pearson under high control conditions.

Where work should be completed on a computer, internet access is not permitted.

There should be no scheduled breaks.

All student work must be completed independently and submitted to Pearson by the teacher/tutor.

Students must not bring anything into the supervised environment or take anything out without your knowledge and approval.

Centres are responsible for putting in place appropriate checks to ensure that only permitted material is introduced into the supervised environment.

The centre must ensure the student has access to all the required resources for the session. For this session the student must have access to the following:

- A PC with word processing software.
- Information Booklet.
- A calculator.

Maintaining security

- User areas must only be accessible to the individual students and to named members of staff.
- Students can only access their work under supervision.
- Internet access is not permitted.
- Student work must be backed up regularly. Students must save their work to their folder using thenaming instructions indicated in each activity.
- Any work students produce under supervision must be kept secure.
- Any materials being used by students must be collected in at the end of each session and stored securely.

Outcomes for submission

The following will need to be submitted by each student:

- Unit rate calculations.

**T Level Technical Qualification in Design, Surveying and Planning for
Construction (Level 3)****Friday 10 June 2022**

Time 1 hour

Paper
reference**19531****Core****Employer Set Project****Task 3: Calculations****You must have:**

Information Booklet, calculator, Task 3 Unit Rate Calculations.doc

Information

- This booklet contains material for the completion of the set task under supervised conditions.
- This booklet is specific to each series and this material must only be issued to students who have been entered to undertake the task in the relevant series.
- This booklet should be kept securely until the start of the supervised assessment session.
- This set task must be undertaken on Friday 10 June 2022.

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Instructions for students

Read the assessment information carefully.

This assessment will take place in a single session of one hour under supervised conditions.

You will complete this assessment under supervision and there will be no scheduled breaks.

Internet access is not allowed.

You must work independently throughout this assessment session and should not share your work with other students.

This booklet contains assessment tasks as follows:

- Task 3: Quantities sheets – 7 marks.

Set Task Brief

You must complete all the tasks.

Read the project brief before attempting the task.

Task 3

You have 1 hour to complete this task.

The Lead Architect has asked you to assist the Quantity Surveyor to produce a unit rate that will be included in estimating a cost for the drainage works for the project. Tables 1–6 have data that will assist you with Task 3.

Tasks

Materials	Price	Per
Pea gravel	£48.00	m ³
150 mm underground foul drainage pipe	£42.84	6 m length
Type 1 stone backfill	£50.00	m ³

Table 1

Labour constants	Hours	Per
Installation of 150 mm diameter foul drainage pipe	0.2	m

Table 2

Wastage allowance	Percentage
150 mm underground foul drainage pipe	5%
Type 1 stone backfill	5%
Pea gravel	5%

Table 3

Employee type	Rate per hour
Pipe layer	£11.75

Table 4

Plant hire	Rate	Per
Excavator including banksman and driver	£29.50	Hour

Table 5

Plant usage rates	Hours	Per
Excavator (pipe excavation)	0.10	m ³
Excavator (pipe backfill)	0.10	m ³

Table 6

Use the estimating data to build up unit rates.

You will need to:

- build up the unit rate for laying a 150 mm diameter foul sewer including the backfill of the trench using the unit rate calculation sheet provided.

You need to submit:

- a completed unit rate calculation sheet for the 150 mm diameter foul sewer showing all your working out.

You will be awarded marks for:

- the unit rate for laying a 150 mm diameter foul sewer.

You have **1 hour** to complete this task.

(7)

This is an example of the table provided to you electronically to complete.

Item (a)	Description	Rate
	<p>Lay a 150 mm foul drainage pipe in a 600 mm wide excavation up to a maximum depth of 1 m as in Figure 1. The pipe is to have a 150 mm pea gravel bed and surround.</p>	
<p style="text-align: center;">Figure 1: Typical section of a foul drainage trench</p>		
Total		

Outcomes for submission

The unit rate calculation sheet must be saved in PDF format using this naming convention:

Task_3_unit_rate_calculations_[Registration number #]_[surname]_[first letter of first name]

**T Level Technical Qualification in Design, Surveying
and Planning for Construction (Level 3)**

Student name:

Provider number:

Pearson Learner ID:

Paper
Reference**19531****Core****Employer Set Project****Task 3 Unit Rate Calculations****You do not need any other materials.****Information**

- Fill in the boxes at the top of this page with the student's name, centre number and Pearson Learner ID number.
- This booklet contains resource material for the completion of the set task under supervised conditions.



Calculate the unit rate (show all your workings)

Lay a 150 mm foul drainage pipe in a 600mm wide excavation up to a maximum depth of 1 m as shown in Figure 1. The pipe will have a 150 mm pea gravel bed and surround.

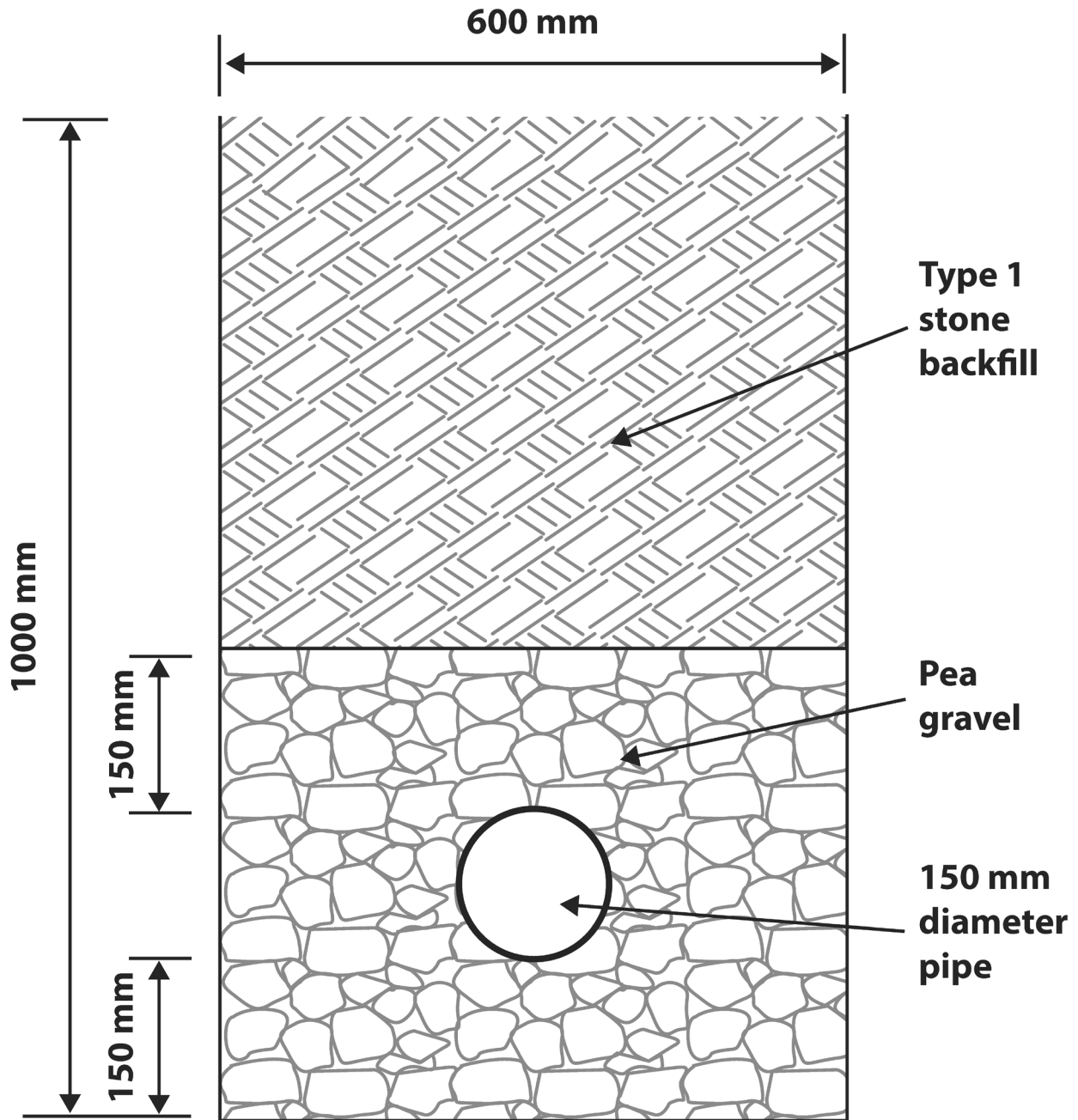


Figure 1: Typical section of a foul drainage trench

Cost of materials per metre run (including wastage)

1. Cost of pea gravel per metre run

2. Cost of pipe per metre run

3. Cost of backfill per metre run

4. Total material costs

Labour and plant costs (all rates per metre run)

5 i) Labour costs

5 ii) Plant costs

6. Total plant and labour

7. Total cost of materials, plant and labour

**T Level Technical Qualification in Design, Surveying and Planning for
Construction (Level 3)****Window for supervised period: Monday 13 June 2022 – Friday 17 June 2022****Time 2 hours****Paper
reference****19531****Core****Employer Set Project****Teacher Guidance****Task 4: Group Presentation****You do not need any other materials.****Information**

- This document contains teacher guidance for the assessment due to take place for the above task.
- The set task must be taken under supervised conditions.
- This set task must be undertaken between Monday 13 June 2022 and Friday 17 June 2022.

Continue ►**W73766A**©2022 Pearson Education Ltd.
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Instructions to teachers/tutors

This paper must be read in conjunction with information on conduct for the task in the unit specification and the Information for Conducting External Assessments (ICEA) document.

The set task should be carried out under supervised conditions. This booklet is specific to each task and this material must be issued only to students who have been entered to take the assessment in the specified series. This booklet should be kept securely until the start of the supervised assessment. This assessment should be undertaken in the window timetabled by Pearson.

During any breaks, materials must be kept securely.

All student work must be completed independently and submitted to Pearson by the teacher/tutor.

Students must not bring anything into the supervised environment or take anything out without your knowledge and approval.

Centres are responsible for putting in place appropriate checks to ensure that only permitted material is introduced into the supervised environment.

The time for printing any digital work or carrying out digital recordings does not form part of the assessment duration.

The centre must ensure the student has access to all the required resources for the session. For this session the student must have access to the following:

- A PC with internet access and presentation software.
- Screencast software.
- A calculator.

Organising groups

- Groups should be made up of two or three students.
- Each student should be given the opportunity to present a minimum of three slides.

