UK Civil Aviation Authority

National Private Pilot Licence (Aeroplane)

CAP 3181

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Contents

Introduction

Aviation Safety (Amendment) (No.2) Regulation 2025

UK Statutory Instrument (2025 No 878) amended the assimilated aviation regulations with respects to the Aircrew Regulation (UK Reg 1178/2011).

Air Navigation (Amendment) Order 2025

UK Statutory Instrument (2025 No 850) amended the Air Navigation Order 2016.

CAP3181 NPPL(A)

The purpose of this CAP is a temporary measure until the main updated CAP will be ready for publication. This CAP sets out the requirements and syllabus for student pilots, pilots, instructors, examiners and training organisations to follow for the issue of a NPPL(A).

All references and definitions used in this CAP have the meaning as set out in Schedule 1 of the ANO 2016.

Section 1 – National Private Pilot Licence (NPPL) for Aeroplanes, Microlights and Touring Motorgliders (TMG)

Part A Common requirements

The purpose of this part is to set out the common requirements for the NPPL across all class ratings.

1. Applicability

1.1 The holder of an NPPL(A) with an SEP, TMG or Microlight class rating may exercise the privileges of the licence to fly aeroplanes within these Classes, as applicable, registered in the UK within UK airspace.

1.2 Use of the licence within the airspace of other countries is subject to the agreement of the relevant authorities in those countries.

2. Privileges

2.1 The privileges and conditions of the NPPL(A) are as defined in Chapter 3, Part 1 of Schedule 8 to the ANO 2016.

3. Minimum age

3.1 An applicant for an NPPL(A) SEP(Land), TMG or Microlight (or Microlight–Powered Parachute) shall be at least 17 years of age.

3.2 The minimum age for the first solo flight is 16 years of age.

4. Licence validity

4.1 The NPPL(A) is issued with a lifetime validity.

4.2 Class ratings included in an NPPL(A) are issued with a 24-month validity period to the end of the calendar month in which the Skill Test or Proficiency Check was conducted.

5. Medical requirements

5.1 Student pilot must have either made a valid Pilot Medical Declaration (PMD) or hold a valid Part-MED Class 1, 2 or LAPL Medical Certificate when flying solo under supervision.

5.2 An applicant for an NPPL(A) must have made a valid PMD or hold a valid Part-MED Class 1, 2 or LAPL medical certificate.

5.3 For information regarding the medical requirements for the PMD please refer to Article 163 of the ANO, or the CAA web site at Medical requirements for private pilots | Civil Aviation Authority.

6. Theoretical knowledge

6.1 An applicant for an NPPL(A) with SEP(Land), TMG or Microlight shall pass either the NPPL(A) examinations or the Part-FCL examinations.

6.2 The NPPL(A) examinations cover:

a) Air Law

b) Human Performance

c) Meteorology

d) Navigation

e) Aircraft General

6.3 The communications exam would also be required if the pilot is wishing to gain the FRTOL. This can be conducted either as a paper examination or as a separate examination on the eExams system.

6.4 An applicant for a NPPL(A) Microlights restricted to Powered Parachute must also pass the theoretical knowledge examinations in paragraph 6.2.

6.5 An applicant for an NPPL(A) for all classes shall successfully pass all the examinations within 24 months prior to applying for the licence.

7. NPPL Skill Test

7.1 All the flight training, supervised solo and theoretical knowledge examinations must be completed prior to the student pilot undertaking the Skill Test.

7.2 The Skill Test shall be taken within 6 months of the completion of training and all sections of the test must be completed within 6 months of the first attempt. If the applicant does not pass all sections of the skill test at the first attempt, the section(s) which have been failed may be attempted in a further test. There is no limit to the number of tests that may be taken.

7.3 The Skill Test is valid for licence issue for 6 months from the date of a successful pass in all sections to applying for the licence.

7.4 The Skill Test must be taken in the aircraft type in which the applicant has completed their flight training in, SEP (Land), TMG, Microlight (Three-axis), Microlight (Weightshift) or Microlight (Powered Parachute).

7.5 The Skill Test shall be conducted by an authorised Flight Examiner.

8. Flight Radio Telephony Operators Licence (FRTOL)

8.1 Pilots who intend to operate radiotelephony equipment installed in an aircraft must hold an FRTOL.

8.2 The FRTOL requirements can be found on the CAA website in CAP2325: CAP2325: Guidance for FRTOL Practical Test Candidates | UK Civil Aviation Authority

Part B – Single Engine Piston (SEP) and Touring Motorglider (TMG)

1. Flying training and experience requirements

1.1 An applicant for an NPPL(A) with SEP(Land) or TMG shall have completed at least 32 hours flight time as pilot of aeroplanes (excluding NPPL Skill Test).

1.2 NPPL(A) SEP(Land) and NPPL(A) TMG training can be conducted at an Approved Training Organisation (ATO), Declared Training Organisation (DTO) or with an independent Flight Instructor (FI).

1.3 Training for the NPPL(A) SEP(Land) or TMG must include the following:

a) 22 hours dual instruction (to include 1 hour instrument appreciation);

b) 10 hours supervised solo flight time which must include at least 4 hours of solo cross-country flight time, including one solo cross-country flight of at least 150 km (80 NM) in the course of which a full stop landing at one aerodrome other than the aerodrome of departure shall be made.

2. NPPL(A) SEP/TMG Skill Test

2.1 An applicant for an NPPL(SEP(Land)) or NPPL(TMG) shall have demonstrated the ability to perform as pilot-in- command of an aeroplane/TMG, the procedures and flight manoeuvres described in the foregoing pages of this syllabus with a degree of competency appropriate to the privileges granted to the holder of an NPPL(SEP(Land))/NPPL(TMG).

2.2 An applicant for an NPPL(SEP(Land))/NPPL (TMG) General Skill Test shall have satisfactorily completed all the required flight training, including the supervised solos flights.

2.3 An applicant for a Skill Test shall have successfully completed all theoretical knowledge examinations including examinations in Communications if completing the Part-FCL examinations or if completing the NPPL examinations if the FRTOL is to be applied for.

2.4 The Skill Test must be completed in one aircraft class, SEP(Land) or TMG. This is the class that will be endorsed in the licence on issue.

2.5 Provision of aeroplanes/TMG's for the Skill Test - The aeroplane/TMG used for the test shall meet the requirements for training aeroplanes/TMG.

SECTIONS OF THE FLIGHT TEST

Section 1: Pre-flight operations and departure

Section 2: General Airwork

Section 3: Enroute procedures

Section 4: Approach and landing procedures

Section 5: Abnormal and emergency operations

FLIGHT TEST TOLERANCES

The applicant shall demonstrate the ability to:

- operate the aeroplane within its limitations;
- complete all manoeuvres with smoothness and accuracy;
- exercise good judgement and airmanship;
- apply aeronautical knowledge; and
- maintain control of the aeroplane at all times in such a manner that the successful outcome of the procedure or manoeuvre is never seriously in doubt.