Maintaining security

- User areas must only be accessible to the group of students undertaking the assessment and to named members of staff.
- Students can only access their work under supervision.
- Student work must be backed up regularly. Students will save their work to their folder using the naming instructions indicated in each activity.
- Any work students produce under supervision must be kept securely.
- Any materials being used by students must be collected in at the end of each session and stored securely.

Outcomes for submission

- A presentation.
- A screencast recording of the group presentation.
- An electronic authentication sheet completed by each student.

**T Level Technical Qualification in Design, Surveying and Planning for
Construction (Level 3)****Window for supervised period: Monday 13 June 2022 – Friday 17 June 2022****Time** 2 hours**Paper
reference****19531****Core****Employer Set Project****Task 4: Group Presentation****You do not need any other materials.****Information**

- This booklet contains material for the completion of the set task under supervised conditions.
- This booklet is specific to each series and this material must only be issued to students who have been entered to undertake the task in the relevant series.
- This booklet should be kept securely until the start of the supervised assessment session.
- The set task must be taken under supervised conditions.
- This set task must be undertaken between Monday 13 June 2022 and Friday 17 June 2022.

Continue ►

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Instructions for students

Read the assessment information carefully.

You must plan your time and submit all required evidence at the end of the supervised period.

Your centre will advise you of the timings of the supervised period.

You will complete this assessment under supervision and your work will be kept securely during any breaks taken.

This booklet contains assessment task as follows:

- Task 4: Group presentation – 9 marks.

Set Task Brief

You must complete all the tasks.

Read the project brief **before** attempting the task.

Task 4

You have two hours to complete this task.

The client has awarded the project and excavation of the foundations is underway on-site.

Your team has been forwarded the following email that was sent to the architect from the contractor. The client has asked you to produce a presentation to address the problem.

To: *The Client*

Subject: *Complaints from local council and outdoor market holders*

We are two weeks into the project and have been driving the pile foundations for the new superstore and veterinary practice. We have had to stop work as we have had complaints from the local council and the organisers of the outdoor market. The market customers are complaining about the large amount of dust and noise from the construction work. We require your advice on how to proceed; particularly we require answers to the following questions:

- *What are the potential impact, hazards and dangers of the presence of the dust and noise on the site?*
- *How can the dust and noise be dealt with?*

Yours,

The Contractor

Task

In your group, produce a presentation that addresses each of the client's questions.

You will be able to research the issue.

As a group you will need to produce a presentation that includes:

- the potential impact, hazards and dangers of the presence of the dust and noise on the site
- how the dust and noise can be dealt with.

Each group member must present a minimum of **three** slides.

Each presenter must introduce themselves when they begin presenting.

The group presentation should be logically structured and flow from one presenter to the next.

Outcomes for submission

You need to submit:

- a presentation to client (slides and any supporting notes)
- a screencast recording of the presentation.

(9)

You will be awarded marks for:

- communication of technical information
- coherence between different parts of the presentation and different presenters.

The presentation must be saved in .pptx format and submitted for each student who is part of the group using this naming convention:

Task_4_presentation_[Registration numbers #]_[surname]_[first letter of first name]

The screencast must be saved in .mp4 format and submitted for each student who is part of the group using this naming convention:

Task_4_screencast_[Registration number #]_[surname]_[first letter of first name]

Employer Set Project 2206: Mark scheme outline

General Marking Guidance

- All students must receive the same treatment. Examiners must mark the first student in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Students must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme, not according to their perception of where the grade boundaries may lie.
- All marks on the mark scheme should be used appropriately.
- All marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved. Examiners should also be prepared to award zero marks if the student's response is not rewardable according to the mark scheme.
- Where judgement is required, a mark scheme will provide the principles by which marks will be awarded.
- When examiners are in doubt regarding the application of the mark scheme to a student's response, a senior examiner should be consulted.
- Crossed out work should be marked **unless** the student has replaced it with an alternative response.
- Accept incorrect/phonetic spelling (as long as the term is recognisable) unless instructed otherwise.

Specific Marking Guidance

Levels-Based Mark Scheme Guidance

Levels-based mark schemes (LBMS) have been designed to assess students' work holistically. They consist of two parts:

- **Indicative content**

Indicative content reflects content-related points that a student might make but is not an exhaustive list. Nor is it a model answer. Students may make some or none of the points included in the indicative content as its purpose is as a guide for the relevance and expectation of the responses. Students must be credited for any appropriate response.

- **Levels-based descriptors**

Each level is made up of a number of traits which when combined together articulate the quality of response that a student needs to demonstrate. The traits progress across the levels to demonstrate the different expectations of each level. When using a levels-based mark scheme, the 'best fit' approach should be used.

Applying the levels-based descriptors

Examiners should take a 'best fit' approach to determining the mark.

- Examiners should first make a holistic judgement on which level most closely matches the student's response. Students will be placed in the level that best describes their answer. Answers can display characteristics from more than one level, and where this happens markers must use any additional guidance (e.g. weighting of traits) and their professional judgement to decide which level is most appropriate.
- The mark awarded within the level will be decided based on the quality of the answer and will be modified according to how securely all traits are displayed at that level:
 - marks will be awarded at the top of that level if the student has evidenced each of the descriptor traits securely
 - where the response does not securely meet all traits, the marks should be awarded based on how closely the descriptor has been met.

**Task
Report:
Indicative
content**

Typical responses may include:

- Introduction.
- Summary of project.
- Discussion of the types of framed construction techniques for building the superstructure including walls, floors, cladding etc. For example, the student might select a braced portal or a stanchion and truss roof for the main steel frame of the building. The first floor of the building might be formed using steel beams with an accompanying composite or precast concrete floor. Walls in the building could be made from insulated timber stud partitions finished with plasterboard, or cold formed steel framed partitions finished with a metal/ PVC faced insulated panel. The overall building might be clad in metal profile insulated panels with sections of feature glazing. Alternatively, a more sustainable timber cladding system might be used.
- Discussion of site practices to minimise the impact of noise on the surrounding area during the construction process, such as silencers on machinery, control of working hours, turning off machinery when not in use, erection of hoardings and barriers, substitution of less noisy construction processes, and use of quiet construction equipment e.g. use of plastic and rubber hammers rather than metal.
- Accessibility, compliance with building regulations related to access for all. Students might:
 - suggest using a powered entrance door automatically operated by a sensor.
 - outline the requirement to have a level access to the main entrances or a ramp into the building
 - specify that the minimum width of the external entrance be 1m
 - note that finishes of door thresholds are to be of a material designed not to impede the movement of wheelchairs
 - the requirement to have a sensible width between display aisles to allow access for wheelchairs e.g., 1.2 m
 - the need for appropriate manoeuvring space in front of any reception desk or counter (the minimum is 1.2 m x 1.8 m)
 - the use of frosting or signage to be applied to door glazing so the entrance is clear for the partially sighted.
- Suggestions for the design of the new superstore selling pet supplies and veterinary practice such as ideas for internal layout, material choices for finishes, glazing and options and technologies for building production. The student might suggest using easily cleaned anti-slip vinyl flooring in the store, as some customers may bring pets to the store. For safety ground floor external glazing might be anti-shatter and triple glazed for energy efficiency.

Assessment focus		Band 1	Band 2	Band 3	Band 4
Task 1: Report	0	1–3	4–6	7–9	10–12
	No rewardable content	<ul style="list-style-type: none"> • Demonstrates some accurate knowledge and understanding of the project (AO2) • Points made show superficial consideration of the outline tender specification and the client’s vision (AO2) • Demonstrates some lines of reasoning and partially appropriate references to research to justify the points made (AO1) • The report has some structure and is clear in parts. Its appropriateness for the audience and use of technical language is limited (AO4a) 	<ul style="list-style-type: none"> • Demonstrates generally accurate knowledge and understanding of the project (AO2) • Points made show adequate consideration of the outline tender specification and the client’s vision (AO2) • Demonstrates generally logical lines of reasoning and generally appropriate references to research to justify the points made (AO1) • The report is adequately structured, broadly appropriate for the audience and generally uses technical language appropriately (AO4a) 	<ul style="list-style-type: none"> • Demonstrates largely accurate and thorough knowledge and understanding of the project (AO2) • Points made show very good consideration of the outline tender specification and the client’s vision (AO2) • Demonstrates largely logical and coherent lines of reasoning and largely appropriate references to research to justify the points made (AO1) • The report is well structured, largely clear, mostly appropriate for the audience and mostly uses technical language appropriately (AO4a) 	<ul style="list-style-type: none"> • Demonstrates accurate, thorough and detailed understanding of the project (AO2) • Points made are perceptive and show thorough consideration of the outline tender specification and the client’s vision (AO2) • Demonstrates thorough, detailed, logical and coherent lines of reasoning and fully appropriate references to research to justify the points made (AO1) • The report is well structured, clear, concise, fully appropriate for the audience and uses technical language appropriately (AO4a)

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Assessment focus		Band 1	Band 2	Band 3
Task 1: Gantt chart	0	1–2	3–4	5–6
	No rewardable content	<ul style="list-style-type: none"> • Demonstrates partially accurate understanding of the requirements for the project (AO2) • Partially accurate sequencing of activities and somewhat appropriate use of resources, with limited consideration of constraints and priorities (AO1) • The digital presentation is partially clear and makes partially effective use of appropriate features to convey information (AO4b) 	<ul style="list-style-type: none"> • Demonstrates mostly accurate understanding of the requirements for the project (AO2) • Mostly accurate sequencing of activities and mostly appropriate use of resources, with good consideration of constraints and priorities (AO1) • The digital presentation is mostly clear and makes mostly effective use of appropriate features to convey information (AO4b) 	<ul style="list-style-type: none"> • Demonstrates accurate, thorough and detailed understanding of the requirements for the project (AO2) • Comprehensive and logical sequencing of activities and appropriate use of resources, with thorough, detailed and perceptive consideration of constraints and priorities (AO1) • The digital presentation is clear and makes highly effective use of appropriate features to convey information (AO4b)