The following limits are for general guidance. The examiner should make allowance for turbulent conditions and the handling qualities and performance of the aeroplane used:

(1) height:

(i) normal flight ± 150 ft

(2) heading:

(i) normal flight ± 10°

(3) speed:

(i) take-off and approach +15/–5 knots

(ii) all other flight regimes ± 15 knots

CONTENTS OF THE GENERAL SKILL TEST

The General Skill Test contents for the issue of an NPPL (SEP(Land))/NPPL (TMG) are shown below: Use of checklists, control of the aeroplane by external visual reference, anti/de-icing procedures, etc. apply in all sections.

SECTION 1 – PRE-FLIGHT OPERATIONS AND DEPARTURE

a. Pre-flight documentation and weather brief
b. Mass and balance and performance calculation
c. Aeroplane inspection and servicing
d. Passenger care and considerations
e. Engine starting and after starting procedures
f. Taxiing and aerodrome procedures, pre take-off procedures
g. Take-off and after take-off checks
h. Aerodrome departure procedures
i. ATC liaison - compliance, R/T procedures, Airmanship

SECTION 2 – GENERAL AIRWORK

a ATC liaison and compliance, R/T procedure, Airmanship
b Straight and level flight, with speed changes
c Climbing:
- best rate of climb
- climbing turns
- levelling off

d Medium (30° bank) turns
e Steep turns (360° left and right - 45° bank) including recognition and recovery from a spiral dive
f Flight at critically low airspeed with and without flaps. Best angle of climb
g Stalling:
- Clean stall and recovery with power
- Approach to stall descending turn with bank angle 20°, approach configuration
- Approach to stall in landing configuration

h Descending
- With and without power
- Descending turns (steep gliding turns)
- Levelling off

SECTION 3 – ENROUTE PROCEDURES

a. Flight plan, dead reckoning, map reading and use of moving map display (optional)
b. Maintenance of altitude, heading and speed
c. Orientation, timing and revision of ETAs and log keeping using a manual flight log
d. Diversion to alternate aerodrome (planning and implementation) including the use of moving map displays (optional)
e. Use of radio navigation aids including the use of GNSS and moving map displays (optional)
f. Basic instrument flying check (180° turn in simulated IMC)
g. Flight management (checks, fuel systems and carburettor icing, etc.)
h. ATC compliance and R/T procedures

SECTION 4 – APPROACH AND LANDING PROCEDURES

a. Aerodrome arrival procedures

b. *Precision landing (short field landing), cross wind, (if suitable conditions available)

c. *Flapless landing

d. Approach to landing with idle power

e. Touch and go

f. Go-around from low height

g. ATC liaison -compliance, R/T procedures, Airmanship

h. Actions after flight including documentation

*Some of these items may be combined at the discretion of the Flight Examiner.

SECTION 5 – ABNORMAL AND EMERGENCY PROCEDURES

This section may be combined with Sections 1 through 4

a. Simulated engine failure after take-off

b. *Simulated forced landing

c. Simulated precautionary landing

d. *Simulated emergencies

- Engine fire
- Cabin or Electrical fire
- Partial loss of power
- Simulated emergencies from the POH, FM or similar or abnormal conditions introduced by the examiner.

e. Oral questions

*Some of these items may be combined at the discretion of the Flight Examiner.

Examiner Report for NPPL(SEP/TMG) Skill Test:

Please complete this form in BLOCK CAPITALS using black or dark blue ink.

1.APPLICANT DETAILS

Surname: …… Forenames: ……..

CAA Personal reference number: …… Attempt: ……

Date: …….. Place of Test……

FALSE REPRESENTATION STATEMENT

It is an offence under the UK Air Navigation Order to make, with intent to deceive, any false representation for the purpose of procuring the grant, issue, renewal or variation of any certificate, license, approval, permission or other document. This offence is punishable on summary conviction by a fine, and on conviction on indictment with an unlimited fine or imprisonment or both.

I declare that the information provided is correct. Applicant's Signature:

2.FLIGHT TEST

Route

Aircraft Type and Reg · Block Times: Depart Arrival Total

Test Sections:	1	2	3	4	5
Sections to be taken:					
Result:					
(a)					
(b)					
(c)					
(d)					
(e)					
(f)					
(g)					N/A
(h)					N/A
Re-test Sections:					
Test Sections incomplete due:					
Items not completed:					
Re-training required/recommended:					

Examiner's Name: Examiner's CAA Reference Number:

Examiner's Signature:	Date:
Applicant's Signature:	Date:
3.TRAINING ORGANISATION	
ATO/DTO/Other:	Date training completed:
Recommended for test by (name):	

Copies of the report shall be submitted to:
(1) The Applicant (2) The CAA (3) The Examiner

Civil Aviation Authority Regulation 6
Regulation 6(5) of the Civil Aviation Authority Regulations 1991 provides as follows: Any person who has failed any test or examination which he is required to pass before he is granted or may exercise the privileges of a personnel licence may within 14 days of being notified of his failure request that the Authority determine whether the test or examination was properly conducted. In order to succeed you will have to satisfy the Authority that the examination or test was not properly conducted. Mere dissatisfaction with the result is not sufficient reason for appeal.

Use of checklist, airmanship, control of aeroplane or TMG by external visual references, anti-icing procedures, etc. apply in all sections

SECTION 1. PRE-FLIGHT OPERATIONS AND DEPARTURE		**SECTION 4. APPROACH AND LANDING PROCEDURES**	
a	Pre-flight documentation, NOTAM and weather briefing	a	Aerodrome arrival procedures
b	Mass, balance and performance calculation	b	*Precision Landing (short field landing), crosswind, if suitable Conditions available
c	Aeroplane inspection and servicing		
d	Engine starting and after starting procedures	c	*Flapless Landing
e	Taxiing and aerodrome procedures, pre-take-off procedures	d	*Approach to landing with idle power
		e	Touch and go
f	Take-off and after take-off checks	f	Go around from a low height
g	Aerodrome departure procedures	g	ATC compliance and R/T procedures
h	ATC liaison – compliance, R/T procedures	h	Actions after flight
SECTION 2. GENERAL AIRWORK		**SECTION 5. ABNORMAL & EMERGENCY PROCEDURES**	
a	ATC liaison – compliance, R/T procedures	This section may be combined with sections 1 through 4	
b	Straight and level flight, with speed changes	a	Simulated engine failure after take-off
c	Climbing: (i) Best rate of climb (ii) Climbing turns (iii) Levelling off	b	*Simulated forced landing
		c	Simulated precautionary landings
		d	*Simulated emergencies • Engine fire • Cabin or Electrical fire • Partial loss of power • Simulated emergencies from the POH, FM or similar or abnormal conditions introduced by the examiner. *Some of these items may be combined at the discretion of the Flight Examiner.
		e	Oral questions
d	Medium (30° bank) turns, lookout procedure and collision Avoidance	*these items may be combined at the discretion of the FE.	

e	Steep (45° bank) turns (including recognition and recovery from a spiral dive)	**Note:** if the test is completed in two parts then Section 1 and items a, b and h of Section 4 (aerodrome arrival, landing, actions after flight) shall be assessed on both flights.
f	Flight at critically low airspeed with and without flaps	
g	Stalling: (i) Clean stall and recover with power (ii) Approach to stall descending turn with 20° bank approach configuration (iii) Approach to stall in landing configuration	
h	Descending: (i) With and without power (ii) Descending turns (steep gliding turns) (iii) Levelling off	
SECTION 3. ENROUTE PROCEDURES		
a	Flight plan, dead reckoning, map reading and use of moving map display (optional).	
b	Maintenance of altitude, heading and speed.	
c	Orientation, airspace structure, timing and revision of ETAs, and log keeping using a manual flight log.	
d	Diversion to alternate aerodrome (planning and implementation) including the use of moving map displays (optional)	
e	Basic instrument flying (180° turn in simulated IMC)	
f	Flight management (checks, fuel systems and carburettor icing etc.)	
g	ATC compliance and R/T procedures	

3. Flight training syllabus

3.1 This syllabus is for the NPPL(SEP(Land)) or NPPL(TMG) and conforms to the agreed requirements of the UK CAA for the training of pilots for the grant of an NPPL (SEP(Land)) or NPPL (TMG).

3.2 Each course is to be designed so that the students or the pilots under training are given the experience, the competence in flying, and the knowledge of aviation technical matters demanded by the ground and flight tests as laid down in this syllabus for the initial issue of a National Private Pilot Licence.

3.3 To enable them to use the aeroplanes and facilities of the private flying environment within the privileges of the licence, in a safe and responsible manner within their own limitations.

3.4 The co-ordination of ground and flight training is a necessary and important part of any pilot course. Care should be exercised when conducting the course to ensure that flying training exercises are compatible with the student's ground training progress.

3.5 The following definitions provide a general guide to the briefings given but may vary in length and content dependent on the individual students' needs.

a) **Long Briefing** – A detailed explanation and discussion conducted by the flight instructor of the major considerations of an air exercise. The normal length should be approximately 30 minutes and may be given to an individual student, or as an informal lecture to two or more students.

b) **Pre-flight Briefing** – A practical exposition by the flight instructor and lasting 10-15 minutes, on the contents of a specific flight lesson. This normally includes a statement of the aims, a brief revision of the practical aspects of any Principles of Flight involved, a statement of exactly what air exercises are to be taught by the instructor and practised by the student, and how, when and by whom the aeroplane is to be operated within the limits imposed by airmanship, weather and flight safety. These limits may vary with a particular flight and will be appropriate to the student's stage of training. The order in which the content is given may vary according to the instructor's judgement and the student's experience.

c) **Post-flight Discussion** – A few minutes devoted by the instructor immediately after a specific lesson to consolidate the major points made during the flight, clarify any queries the student may have and review progress made by the student, using fault analysis or praise as necessary, and finally to indicate the nature of the next lesson.

3.6 The numbering of the air exercises is to be used primarily as a reference list and instructional sequencing guide only. Demonstrations and practices need not necessarily be given in the order listed. The actual order and content will depend upon the following interrelated factors:

- The student's progress and ability
- Instructional technique considerations
- The weather conditions affecting the flight
- The local operating environment
- The flight time available

3.7 Flight instruction shall be given by flight instructors qualified in accordance with the Air Navigation Order or Part-FCL and shall be sufficient to cover the following flight procedures and manoeuvres:

- pre-flight operations, including mass and balance determination, aeroplane inspection and servicing;
- aerodrome and traffic pattern operations, collision avoidance precautions and procedures;
- control of the aeroplane by external visual reference;
- flight at critically slow airspeeds; recognition of, and recovery from, incipient and full stalls;
- flight at critically high airspeeds; recognition of, and recovery from spiral dives;
- normal and cross wind take-offs and landings, landing at unlicensed strips, short field/grass field operation;
- maximum performance (short field and obstacle clearance) take-offs; short field landings;
- instrument appreciation;
- cross-country flying using visual reference and dead reckoning;
- emergency operations, including simulated aeroplane equipment malfunctions;

and operations to, from and transiting controlled aerodromes, compliance with air traffic services, procedures, radiotelephony procedures and phraseology.

3.8 The flying training section of the NPPL (SEP(Land)) course will include exercises as shown below. The exercise numbering corresponds to the exercises conducted for the Part-FCL PPL, but the depth of coverage and time spent on the different exercises will be less than in the Part-FCL PPL course. The exercises, particularly those following first solo and consolidation on the circuit, will not necessarily be given in the order as shown.

Exercise 1 Familiarisation with the aeroplane

- characteristics of the aeroplane
- cockpit layout
- systems
- check lists, drills, controls
- passenger care

Exercise 1b Emergency drills

- action in event of fire on the ground and in the air
- engine, cabin and electrical system fire
- systems failure
- escape drills, location and use of emergency equipment and exits

Exercise 2 Preparation for and action after flight

- flight authorisation and aeroplane acceptance
- serviceability documents
- equipment required, maps, etc
- external checks
- internal checks
- harness, seat or rudder pedal adjustments
- starting and warm up checks
- power checks
- running down system checks and switching off the engine
- parking, security and picketing (e.g. tie down)
- completion of authorisation sheet and serviceability documents

Exercise 3 Air experience

- flight exercise

Exercise 4 Effects of controls

- primary effects when laterally level and when banked
- further effects of aileron and rudder
- effects of:
- airspeed
- slipstream
- power
- trimming controls
- flaps
- other controls as applicable
- operation of:
- mixture control
- carburettor heat
- cabin heating/ventilation
- airmanship

Exercise 5a Taxiing

- pre-taxi checks
- starting, control of speed and stopping
- engine handling
- control of direction and turning
- turning in confined spaces
- parking area procedures and precautions
- effects of wind and use of flying controls
- effects of ground surface
- freedom of rudder movement
- marshalling signals
- instrument checks
- air traffic control procedures
- airmanship

Exercise 5b Emergencies

- brakes and steering failure

Exercise 6 Straight and level

- at normal cruising power, attaining and maintaining straight & level flight
- flight at critically high airspeeds
- demonstration of inherent stability
- control in pitch, including use of trim
- lateral level, direction and balance, trim:
- at selected airspeeds (use of power)
- during speed and configuration changes
- use of instruments for precision flight
- airmanship