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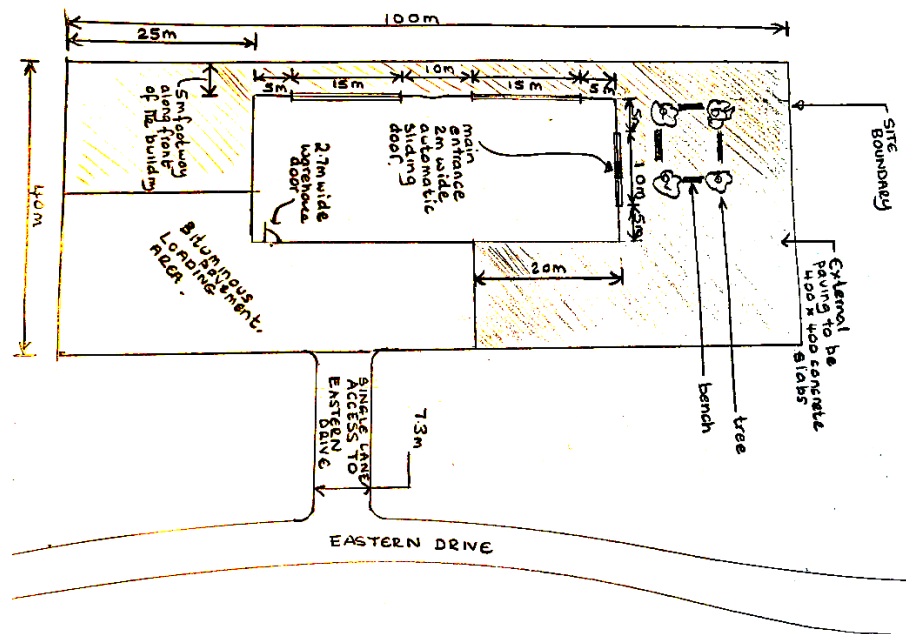
Site plan

Task 2:
External site
plan sketch
design
outcomes:
Indicative
content

Considerations for marking:

- building footprint (size)
- position of main entrance
- position of warehouse entrance
- appropriate orientation of the building on the site
- extent of pedestrian paving (with key dimensions)
- appropriate paving materials
- position of lorry loading area for merchandise deliveries
- access from Eastern Drive

Example response (alternative responses may include variations on design)



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Assessment focus		Band 1	Band 2	Band 3	Band 4
Task 2: External site plan sketch design	0	1–3	4–6	7–9	10–12
	No rewardable material	<ul style="list-style-type: none"> The solution is limited in its effectiveness and partially meets the requirements of the specification (AO2) The solution has limited logic and shows superficial coherence between different aspects of the design (AO2) The solution requires several amendments to be feasible (AO5a) 	<ul style="list-style-type: none"> The solution is broadly effective and generally meets the requirements of the specification (AO2) The solution is generally logical and shows some coherence between different aspects of the design (AO2) The solution requires some further amendments to be feasible (AO5a) 	<ul style="list-style-type: none"> The solution is largely effective and mostly meets the requirements of the specification (AO2) The solution is largely logical and is mostly coherent between different aspects of the design (AO2) The solution is mostly feasible without further amendments (AO5a) 	<ul style="list-style-type: none"> The solution is highly effective and fully meets the requirements of the specification (AO2) The solution is thorough, detailed and logical and shows comprehensive coherence between different aspects of the design (AO2) The solution is feasible without further amendments (AO5a)

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Elevation sketch

Task 2

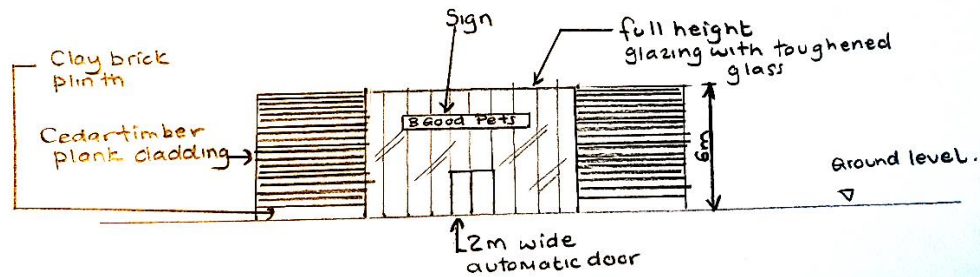
Elevation sketch design outcomes:

Indicative content

Considerations for marking:

- external walls – materials and finishes
- windows and doors
- main entrance for customers
- position and size of building signage
- any other salient features

Example responses



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Assessment focus		Band 1	Band 2	Band 3	Band 4
Task 2:	0	1–3	4–6	7–9	10–12
Elevation sketch design outcomes	No rewardable material	<ul style="list-style-type: none"> The solution is limited in its effectiveness and partially meets the requirements of the specification (AO2) The solution has limited logic and shows superficial coherence between different aspects of the design (AO2) The solution requires several amendments to be feasible (AO5a) 	<ul style="list-style-type: none"> The solution is broadly effective and generally meets the requirements of the specification (AO2) The solution is generally logical and shows some coherence between different aspects of the design (AO2) The solution requires some further amendments to be feasible (AO5a) 	<ul style="list-style-type: none"> The solution is largely effective and mostly meets the requirements of the specification (AO2) The solution is largely logical and is mostly coherent between different aspects of the design (AO2) The solution is mostly feasible without further amendments (AO5a) 	<ul style="list-style-type: none"> The solution is highly effective and fully meets the requirements of the specification (AO2) The solution is thorough, detailed and logical and shows comprehensive coherence between different aspects of the design (AO2) The solution is feasible without further amendments (AO5a)

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Quality of the site plan and elevation sketch drawings

Task 2 Quality of sketch drawings: Indicative content	Considerations for marking: <ul style="list-style-type: none"> • use of standard construction conventions • quality of annotation • clarity of sketches • use of proportion. 			
Assessment focus		Band 1	Band 2	Band 3
Task 2: Quality of sketch drawings	0 No rewardable material	1–2 <ul style="list-style-type: none"> • The drawings are partially effective but limited in detail (AO2) • Standard conventions and/or annotations have been attempted but may not always be technically correct (AO3) • The drawings have limited clarity, quality and accuracy (AO4b) 	3–4 <ul style="list-style-type: none"> • The drawings are mostly effective and detailed (AO2) • The standard conventions and/or annotations are mostly accurate and technically correct (AO3) • The drawings are of good clarity, quality and accuracy (AO4b) 	5–6 <ul style="list-style-type: none"> • The drawings are highly effective, thorough and detailed (AO2) • The standard conventions and/or annotations are fully accurate and technically correct (AO3) • The drawings are of high clarity, quality and accuracy (AO4b)

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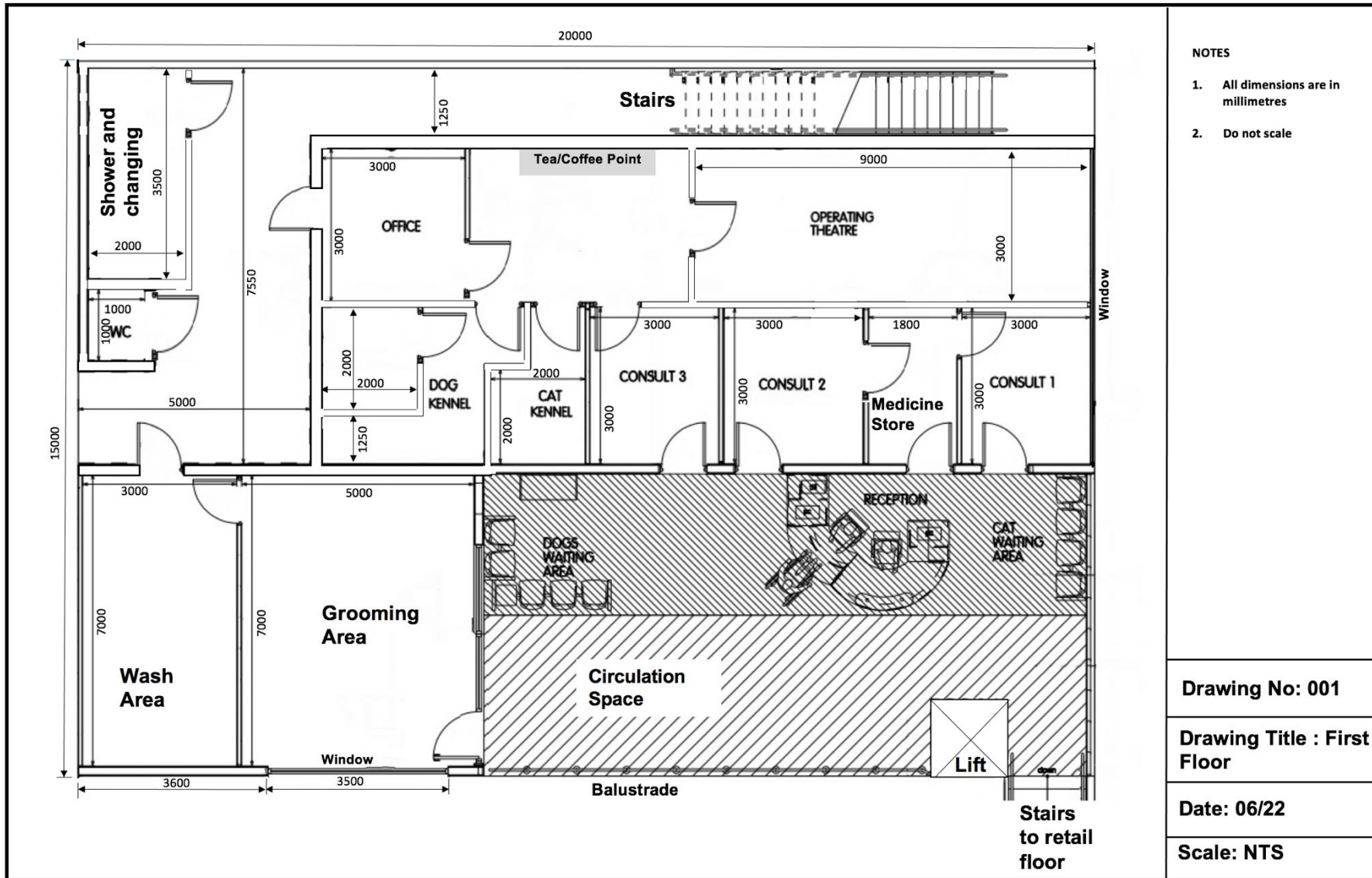
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CAD Design – First floor



Task 2:
CAD design
outcomes:
Indicative
content

Considerations for marking:

- perimeter and internal walls
- windows and doors – location, positions, quantity, dimensions
- use of space and ergonomic layout
- sensible relationship between different rooms
- position of lifts and stairs
- adequate space for tea/coffee point
- sufficient office space provided
- suitable position of the kennelling for cats and dogs
- suitable position for the medical store
- position of the veterinary waiting area
- position of operating theatre
- position of the veterinary consulting rooms
- appropriate protection to the edge of the mezzanine
- position of the pet washing area
- position of the grooming salon
- position of the unisex and staff toilet