Exercise 7 Climbing

- entry, maintaining the normal and maximum rate climb, levelling off
- levelling off at selected altitudes
- en-route climb (cruise climb)
- climbing with flap down
- recovery to normal climb
- maximum angle of climb
- airmanship

Exercise 8 Descending

- entry, maintaining and levelling off
- levelling off at selected altitudes
- glide, powered and cruise descent (including effect of power and airspeed)
- descending with flaps down
- side slipping (on suitable types)
- airmanship

Exercise 9 Turning

- entry and maintaining medium level turns
- resuming straight flight
- faults in the turn (incorrect pitch, bank, balance)
- climbing turns
- descending turns
- slipping turns (on suitable types)
- turns on to selected headings, use of gyro heading indicator and compass
- use of instruments for precision flight

- airmanship

Exercise 10a Slow flight

- safety checks
- introduction to slow flight
- controlled flight down to critically slow airspeed
- application of full power with correct attitude and balance to achieve normal climb speed
- airmanship

NOTE: The objective is to improve the student's ability to recognise inadvertent flight at critically low speeds and provide practice in maintaining the aeroplane in balance while returning to normal airspeed.

Exercise 10b Stalling

- airmanship
- safety checks
- symptoms
- recognition
- clean stall and recovery without power and with power
- recovery when a wing drops
- approach to stall in the approach and in the landing configuration with and without power, recovery at the incipient stage of the stall.

Exercise 11 Spin avoidance

- airmanship
- safety checks
- stalling and recovery at the incipient spin stage (stall with excessive wing drop, about 45°)
- instructor induced distractions during the stall

NOTE 1: At least two hours of stall awareness and spin avoidance flight training shall be completed during the course.

NOTE 2: Consideration of manoeuvre limitations and the need to refer to the aeroplane manual and mass and balance calculations.

Exercise 12 Take-off and climb to downwind position

- pre-take-off checks
- into wind take-off
- safeguarding the nosewheel
- crosswind take-off
- drills during and after take-off
- short take-off and soft field procedure/techniques including performance calculations
- noise abatement procedures
- airmanship

Exercise 13 Circuit, approach and landing

- circuit procedures, downwind, base leg
- powered approach and landing
- safeguarding the nosewheel
- effect of wind on approach and touchdown speeds, use of flaps
- crosswind approach and landing
- glide approach and landing
- short landing and soft field procedures/techniques
- flapless approach and landing
- 3 point landing (tailwheel aeroplane, if applicable)
- missed approach/go-around
- noise abatement procedures
- airmanship

Exercise 12/13 Emergencies

- abandoned take-off and reasons for doing so
- engine failure after take-off including partial loss of power
- mislanding/go-around
- missed approach

NOTE: If partial loss of power is not taught prior to first solo, it should be addressed during circuit consolidation flying

NOTE: In the interests of safety, it will be necessary for pilots trained on nose-wheel aeroplanes to undergo differences training before flying tailwheel aeroplanes and vice versa

Exercise 14a First solo

- instructor's briefing, observation of flight and de-briefing
- procedures for leaving and rejoining the circuit
- the local area, restrictions, map reading
- turns using the magnetic compass
- compass errors
- airmanship

Exercise 14b

- **NOTE:** During flights immediately following the solo circuit consolidation the following should be revised:

- instructor's briefing, observation of flight and de-briefing
- procedures for leaving and rejoining the circuit
- the local area, restrictions, map reading
- turns using the magnetic compass
- compass errors
- airmanship

Exercise 15 Advanced turning

- steep turns (45°), level, descending
- stalling in the turn and recovery
- recoveries from unusual attitudes, including spiral dives
- airmanship

Exercise 16 Forced landing without power

- forced landing procedure
- choice of landing area, provision for change of plan
- gliding distance, descent plan
- key positions
- engine warming procedure, engine failure checks
- use of radio
- base leg
- final approach
- landing, actions after landing
- airmanship
- after completing the forced landing without power items, the FI should discuss and practice enroute partial power loss scenarios with the applicant

NOTE: The teaching of partial power engine failures during or immediately after take-off should emphasise maintaining a safe flying speed and control of the aircraft. It may be appropriate to treat a partial loss of power as a full EFATO, with selection of a landing site beyond the runway.

Recommended items for teaching partial power during Exercise 16:

1. Identify partial power failure condition;

2. Perform the partial engine failure checks, as per the checklist, Pilots Operating Handbook or Flight Manual;

3. Adjust flight controls to re-establish flight path that maximises performance for partial power condition and maintain a safe airspeed margin above stall speed;

4. Formulate a plan to recover aeroplane to a safe landing area or aerodrome, taking into account that partial failure might lead to a full power failure at any time;

5. Manoeuvre the aeroplane to a selected landing area or aerodrome using the remaining power to establish an optimal aircraft position for a safe landing;

6. Advise Air Traffic Service Unit, or other agencies capable of providing assistance of situation and intentions;

7. Brief passengers about flight situation, brace position and harness security;

8. Maintain a contingency plan for coping with a full power failure throughout the manoeuvre, for example instead of making a straight in approach, consider flying into the overhead of the aerodrome to maintain height for as long as possible, followed by a descending circuit close to the runway.

Exercise 17 Precautionary landing

- full procedure away from the aerodrome to break-off height
- occasions necessitating
- in-flight conditions
- landing area selection
- normal aerodrome
- disused aerodrome
- ordinary field
- circuit and approach
- actions after landing
- airmanship

Exercise 18a Navigation

Flight planning

- weather forecast and actuals
- map selection and preparation
- choice of route
- controlled airspace
- danger, prohibited and restricted areas
- safety altitude(s)
- calculations
- magnetic heading(s) and time(s) en-route
- fuel consumption
- mass and balance
- mass and performance
- flight information
- NOTAMS etc.
- radio frequencies
- selection of alternate aerodromes
- aeroplane documentation
- notification of the flight
- pre-flight administrative procedures
- flight plan form

Departure

- organisation of cockpit workload
- departure procedures
- altimeter settings
- ATC liaison in controlled/regulated airspace
- setting heading procedure
- noting of ETAs
- maintenance of altitude and heading
- revision of ETAs & heading
- log keeping
- use of radio
- minimum weather conditions for continuation of flight
- in-flight decisions
- transiting controlled/regulated airspace
- diversion procedures
- uncertainty of position procedure
- lost procedure

Arrival, aerodrome joining procedure

- ATC liaison in controlled/regulated airspace
- altimeter setting
- entering the traffic pattern
- circuit procedure
- parking
- security of aeroplane
- refuelling
- booking in/closing of flight plan, if appropriate
- post-flight administrative procedure

NOTE: The applicant should initially conduct the navigation exercises using a chart, manually completed flight log and maintain the flight log during the exercises. Once the applicant has reached a sufficient level of competence determined by the FI, flight planning applications and moving map devices should be integrated into the navigation exercises and supervised solo cross-country flights.

Exercise 18b Navigation problems at lower levels and in reduced visibility

- actions prior to descending
- hazards (e.g. obstacles & terrain)
- difficulties of map reading or when using moving map devices
- effects of wind and turbulence
- avoidance of noise sensitive areas
- joining the circuit
- bad weather circuit and landing

Exercise 18c

Use of GNSS (including the use of moving map if available):

- selection of waypoints;
- to or from indications and orientation;
- database management;
- error messages.

Use of VHF omni range:

- availability, AIP and frequencies;
- selection and identification;
- OBS;
- to or from indications and orientation;
- CDI;
- determination of radial;
- intercepting and maintaining a radial;
- VOR passage;
- obtaining a fix from two VORs.

Use of ADF equipment: NDBs:

- availability, AIP and frequencies;
- selection and identification;
- orientation relative to the beacon;
- homing.

Use of VHF/DF:

- availability, AIP, frequencies;
- R/T procedures and ATC liaison;
- obtaining a QDM and homing.

Use of en-route or terminal radar:

- availability and AIP;
- procedures and ATC liaison;
- pilot's responsibilities;
- secondary surveillance radar:
    - transponders;
    - code selection;
    - interrogation and reply.

Use of DME:

- station selection and identification;
- modes of operation: distance, groundspeed and time to run.

Exercise 19 Instrument appreciation

- physiological sensations
- instrument appreciation
- demonstration to show need for proper training before flying by sole reference to instruments and being able to make a 180° turn on instruments on inadvertent encounter with cloud

4. Theoretical knowledge syllabus

4.1 Applicants for an NPPL shall pass either the NPPL paper examinations or the Part-FCL eExam examinations.

4.2 Ground training consists of all the theoretical knowledge required for the course. No mandatory lecture periods are laid down and training may consist of directed self-study.

4.3 The essential knowledge needed by students to understand the constraints of their intended operating environment and its inter-relationship with the operation of an aeroplane within their personal limitations. The subject material may be covered by classroom lectures or by directed self-study.

4.4 The Part-FCL syllabus is published in the applicable Acceptable Means of Compliance (AMC) (ORS9) for AMC 1 FCL.210; FCL.215 training course and theoretical knowledge examination.

4.5 The NPPL paper examination syllabus is in paragraph 4 of Part C NPPL theoretical knowledge syllabus.

5. Touring motorglider flight training syllabus

5.1 Some flight exercises for the NPPL(A) with TMG class rating are specific to Touring Motor Gliders and may not be included in the available Flight Instructors Manuals. The following TMG specific exercises are to be included in the NPPL flying training syllabus at a point appropriate to the flying exercise number:

5.2 Exercise 4 - Effect of Airbrake or Spoiler

Instructors Note: This exercise is to show the effect that airbrake (or spoiler) has on the pitch attitude and to the performance of the aircraft. The reasons for using airbrake (or spoiler) will be covered during subsequent lessons.

Demonstration Part 1.

In trimmed level or gliding flight, remove your hands and feet from the flying controls. Point out or remind the student of the location of the airbrake lever. Progressively select ½ to 2/3 airbrake (or spoiler) and note the change of attitude and speed. Close the airbrake (or spoiler) and note the attitude and speed change. Then take control and demonstrate maintaining the attitude and speed while opening and closing the airbrake (or spoiler).

Student Practice. Ask the student to take control and maintain the required attitude and speed while he or she opens, pauses, and then closes the airbrake (or spoiler).

Demonstration Part 2.

In level or gliding flight, while maintaining the required attitude, progressively open the airbrake (or spoiler) to 1/2 and note the increased rate of descent. Fully open the airbrake (or spoiler) and note a further increase in the rate of descent. Close the airbrake (or spoiler) and note the reduction in descent rate.

Summary: The airbrake (or spoiler) can affect the pitch attitude and therefore the speed of the aircraft. More significantly, the airbrake (or spoiler) affects the rate of descent of the aircraft. The operational use of airbrake will be covered later.

5.3 Exercise 8 – Gliding Performance Appreciation

Instructor's Note: During exercise 16 the student will be expected to have an appreciation of the glide performance of the aircraft to enable him or her to make appropriate judgement when gliding to a landing area. Additionally, pilots of TMGs will inevitably utilise the aircraft for soaring flight with the engine stopped. This exercise demonstrates the best glide performance against a glide flown at an inappropriate speed. The exercise is best flown in a non-soaring environment.

Demonstration 1. At an appropriate height, note the position above the ground and close the throttle. Fly the aircraft in the straight glide at the best glide speed and note the rate of descent.

Having descended approximately 1000', again note the aircraft position.

Demonstration 2. Climb away and then close the throttle at the same position and height above the ground as in as the previous demonstration. Fly the aircraft in the straight glide on approximately the same heading as the previous demonstration, but at, say, 20 kt faster than best glide speed and note the rate of descent. Having descended approximately 1000', again note the aircraft position. Note the shorter distance travelled for a similar height loss.

Summary: The speed of the aircraft significantly affects the glide performance. The operational use of appreciating glide performance will be covered during exercise 16, 'Forced landings without power'.

5.4 Exercise 16 – Stopping and Starting the Engine in Flight

Instructors Note: This exercise has significant airmanship implications! It is, of course, important that the instructor ensures that the student is fully aware of the requirement to remain within gliding range of an airfield with the engine stopped, and to ensure that he or she understands the concept of a height envelope, including a 'height floor'. For example:

3000' – Stop the engine

1500' – Restart the engine

1000' – Exercise 'height floor'. Abandon engine start attempt.

Get established in the glide circuit

This exercise demonstrates the procedure for stopping and starting the engine in flight using normal engine starting for the aircraft type.

Demonstration – Stopping. Having carefully addressed the airmanship considerations, at an appropriate height and position (ideally close to an airfield) reduce the power to allow the engine to cool to the recommended temperature. Having achieved the recommended temperature, stop the engine as recommended in the flight manual or pilots notes. Note any post engine stop requirements, for example electrical power conservation, propeller adjustment, engine cooling flap closure, etc.

If the type has no recommended engine stopping procedure, the following guidelines may be appropriate. After the engine cooling down period:

- Carb Heat ‘Check Fully Hot’
- Ancillary electrics ‘Off’
- Radio ‘Off’
- Ignition ‘Off’
- Fuel ‘Off’
- Check airspeed
- Apply the propeller brake, or feather the propeller,
- or reduce the airspeed until the propeller stops
- Adopt the normal gliding attitude
- Radio ‘On’

Demonstration – Starting. Having addressed the appropriate airmanship considerations and any pre starting requirements, for example un-feathering the propeller or opening cooling flaps, etc, start the engine as recommended in the flight manual or pilots notes.