Assessment focus		Band 1	Band 2	Band 3	Band 4
Task 2:	0	1–3	4–6	7–9	10–12
CAD design outcomes	No rewardable material	<ul style="list-style-type: none"> The solution is limited in its effectiveness and partially meets the requirements of the specification (AO2) The solution has limited logic and shows superficial coherence between different aspects of the design (AO2) The solution requires several amendments to be feasible (AO5a) 	<ul style="list-style-type: none"> The solution is broadly effective and generally meets the requirements of the specification (AO2) The solution is generally logical and shows some coherence between different aspects of the design (AO2) The solution requires some further amendments to be feasible (AO5a) 	<ul style="list-style-type: none"> The solution is largely effective and mostly meets the requirements of the specification (AO2) The solution is largely logical and is mostly coherent between different aspects of the design (AO2) The solution is mostly feasible without further amendments (AO5a) 	<ul style="list-style-type: none"> The solution is a highly effective and fully meets the requirements of specification (AO2) The solution is thorough, detailed and logical and shows comprehensive coherence between different aspects of the design (AO2) The solution is feasible without further amendments (AO5a)

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CAD Design - Quality of the drawing

Task 2 Quality of CAD drawing: Indicative content	Considerations for marking: <ul style="list-style-type: none"> • use of standard drawing conventions • quality of annotation • clarity of drawing • use of scale 			
Assessment focus		Band 1	Band 2	Band 3
Task 2: Quality of CAD drawing	0 No rewardable material	1 - 2 <ul style="list-style-type: none"> • The drawings are partially effective but limited in detail (AO2) • Standard conventions and/or annotations have been attempted but may not always be technically correct (AO3) • The drawings have limited clarity, quality and accuracy (AO4b) 	3 - 4 <ul style="list-style-type: none"> • The drawings are mostly effective and detailed (AO2) • The standard conventions and/or annotations are mostly accurate and technically correct (AO3) • The drawings are of good clarity, quality and accuracy (AO4b) 	5 - 6 <ul style="list-style-type: none"> • The drawings are highly effective, thorough and detailed (AO2) • The standard conventions and/or annotations are fully accurate and technically correct (AO3) • The drawings are of high clarity, quality and accuracy (AO4b)

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**Task 2: Technical
content of
presentation
Indicative content**

Typical responses may include:

- building layout – retail floor, training room, veterinary waiting area, toilets, grooming salon, veterinary offices, veterinary consulting rooms, operating theatre, kennelling for cats and dogs warehouse, staff canteen.
- fit out of the retail floor – position of four cashier check-out points, display shelving, fish tanks, rabbit pens.
- access – external doors and signage.
- choice of external finish – consideration of surrounding area e.g. market
- green spaces –ground level green spaces, external planting.
- ergonomics – circulation spaces, size/number doors, accessibility.
- anticipation of potential risks or issues and mitigations included in the design.
- position of warehouse door and adjacency with access to Eastern drive.

Assessment focus		Band 1	Band 2	Band 3	Band 4
Task 2:	0	1–3	4–6	7–9	10–12
Technical content of presentation	No rewardable material	<ul style="list-style-type: none"> • Demonstrates some accurate knowledge and understanding of issues relating to the design (AO2) • The points made show limited consideration of the interrelationships between different aspects that affect the design of the building (AO2) • Demonstrates limited lines of reasoning to justify the design (AO5b) 	<ul style="list-style-type: none"> • Demonstrates generally accurate knowledge and understanding of issues relating to the design (AO2) • The points made show adequate consideration of the interrelationships between different aspects that affect the design of the building (AO2) • Demonstrates generally logical lines of reasoning to justify the design (AO5b) 	<ul style="list-style-type: none"> • Demonstrates largely accurate and thorough knowledge and understanding of issues relating to the design (AO2) • The points made show very good consideration of the interrelationships between different aspects that affect the design of the building (AO2) • Demonstrates largely logical and coherent lines of reasoning to justify the design (AO5b) 	<ul style="list-style-type: none"> • Demonstrates accurate, thorough and detailed understanding of issues relating to the design (AO2) • The points made show a perceptive, thorough and detailed consideration of the interrelationships between different aspects that affect the design of the building (AO2) • Demonstrates thorough, detailed, logical and coherent lines of reasoning to justify the design (AO5b)

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Task 2 Quality of digital communication: Indicative content	Considerations for marking: <ul style="list-style-type: none"> choice of language, technical vocabulary, consideration of the audience slide structure, slide order, size and font of text, use of images/diagrams use of colour, use of animations and transitions 			
Assessment focus		Band 1	Band 2	Band 3
Task 2: Quality of digital communication	0 No rewardable material	1–2 <ul style="list-style-type: none"> Somewhat effective communication of technical information which is somewhat appropriate for the audience and delivered with reasonable fluency and clarity (AO4a) Selects and applies techniques for organising and presenting content that are somewhat appropriate (AO3) Basic use of digital features to enhance the quality of the presentation (AO4b) 	3–4 <ul style="list-style-type: none"> Mostly effective communication of technical information which is mainly appropriate for the audience and delivered in a mostly fluent and clear manner (AO4a) Selects and applies techniques for organising and presenting content that are mostly appropriate (AO3) Good use of digital features to enhance the quality of the presentation (AO4b) 	5–6 <ul style="list-style-type: none"> Highly effective communication of technical information which is consistently appropriate for the audience and delivered in a fluent, clear and concise manner (AO4a) Selects and applies techniques for organising and presenting content that are fully appropriate (AO3) Excellent use of digital features to enhance the quality of the presentation (AO4b)

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Task 3	Process	Evidence	Mark
150mm diameter foul drainage pipe	Correct process to find cost of the materials including wastage	<p><u>Cost of materials per metre run (including wastage)</u></p> <p>1. Cost of pea gravel per metre run</p> <p>Pea gravel = $(0.15+0.15 +0.15) \times 0.6 = 0.27 \text{ m}^3$</p> <p>Minus volume of the pipe = $\pi r^2 = \pi \times 0.075^2 = 0.0177\text{m}^3$</p> <p>Pea gravel = $(0.27-0.0177) = 0.252 \times 48 = \text{£}12.10$</p> <p>Including wastage = $12.10 \times 1.05 = \text{£}12.71$</p> <p>2. Cost of pipe per metre run</p> <p>150mm diameter underground foul drainage pipe = $\text{£}42.84 / 6 = \text{£}7.14$</p> <p>Including wastage = $7.14 \times 1.05 = \text{£}7.50$</p> <p>3. Cost of backfill per metre run</p> <p>Type 1 stone = $0.55 \times 0.6 = 0.33 \text{ m}^3$</p> <p>Including wastage = $0.33 \times 50 \times 1.05 = \text{£}17.33$</p> <p>4. Total material costs = $12.71 + 7.50 + 17.33 = \text{£}37.54$</p> <p>(Allow follow through only if two correct values are seen above)</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p>

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	<p>Correct process to find cost of labour and plant</p>	<p><u>Labour & plant costs (all rates per metre run)</u></p> <p>5. Labour costs Installation of 150mm foul drainage pipe = $0.2 \times 11.75 = \text{£}2.35$</p> <p>6.Plant costs Excavator, driver and banksman to excavate trench for pipe = $0.6 \times 1 \times 0.1 \times 29.50 = \text{£}1.77$</p> <p>Excavator, driver and banksman to backfill trench = $0.6 \times 0.55 \times 0.1 \times 29.50 = \text{£}0.97$ (Accept total plant cost $\text{£}2.74$) Both values required.</p>	<p>1</p> <p>1</p>
	<p>Correct answer</p>	<p>7.Total cost of materials, plant and labour= $\text{£}37.54 + \text{£}2.35 + \text{£}1.77 + \text{£}0.97 = \text{£}42.63$</p> <p>Allow follow through for their value of (4) plus their values of (5) and (6) for which one must be correct.</p>	<p>1</p>

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Task 4
Group
presentation:
Indicative
content

Typical responses may include: (add section about noise/acoustic barriers etc.)

- formality of response, sentence structure, style of writing/speaking
- dust can contaminate surface water which can find its way into water courses and has the potential to kill aquatic wildlife
- dust can settle on food stuff and other market goods in the market stalls which may make the food unattractive to purchase.
- dust can also make the stalls and associated flat surfaces look unattractive, dirty and grubby.
- fine dust particles can be inhaled or ingested by construction works, market stall operators and the general public. Regular exposure to dust can lead to diseases like lung cancer, asthma, leading and silicosis
- stop piling work and ensure that any gaps in site hoarding are sealed, use dust suppressant systems such as water misters and dust guards, reduce speed on site to limit vehicles generating dust, use a dust collection system,
- prepare a dust management plan which may include use of an acoustic barrier as an alternative to a standard site hoarding. Acoustic panels tend to be thicker and are designed to either reflect sound back into the construction site or alternatively to absorb the sound. Additional wind barriers might also be installed at right angles to the prevailing wind on the site to help contain the dust.

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Assessment focus		Band 1	Band 2	Band 3
Task 4: Group presentation	0	1–3	4–6	7–9
	No rewardable material	<ul style="list-style-type: none"> The presentation partially addresses the issues raised in the context (AO2) Partially effective communication of technical information which is somewhat appropriate for the audience but has limited clarity in delivery (AO4a) Some coherence between different parts of the presentation and different presenters (AO2) 	<ul style="list-style-type: none"> The presentation mostly addresses the issues raised in the context (AO2) Mostly effective communication of technical information which is mostly appropriate for the audience and is delivered in a clear manner (AO4a) Good coherence between different parts of the presentation and different presenters (AO2) 	<ul style="list-style-type: none"> The presentation is thorough and detailed and comprehensively addresses the issues raised in the context (AO2) Highly effective communication of technical information which is fully appropriate for the audience and is delivered in a clear and concise manner (AO4a) Comprehensive coherence between different parts of the presentation and different presenters (AO2)

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Introduction to my report

This project is going to be a large pet store named 'BgoodPets' which will sell pet supplies and contain a veterinary practice with overall dimensions (50 m long, 20 m) wide and 6 m height at eaves. and will be located on a development site in a market town. The site is immediately adjacent to an outdoor market area. This project is going to be based on the client's vision for the most part, whilst also needing to meet required building regulations. Due to this, we may not be able to meet the client's complete expectations.

With the site being immediately adjacent to an outdoors market area, this brings problems to the development of the project due to these markets being erected every Wednesday and Saturday. This could be a problem due to the potential noise complaints, dust pollution and vibrations from machinery.

This building will be constructed using a steel frame structure, this allows continuous open space throughout the building. Included in this will be a ground floor (50 m x 20 m) and a first floor (20 m x 15 m). The building will have a flat roof.