If the type has no recommended engine starting procedure, the following guideline may be appropriate. If above the minimum height to attempt a start:

- Fuel ‘On’
- Choke ‘As required’
- Throttle ‘Set’
- Ignition ‘On’
- Radio ‘Off’
- Starter ‘Operate’, and when engine starts,
- Choke ‘Off’
- Starter Warning ‘Check’
- Oil Pressure and Temperature ‘Check’
- Carb Heat ‘Cold’
- Radio ‘On’

Summary: Stopping and starting the engine in flight is a relatively complex procedure, and in some types, may require the use of flight reference cards. **The priority must always be to FLY the aircraft, and to remain in gliding range of a safe landing area.** Switching off the ignition and fuel will prevent the engine running under its own power, but the gliding speed will continue to make the propeller rotate due to the windmilling action of the slipstream.

Exercise 16 – Windmill Starting the Engine in Flight

Instructors Note: This exercise uses a considerable amount of height, and therefore the airmanship considerations previously described in exercise 16 should again be addressed. This exercise should be carried out close to an airfield. Consideration should also be given to some older aircraft types with a low V_{ne} – the speed required to windmill the propeller may be too close to V_{ne} for safe windmill starting.

It is important that the student is made aware that electrical failure could occur while attempting to start the engine in flight - for example a discharged battery or failed starter motor. This exercise demonstrates the procedure for windmill starting the engine in flight.

Demonstration. Having addressed the airmanship considerations, including an agreed start attempt 'height floor', fly the aircraft at best glide speed and close to the airfield. Having noted any pre-starting requirements, carry out a windmill start as recommended in the flight manual or pilots notes. If the type has no recommended procedure for a windmill start but the type is approved for a windmill start, the following procedure may be appropriate:

- Fuel 'On'
- Throttle 'Set as for a ground start'
- Choke 'As Required'
- Ignition 'On'
- Radio 'Off'
- Propeller 'Unfeather'
- Accelerate to windmill the propeller (speed is type specific)
- When engine starts, reduce the airspeed
- Adjust the power setting as required
- Choke 'Off'
- Radio 'On'

Summary: The windmilling action of the slipstream can be utilised to start the engine in the event of a failure of the aircraft normal engine starting system. Care must be taken to avoid over- speeding the engine and propeller during the post start recovery. A windmill start attempt will inevitably use a significant amount of height.

5.5 Advice to Instructors

Operational experience of training in TMG within the British Gliding Association has developed the following advice to instructors:

Gliding Airfields. NPPL (TMG) flight training may take place alongside winch launched gliding operations. Instructors should ensure that they and their students are fully conversant with the site procedures for ensuring adequate launching separation.

Performance. Some TMG aircraft types have limited climb performance when compared to other powered aircraft. Instructors should ensure that their students are fully aware of the precautions required in the event of precipitation before take-off, and that they are fully aware of the many factors that can affect take-off and climb performance.

Airbrakes or Spoilers. In many TMG aircraft types, in the event of a 'go around' or baulked landing it is necessary to move the left hand from the airbrake (or spoiler) lever to the stick and the right hand from the stick to the throttle. All instructors and their students should be fully briefed on the required procedure to change from the approach or landing with airbrake (or spoiler) to the take-off or climb under power. For example:

- Close and lock the airbrake (or spoiler) and adopt the appropriate attitude;
- Move the left hand to the control column and then the right hand to the throttle;
- Apply power.

Carburettor Icing. All pilots should be made aware of carburettor icing during the course of their theoretical and flight training. However, some TMG aircraft types are less prone to carburettor icing because of design features such as carburettor position and/or air inlet position. It is likely that this has influenced some instructors and students to become complacent about use of carburettor hot air in flight. Instructors should ensure that their students use carburettor hot air on all occasions appropriate to the engine and aircraft type and are reminded of the primacy aspects of the student noting the use of carburettor heat during the first and every subsequent flight.

Self-Launching Sailplanes. For information on operating this type of powered sailplane, please refer to the Sailplane Pilot Licensing (SPL) requirements in Part-SFCL (UK Reg No 2018/1976).

Part C – NPPL(A) Microlights (including Powered Parachute)

1. Flight training and experience requirements

1.1 Applicants for an NPPL with microlight class rating or microlight powered parachutes may obtain either an “unrestricted” or a “restricted” licence (which includes operational limitations).

2. NPPL(A) Microlights with Operational Limitations on three axis or weightshift aeroplanes

2.1 Applicants shall be required to complete a minimum of 15 hours training as pilot of microlight aeroplanes following the NPPL syllabus.

2.2 This shall include not less than 7 hours as PIC, which shall be flown in the 9 months prior to the date of application for licence issue.

2.3 When an NPPL(A) Microlight is issued with operational limitations, it will impose the constraints as listed below:

Limitation 1:

No person in addition to the pilot shall be carried in the aeroplane other than a qualified flying instructor in an aeroplane equipped with dual controls, provided that where the pilot has gained not less than 25 hours experience on microlight aeroplanes, including not less than 10 hours as PIC and such experience has been entered in his/her personal flying logbook and has been certified by a person holding a Flight Examiner authorisation, then this Limitation (numbered 2) shall cease to apply.

Limitation 2:

No flight shall commence or continue unless:

a) there is no cloud below 1000 feet above ground level over the take-off site and over the planned route including the landing site; and

b) the flight can be conducted in a flight visibility of not less than 10 kilometres.

Limitation 3:

The aeroplane shall not fly further than 8 nautical miles from the take-off site.

Limitation Nos. 2 and 3 will be removed from the licence, upon recommendation to the CAA by the BMAA upon completion of at least 25 hours experience in microlights, including:

a) A minimum total of 5 hours navigation flying training must be completed within the period of 9 months immediately prior to licence application or an application to remove operational limitations from an existing licence.

b) The required navigation flying training includes a minimum of 3 hours of solo navigation flying training to be completed within the 9-month period.

c) The navigation flight training must include either

(i) two supervised solo qualifying cross-country flights. Each solo qualifying cross-country flight must have:

- a minimum total flight distance of 40 nautical miles;
- a landing at another site which is at least 15 nautical miles, measured in a straight line, from the take-off site at which the flight began.

The two solo qualifying cross-country flights must be flown over different routes and to different sites.

(ii) Alternatively, one supervised solo cross-country flight of at least 80 NM, during which a full stop landing at an aerodrome different from the aerodrome of departure shall be made before returning to the original aerodrome.

3. NPPL(A) Microlights without Operational Limitations on three axis or weight shift aeroplanes

3.1 An applicant shall complete a minimum of 25 hours training as pilot of a microlight aeroplane following the BMAA NPPL syllabus.

3.2 The total must include not less than 10 hours as PIC of which at least 3 hours of supervised solo navigation supervised solo navigation flight training in the 9 months prior to the date of application.

3.3 A minimum total of 5 hours navigation flying training must be completed within the period of 9 months immediately prior to licence application or an application to remove operational limitations from an existing licence.

3.4 The navigation flight training must include either

(i) two solo qualifying cross-country flights. Each solo qualifying cross-country flight must have:

- a minimum total flight distance of 40 nautical miles;
- a landing at another site which is at least 15 nautical miles, measured in a straight line, from the take-off site at which the flight began

The two solo qualifying cross-country flights must be flown over different routes and to different sites.

(ii) Alternatively, one supervised solo cross-country flight of at least 80 NM, during which a full stop landing at an aerodrome different from the aerodrome of departure shall be made before returning to the original aerodrome.

4. NPPL(A) Microlights (Powered Parachutes)

4.1 Pilots who undertake their training in a powered parachute microlight will be granted an NPPL(A) with a “Microlight – Powered Parachute only” rating. Holders of such licences may have the rating replaced with a “Microlight” rating subject to satisfactory completion of additional training and experience (including conversion training) in a 3-axis or weight shift microlight to show compliance with the requirements for the Microlight rating as set out in paragraphs 2 or 3 of this section.

4.2 All flying training must be carried out under the supervision of a flying instructor holding an FI rating on the type of powered parachute on which the training is conducted. Flight in any powered parachute is acceptable and must follow either the dual training system for a two-seat aeroplane or the solo training system for a single seat aeroplane.

4.3 Applicants may obtain either an “unrestricted” licence or a “restricted” licence (which includes operational limitations).

5. NPPL(A) Microlights with Operational Limitations on Power Parachutes

5.1 Applicants must produce evidence of having satisfactorily completed a course of training following the BMAA NPPL powered parachute syllabus.

5.2 The syllabus of training must include a minimum of:

a) 4 hours of flight time in a powered parachute including not less than:
b) 1 hour as solo PIC; and
c) not less than 25 take-offs and full stop landings of which at least 6 must be as solo PIC in the 9 months prior to the date of application.

5.3 The Flight Test time can be included in the minimum 4 hours of flight training but cannot form part of the 1 hour required as PIC.

5.4 The licence will impose the constraints listed in paragraph 2.3 of this section.

6. NPPL(A) Microlights without Operational Limitation on Powered Parachutes

6.1 Applicants must produce evidence of having satisfactorily completed a course of training to a syllabus recognised by the CAA and pass a Flight Test.

6.2 The syllabus of training must provide for a minimum of:

a) 15 hours of flight time in a powered parachute supervised by a flying instructor. The total must include not less than:
(i) 6 hours as solo PIC;
(ii) 25 take-offs and full stop landings of which, at least 6 take-offs and full stop landings must be as solo PIC;
(iii) 5 hours training in navigation including at least 3 hours as solo PIC and must include 2 solo 25 NM cross country flights during each of which the

applicant landed at least at 1 other site not less than 10 NM from the take-off site at which the flight began. The 2 solo cross-country flights must be flown over different routes and to different sites.

6.3 The solo hours must be flown within the 9 months prior to the date of application.

7. NPPL(A) Microlight Skill Test

7.1 An applicant for an NPPL (A) Microlights shall have demonstrated the ability to perform as pilot-in- command of a Microlight aeroplane, the procedures and flight manoeuvres described in the foregoing pages of this syllabus with a degree of competency appropriate to the privileges granted to the holder of an NPPL(A) Microlight.

7.2 An applicant for an NPPL(A) Microlight General Skill Test shall have satisfactorily completed all the required flight training, including the supervised solos flights.

7.3 An applicant for a Skill Test shall have successfully completed all theoretical knowledge examinations including examinations in Communications if completing the Part-FCL examinations or if completing the NPPL examinations if the FRTOL is to be applied for.

7.4 The Skill Test must be completed in one aircraft class with the same control system weightshift, three-axis or powered parachute. This is the class that will be endorsed in the licence on issue.

7.5 Provision of microlight aeroplane aeroplane used for the test shall meet the requirements for training Microlight aeroplane.

SECTIONS OF THE FLIGHT TEST

Section 1: Pre-flight operations and departure

Section 2: General Airwork

Section 3: Approach and landing procedures

Section 4: Abnormal and emergency operations

FLIGHT TEST TOLERANCES

The applicant shall demonstrate the ability to:

- operate the aeroplane within its limitations;
- complete all manoeuvres with smoothness and accuracy;
- exercise good judgement and airmanship;
- apply aeronautical knowledge; and
- maintain control of the aeroplane at all times in such a manner that the successful outcome of the procedure or manoeuvre is never seriously in doubt.

The following limits are for general guidance. The examiner should make allowance for turbulent conditions and the handling qualities and performance of the aeroplane used:

(1) height:

(i) normal flight ± 150 ft

(2) heading:

(i) normal flight ± 10°

(3) speed:

(i) take-off and approach +15/–5 knots

(ii) all other flight regimes ± 15 knots

NPPL(A) Microlights Skill Test

Name of applicant	Reference Number of applicant	Date of test

Aircraft Type	Registration	Place of test	Duration of test

Preparation for flight	**Date**	**Stalling (continued)**	**Date**
Weather suitability/NOTAM check			
Aircraft documents check			
Fuel state			
Pre-flight inspection			
Booking out and airfield procedures			
Starting, taxiing and Pre-departure checks			
Pre-start checks			
Post start checks			
Taxiing techniques and checks			
Pre-departure/power checks			
Take-off and departure			
Pre-take off checks (vital actions)		**Operation at minimum level**	
During and post take-off checks		Procedures	
Normal take-off		**Aerodrome joining**	
Assessment of crosswind and crosswind take-off		Procedures and situational awareness	
Performance take-off		**Circuit joining procedures**	
Aerodrome departure procedures		Standard overhead join or other standard joins	
Navigation and orientation		**Approach and landing**	
Recognition of features		Pre-landing checks	
Assessment of heading		Glide approach and use of sideslip	
General handling		Powered approach and performance landing	

Climbing		Assessment of crosswind and crosswind landing	
Straight and level flight		After landing checks	
Descending – use of power, flaps and spoilers		**Missed approach and go-around**	
Turning • level • climbing • descending • at high angles of attack		Checks and procedures	
		Simulated emergencies	
		Engine fire in the air and on the ground	
Unusual attitudes		Engine fire in the air and on the ground	
Recovery from spiral dive		Cabin fire in the air and on the ground	
Recovery from steep climbing turns		Engine failure after take-off (EFATO)	
Stalling		Other simulated emergencies including partial power loss	
Checks before stalling		**Engines and system handling**	
Recovery at incipient stage		Use and management throughout	
Recovery from developed stall • in straight flight • in turning flight • in approach configuration		**Airmanship and situational awareness** • Lookout • Positioning – restricted airspace, hazards and weather • Aerodrome procedures	
Forced landing without power		**Actions after flight**	
Checks and procedures		Engine shut down	
Precautionary landing		Parking and security of aircraft	
Checks and procedures		Recording flight details	

Note: Pilots taking the test must undertake all sections of the test on this page, except for parts inappropriate to the aircraft type.