There will be 2 separate floors, one being the ground floor and the other being the first floor. Stairs and lifts will be included. Lifts can be used by wheelchair users therefore making the store wheelchair user friendly.

Initial summary

As well as what will be included in the project itself, there are many other factors which must be considered when scoping the project.

The site itself is in a market town and has dimensions of 100m x 40m. The site is fairly clean and will not need too much cleaning up before the project can commence.

The ground floor will be for retail space included are displays selling pet products, a staff canteen, a training room, a warehouse and staff and customer toilets. The remaining floor space will be used for circulation space which will include corridors, stairs, lifts etc. There will also be waiting, and reception areas included.

The first floor will include a dog grooming salon and veterinary surgery for small pets such as cats and dogs. There will be unisex staff toilets, showers and a changing area. The remaining area of this floor will be used for circulation space and waiting and reception areas.

Steel frame construction have been chosen due to its high strength and excellent durability. I believe that with this, portal framing would be the best idea for the framework on the superstructure because it allows for it to be a continual, uninterrupted open space in the floor due to the frame being like an exoskeleton with no need for internal pillars to keep the structure stable.

The local council have had preliminary discussions with the client. Explanation that the marketplace will continue during the period of construction meaning minimal disruption is a must. This includes noise and dust. Therefore, I have found methods in my research finding below on how to control and minimize both noise and dust on site.

The accessibility of the building will be suitable to all people and will meet the acts of approved document M which I have gone through below in my research findings. The building will be wheelchair accessible with the inclusion of ramps on entrance and lifts to gain access to and from

floors. Use of stairs and lifts must be provided to the public, taking them and their animals into account.

The structure will be formed from the use of steel cladding, this allows for more architectural design to be implemented.

Biofuel furnaces will be used throughout the building to assist in the project of being carbon neutral.

Research findings

Through my research I have discovered methods on both noise reduction and the control of dust spreading. This will need to be done to meet the Control of Pollution Act 1974 BS 5228, and the Royal Borough's Code of Construction Practice on minimizing noise, vibration and dust.

These include simple methods such as erecting barriers between the site and areas where pedestrians are. By putting up barriers and screens, it blocks direct paths for which noise can travel.

The use of noise dampening materials is also an effective way of minimizing noise. An example of this is placing foam underneath.

Another method of reducing noise is to do the construction work at times when pedestrians are out working or not in the area to minimize the effects of noise pollution on the surrounding people, other methods can include turning off heavy machinery when it is not in use so that there is no unnecessary, uncomfortable loud noise.

Through my research I have also found methods on how to control dust. This involves using water which is seen as the most effective and excellent solution. Water should be applied a couple of times a day, depending on the atmospheric conditions.

Another method I have found on how to control dust is through the use of stone. Stone can be used effectively as a dust deterrent for construction roads and entrances or as a mulch in areas where vegetation cannot be established. In areas of high wind, small stones are not as effective as eight-inch stones.

Mulch and vegetation

Mulch and vegetation may be applied to protect the exposed soil from both wind and water erosion. Whilst this method is eco-friendly, this can become a headache watering your vegetation if not coordinated properly as it might bring erosion problems itself. When applied however, this technique can reduce wind erosion by up to 80%. Hydro-seeding is one of the dust control methods preferred by construction projects.

Approved document M – Access to and use of buildings

Building regulations for access to and use of buildings in dwellings and buildings other than dwellings and provides a baseline for accessibility in the built environment.

Category 1: visitable dwellings

Category 2: accessible and adaptable dwellings

Categories 2 and 3 apply only where required by planning permission.

Volume 2 – BUILDINGS OTHER THAN DWELLINGS

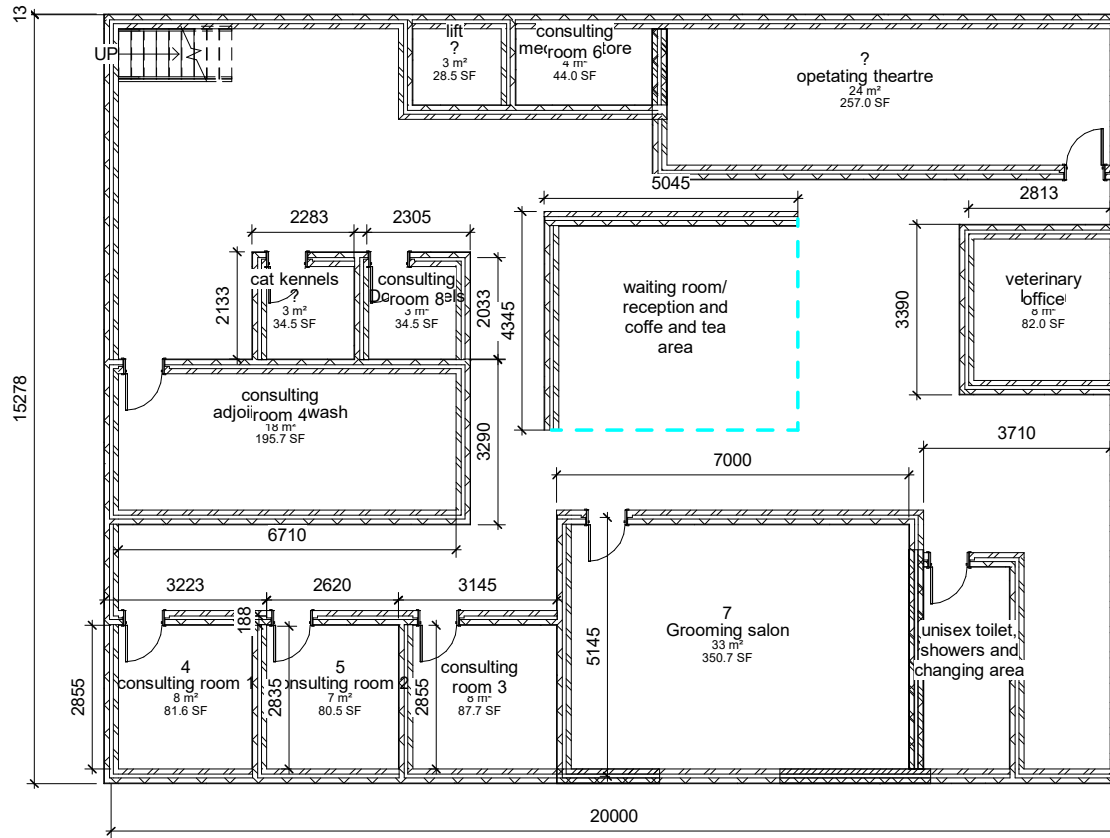
M1 – Access and use of buildings other than dwellings

M2 – Access to extensions to buildings other than dwellings

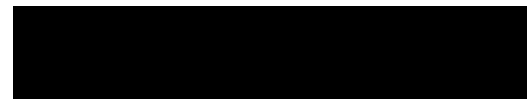
M3 – Sanitary conveniences in extensions to buildings other than dwellings

Conclusion

This project is expected to take 58 weeks and will have a budget of £2 million. The buildings is designed to have a life of around 50 – 60 years.



Bgoodpets

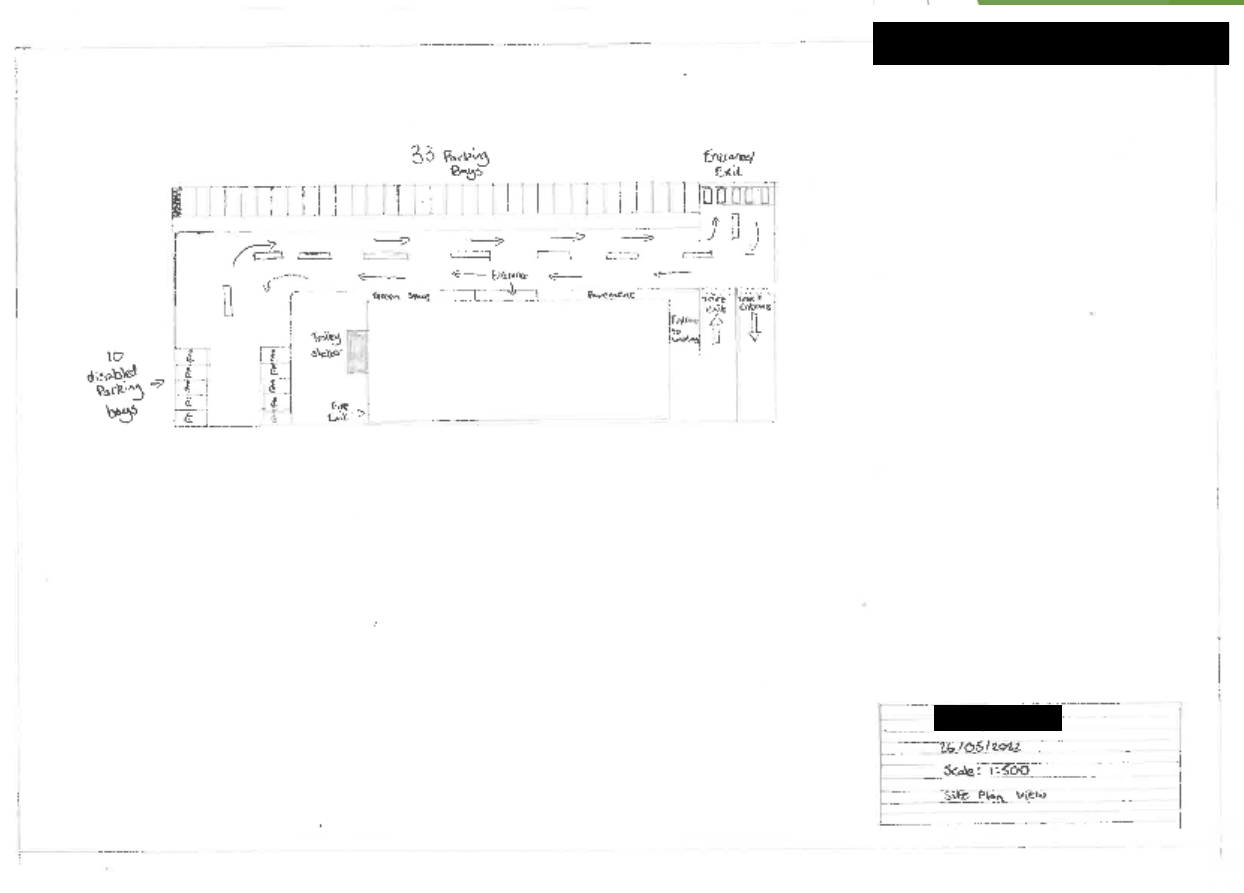


Introduction

- ▶ New site - BgoodPets
- ▶ Budget - £2 million
- ▶ Length of project - 58 weeks
- ▶ The building is designed to last 50 years
- ▶ The building will be a new superstore selling pet supplies and will contain a veterinary practice
- ▶ The building will have two floors; a ground floor 50m x 20m and a first-floor 20m x 15m.
- ▶ The building will have a flat roof
- ▶ There must be stairs and a lift.

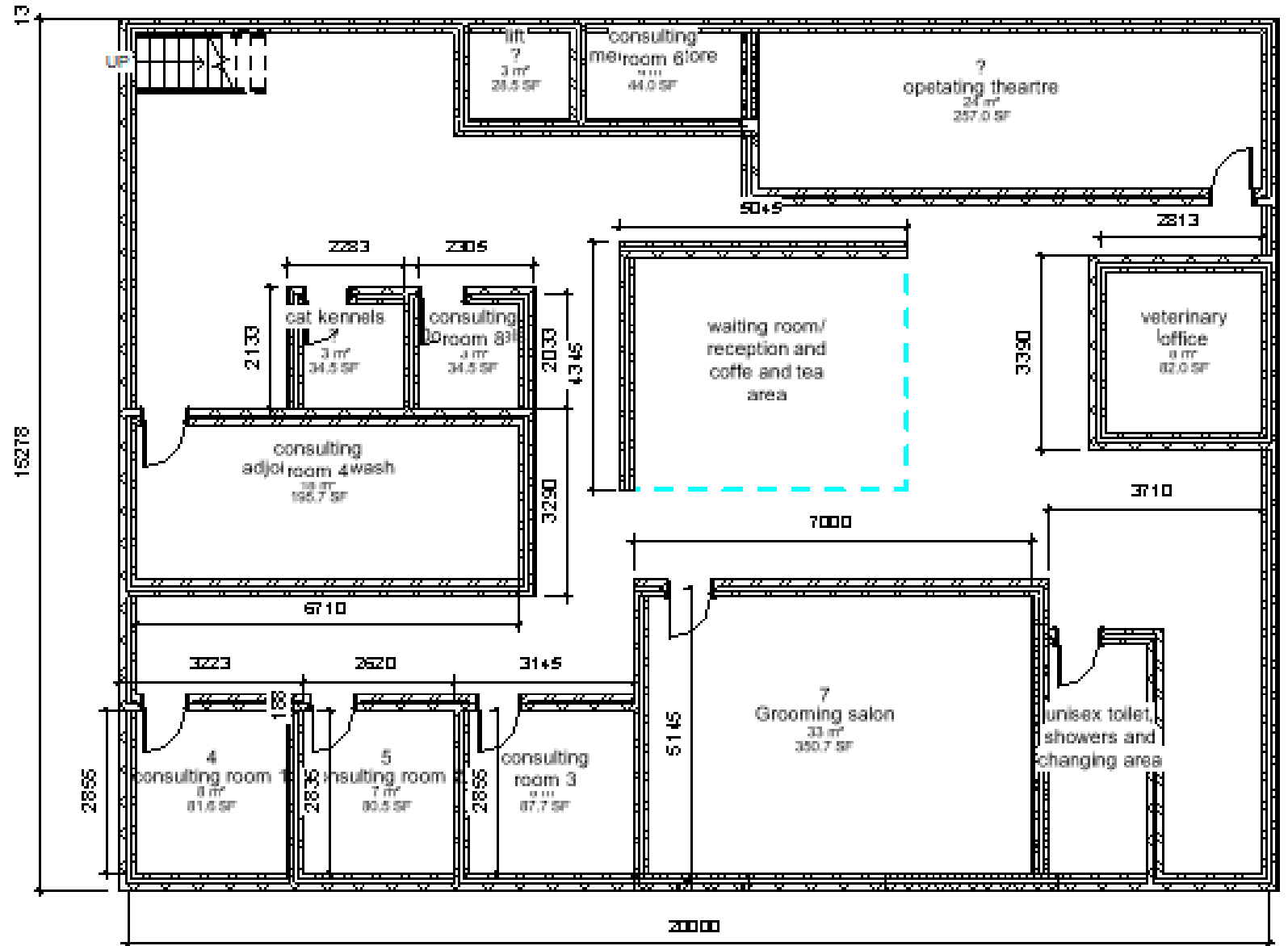
Site layout

- ▶ The site will have 33 parking bays with an extra 10 disabled parking bays (43) total
- ▶ There will be an entrance/exit
- ▶ The site will also include a through road for delivery trucks to drop supplies to the warehouse., where these supplies will be kept.
- ▶ There will be green space outside of the building along with a pathway for customers to access the building
- ▶ The outside space will also include a trolley shelter



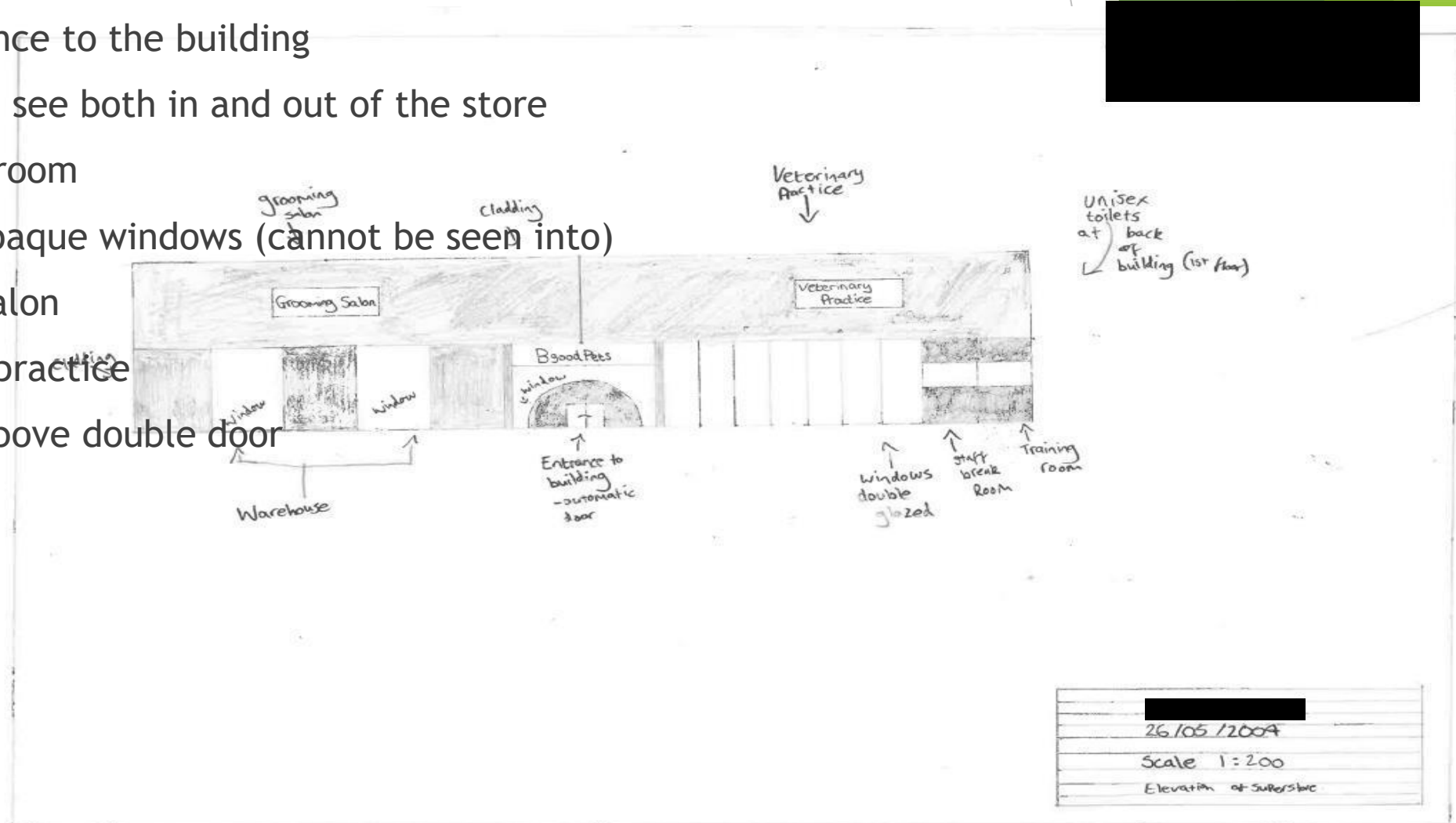
First floor

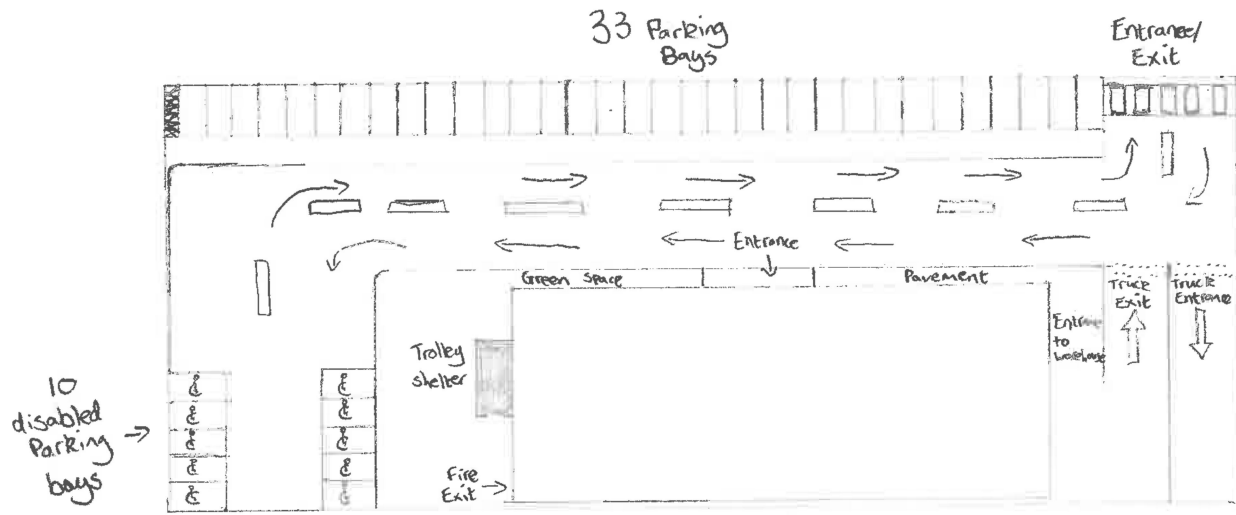
- Veterinary practice
- Grooming salon
- 3 consulting rooms
- Waiting room/ reception and coffee and tea room
- Unisex toilet, showers and changing area
- Veterinary office
- Operating theatre
- Lift
- Dog kennel
- Cat kennel
- Stairs to access first floor
- Adjoining pet washing area



Front elevation

- ▶ Double door entrance to the building
- ▶ Lots of windows to see both in and out of the store
- ▶ Staff and training room
- ▶ Warehouse with opaque windows (cannot be seen into)
- ▶ Signed grooming salon
- ▶ Signed veterinary practice
- ▶ 'BgoodPets' sign above double door





[Redacted]
26/05/2021
Scale: 1:500
Site Plan View

**T Level Technical Qualification in Design, Surveying
and Planning for Construction (Level 3)**

Student name: [REDACTED]

Provider number: [REDACTED]

Pearson Learner ID: [REDACTED]

Paper
Reference**19531****Core
Employer Set Project****Task 3 Unit Rate Calculations****You do not need any other materials.****Information**

- Fill in the boxes at the top of this page with the student's name, centre number and Pearson Learner ID number.
- This booklet contains resource material for the completion of the set task under supervised conditions.

Calculate the unit rate (show all your workings)

Lay a 150 mm foul drainage pipe in a 600mm wide excavation up to a maximum depth of 1 m as shown in Figure 1. The pipe will have a 150 mm pea gravel bed and surround.

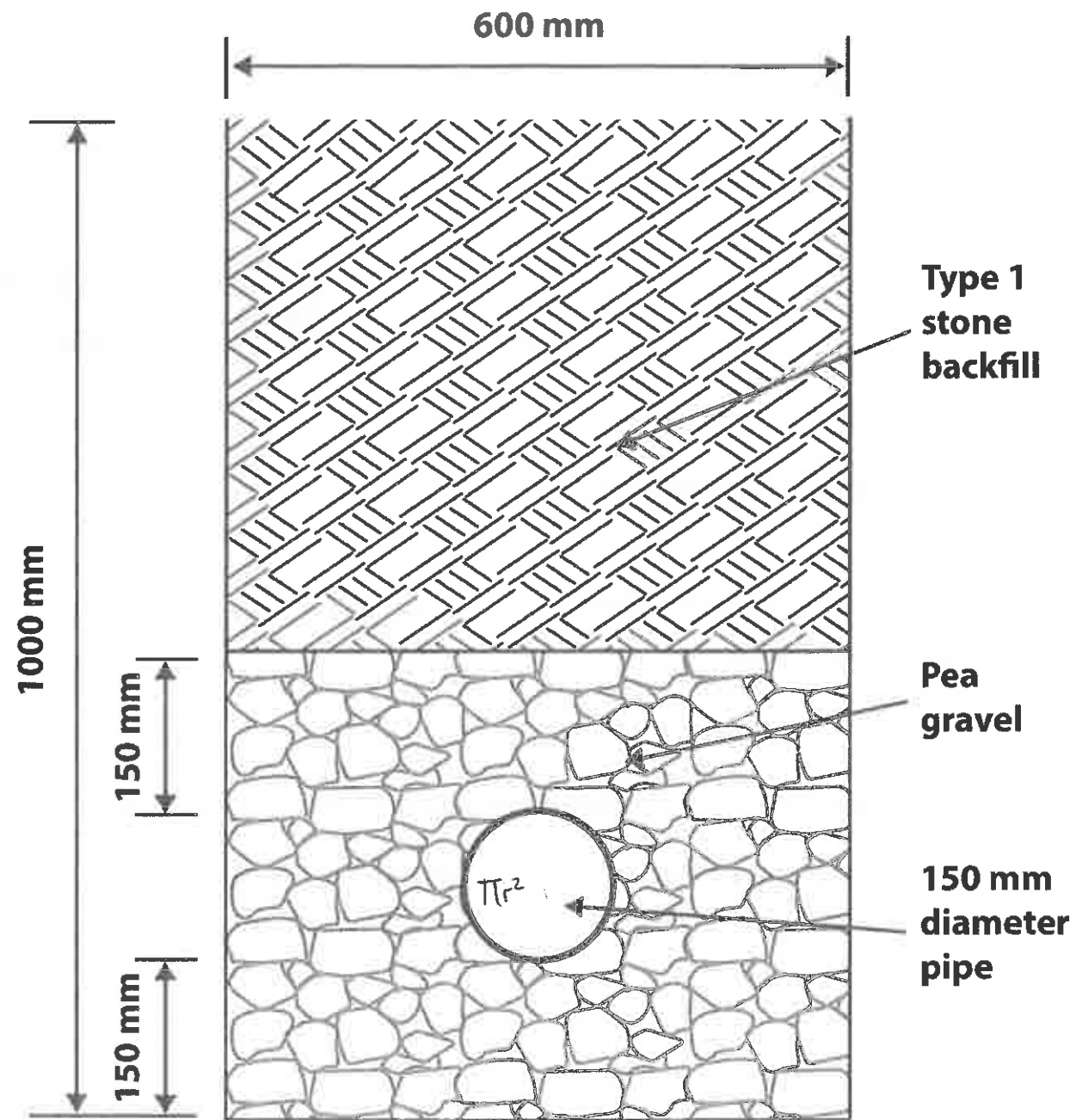


Figure 1: Typical section of a foul drainage trench

Cost of materials per metre run (including wastage)

1. Cost of pea gravel per metre run

$$\text{Size of area of rectangle} = 150 \div 1000 = 0.15 \times 3 = 0.45$$

$$600 \div 1000 = 0.6$$

$$\text{Area of rectangle} = 0.45 \times 0.6 = 0.27$$

$$150 \div 1000 = 0.15 \div 2 = 0.075 \quad \text{Area of gravel} - \text{Area of pipe.}$$

$$\pi 0.075^2 = 0.018^2 = \text{Area of pipe}$$

$$0.27 - 0.018 = 0.252$$

$$0.252 \times 48 = 12.096 \quad (\text{not } \pounds 12.10)$$

2. Cost of pipe per metre run

$$\frac{42.84}{6} = \pounds 7.14 \text{ per metre}$$

~~It will cost $\pounds 7.14$ per 1 metre it goes back~~

$$7.14 \times 1.05 = \pounds 7.50$$

It will cost $\pounds 7.50$ per 1 metre it goes back,

3. Cost of backfill per metre run

$$550 \div 1000 = 0.55 \quad \text{Area} = 0.55 \times 0.6 = 0.33$$

$$600 \div 1000 = 0.6$$

$$0.33 \times 50 (\text{cost}) = 16.5$$

$$16.5 \times 1.05 = \pounds 17.325 = \text{cost of backfill per metre run}$$

$$\pounds (17.30)$$

4. Total material costs

$$\text{(gravel)} - \pounds 12.10$$

$$\text{(pipe)} - \pounds 7.50$$

$$\text{(backfill)} - \pounds 17.30$$

$$\pounds 36.93 = \text{Total material costs.}$$

Labour and plant costs (all rates per metre run)

5 i) Labour costs

If pipe goes back 1m, it will take labourer
0.2 hours to complete
It takes labourer 0.2 hours to complete 1m of pipe
labourer charges £11.75 per hour
 $\frac{£11.75}{0.2} = 2.35$ Labour costs = £2.35

5 ii) Plant costs


$0.6 \times 0.1 = 0.06$
 $0.06 \times 29.50 = 1.77$
~~0.55~~ $0.55 \times 0.6 = 0.33$
assuming 1 metre depth = 0.33 m^3 +
 $0.1 \times 0.33 = 0.033 \times 29.50 = 0.9735 = 1.3035$
= £1.31

6. Total plant and labour

£2.35 + £1.31
= £3.66

7. Total cost of materials, plant and labour

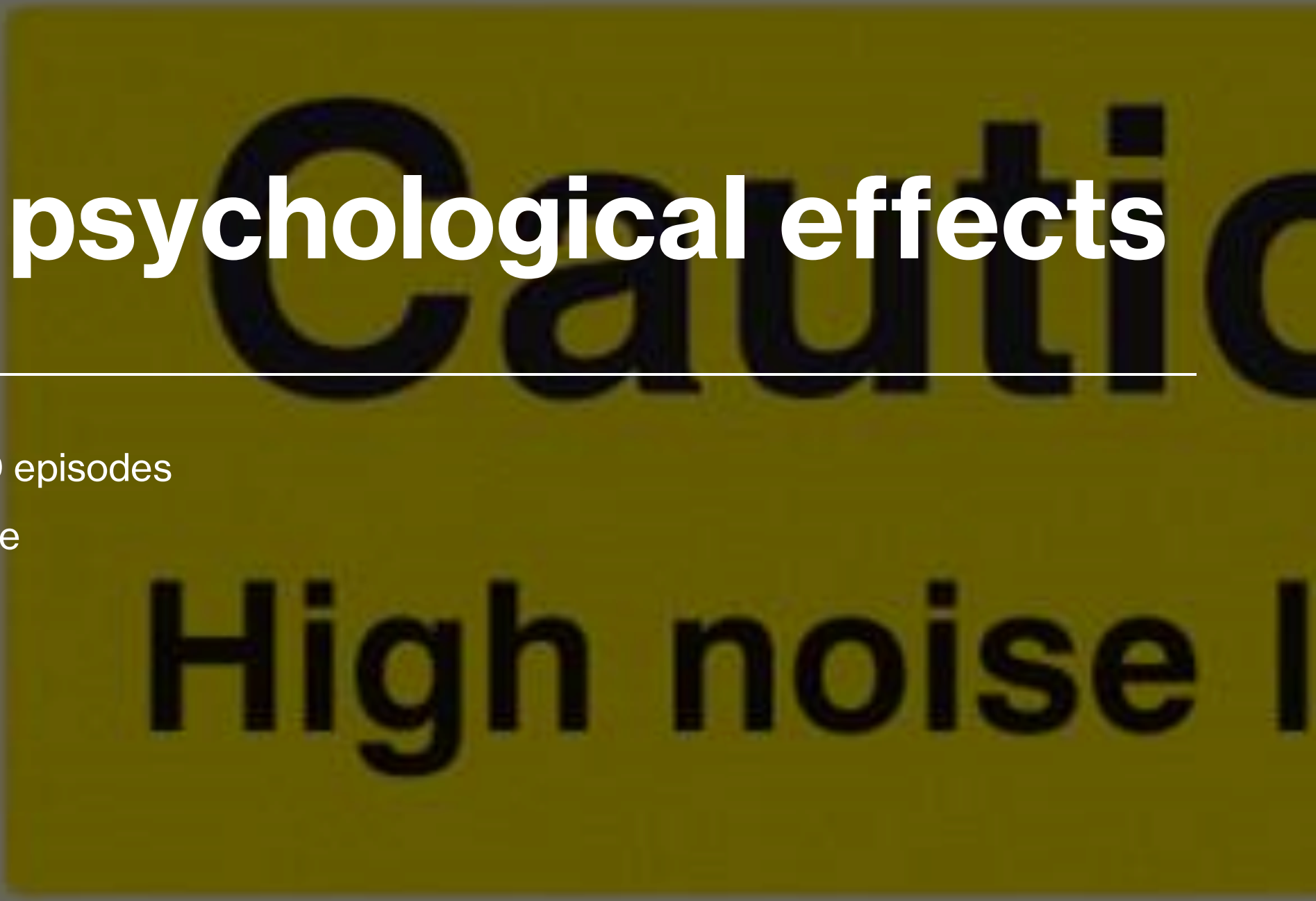
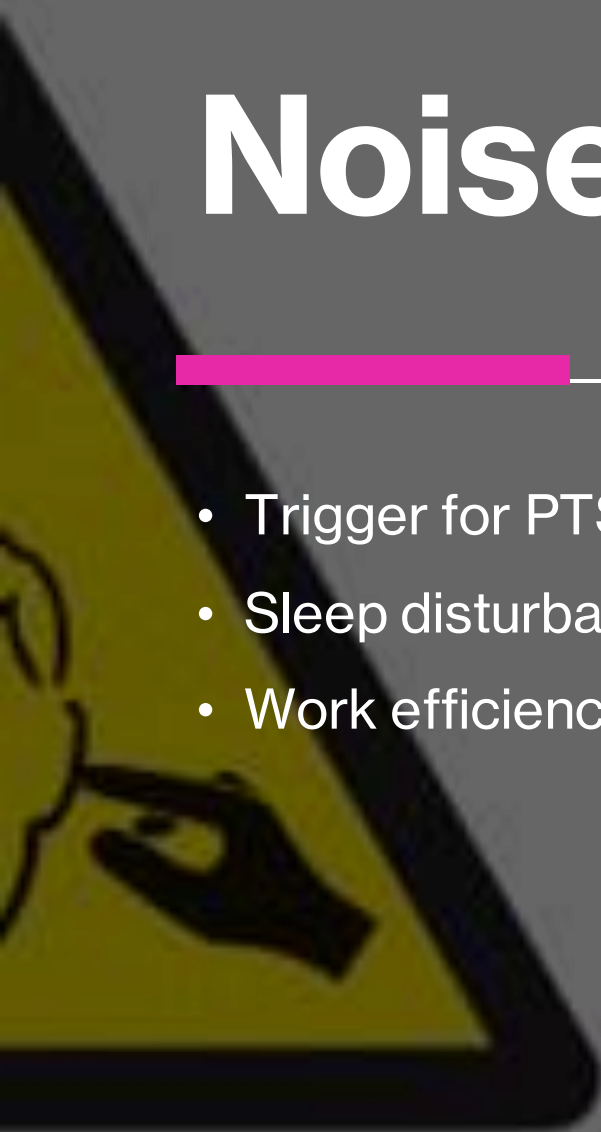
(+) ↓ £36.93 = materials cost
£3.66 = plant and labour cost
 $36.93 + 3.66$
= £40.59



**Prevention
and Risk of
noise and
dust.**

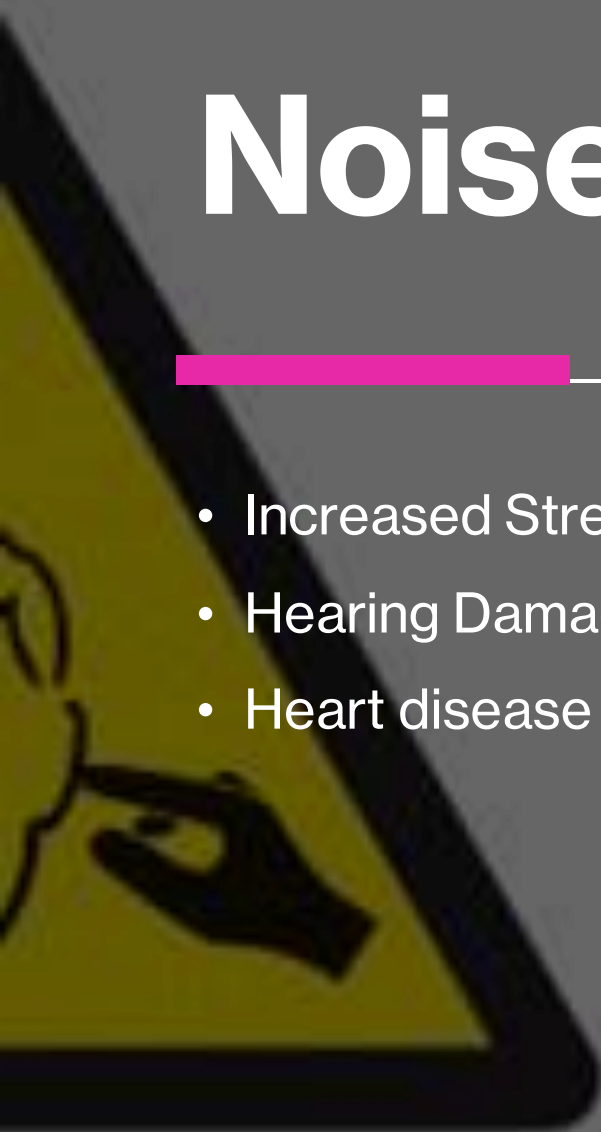
Noise psychological effects

- Trigger for PTSD episodes
- Sleep disturbance
- Work efficiency



Noise health effects

- Increased Stress
- Hearing Damage
- Heart disease



Dust

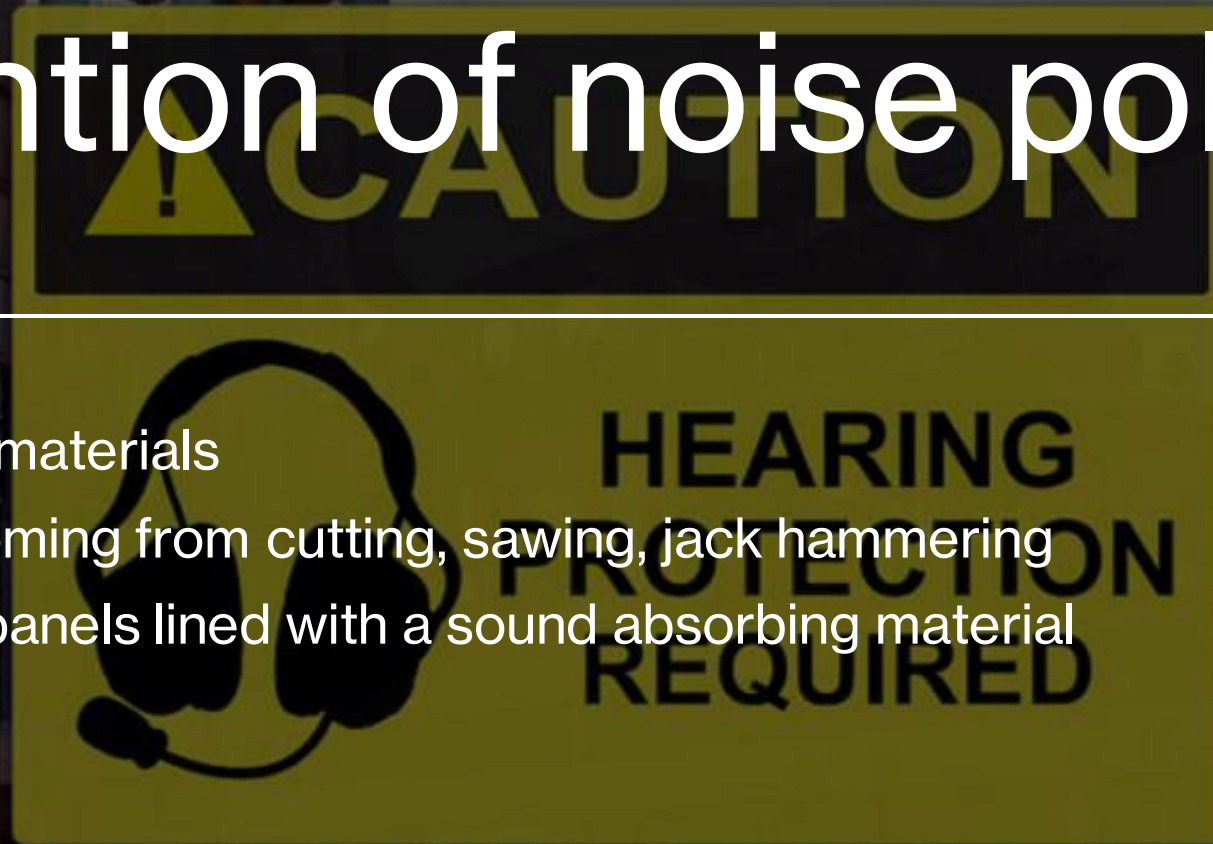
- Eye irritation
- asthma
- Allergies and sneezing

Warning

Dust hazard

Prevention of noise pollution

- Sound-blocking materials
- prevent noise coming from cutting, sawing, jack hammering
- Cheap plywood panels lined with a sound absorbing material





Prevention of dust pollution

- Use of water sprays
- Ventilation systems. Ventilation control is often an extreme method for businesses to reduce dust in the working environment.

Control of Pollution Act 1974

- Royal Borough expects contractors to employ best practicable means to reduce noise to a minimum
- Defined in the Control of Pollution Act 1974, BS 5228, and the Royal Borough's Code of Construction Practice (the Code) on minimizing noise, vibration and dust.



Any questions?

Mark Grid

Task	Assessment Focus	Learner score	Mark Scheme Band	Maximum Mark
1	Report	6	2	12
	Gantt chart	4	2	6
2	External site plan sketch design	7	3	12
	Elevation sketch design outcomes	6	2	12
	Quality of sketch drawings	4	2	6
	CAD design outcomes	10	4	12
	Quality of CAD drawing	5	3	6
	Technical content of presentation	6	2	12
	Quality of digital communication	3	2	6
3	Calculation	5	N/A	7
4	Group presentation	3	1	9
Total Mark		59		100



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