I certify that :

(a) I have examined the training schedule which this applicant has completed and

(b) I have conducted a flight test during which this applicant has demonstrated his ability to perform satisfactorily the manoeuvres listed above and recorded the flight details in the applicant's personal flying logbook.

I am therefore satisfied that the applicant has reached the standard of flying required for the grant of a NPPL Microlight Class Rating

Examiner's Signature ……..	Examiner's name ……..
Examiner's Reference Number ……..	Date of signature ……..

8 Flight training syllabus

8.1 All microlight flight instruction must be conducted in accordance with this syllabus.

8.2 The syllabus is in two main parts:

(i) Flying syllabus,

(ii) Ground subject syllabus

8.3 The flying syllabus is broken down into phases and exercises. Individual exercises are further sub-divided into different elements, each of which must be fully understood by the student.

8.4 Within each phase, each exercise has a specific stated aim. To ensure that these aims are achieved each phase has a specific stated standard of skill which must be achieved.

8.5 Elements pertinent to both weight shift and 3-axis types of aircraft are included in the syllabus. Where an aspect is not relevant to a type it should be ignored. For example, in exercise 6 - “Use of yaw control to maintain balanced flight” is not pertinent to a weight shift aircraft, as no primary control for yaw is provided in current designs.

8.6 Every student should be in possession of a copy of the syllabus. As an aid to ensuring that no element is omitted each element can be ticked off as it is completed.

8.7 An exercise or group of exercises of the flying syllabus is taken as a session, and the pattern of each flying session should be run as follows:

(iii) Pre-flight briefing,

(iv) Flight training lesson,

(v) Post flight debriefing.

8.8 The flight exercises as listed reflect a progression through the basic handling skills to more complex manoeuvring and procedural flying. It is not however mandatory for a student to complete the exercises in strict number order if an instructor feels that the student would benefit from an earlier introduction to a later exercise, for example First Solo immediately after satisfactory completion of Phase 3, Exercise 13.

8.9 All flight exercises should be completed to a satisfactory standard prior to course completion.

8.10 Every training organisation, school or independent flight instructor is required to keep an up-to-date progress report for each student pilot on a student record sheet. Student records must be kept for at least two years after the last entry and should be available to the student to view.

Summary of the Syllabus for the Microlight NPPL Course Flight Training

Phase	Ex No.	Exercise Description
1		Familiarisation exercises and foundation
	1	Aircraft familiarisation
	2	Preparation for flight and action after
	3	Air Experience
	4	Effects of Controls
	5	Taxiing
2		The basic flight manoeuvres
	6	Straight & Level flight
	7	Climbing
	8	Descending
	9a	Medium Level-turns (up to 30° bank angle)
	9b	Climbing and descending turns

3		Slow speed handling
	10a	Critically low airspeed
	10b	Stalling and spin avoidance
4		Take-off, landing and circuit flying
	12	Take off and climb to down wind
	13	The circuit, approach, and landing/overshoot
5		Advanced handling
	14	Advanced turning (up to 60° bank angle)
	15	Unusual and dangerous attitudes/conditions
6		Operational hazards, Emergency procedures and unexpected/unplanned occurrences
	16a	Forced landings, without power to include partial power loss.
	16b	Precautionary landings
	16c	Operation at minimum level
	16d	Action in the event of an engine/cabin fire
	16e	Systems failure
7		Supervised solo flight training
	17a	First supervised solo flight.
	17b	Solo circuit, local area, and general handling consolidation.
8	18	VFR navigation
	18a	Pre-flight planning
	18b	Enroute navigation, departure and arrival procedures including the use of VFR moving map devices.
	18c	Navigation at minimum level and/or deteriorating conditions.
	18d	Unsure of position and lost procedures.
9		Preparation for General Skill Test and Ground Oral Exam

The full syllabus and training standards are available from the BMAA.

9. NPPL(A) Microlights theoretical knowledge syllabus

– PRINCIPLES OF FLIGHT

Physics and Mechanics:

- Speed, Velocity, Force
- Pressure - Bernoulli's Principle
- Motion of a body along a curved path

Aerofoils, Lift and Drag:

- Air Resistance and Air Density
- Aerofoil shapes
- Lift and Drag - Angle of Attack and Airspeed
- Distribution of lift, Centre of pressure
- Drag - Induced, Parasite - Form, Skin, Interference
- Lift/Drag Ratio and Aspect Ratio

Flying Controls:

- The Three Axes - Vertical, Lateral, Longitudinal Yaw, Pitch, Roll
- Operation and Function of Elevators, Ailerons, Rudder
- Principles and Purpose of Mass, and Aerodynamic Balance
- Operation and Function of Trimming Controls
- Operation and Function of Flaps
- Operation and Function of Spoilers, Spoilerons, Tip Rudders
- Principles and Function of Canard configuration
- Principles and operation weight shift control systems
- Operation and function of billow shift

Equilibrium:

- The Four Forces - Lift, Weight, Thrust, Drag
- Moments and Couples
- The Balance of the Four Forces – Straight, Turning, Level, Climbing, Descending

Stability:

- Positive, Neutral, Negative
- Lateral and Directional Stability 3Axis/Weight shift
- Longitudinal Stability 3Axis/Weight shift
- Relationship of C of G to Control in Pitch 3Axis/Weight shift

- Luff Lines on Weight shift aircraft
- Washout

The Stall:

- Airflow Separation
- Stalling Angle - Relationship to Airspeed
- Wing Loading
- Wing Loading increase with bank angle increase
- High Speed Stall

The Spin:

- Causes of a spin
- Autorotation
- Effect of the C of G on spinning characteristics

Turning Flight:

- The Forces in the Turn

Load Factor and Manoeuvres:

- Definition of Load Factor - VN envelope
- Effect on Stalling Speed
- In-Flight Precautions

Aircraft Performance:

- Power Curves
- Effect of Temperature and Density
- Range and Endurance
- Climbing Performance
- Rate of Climb
- Angle of Climb
- Take-off and Landing Performance
- Take-off Run Available
- Take-off Distance Available
- Landing Distance Available

The Take-off and Initial Climb – Performance Effect of:

- Wind
- Wind Gradient
- Wind Shear
- Weight

- Pressure, Altitude, Temperature and Density
- Ground Surface and Gradient
- Use of Flaps

The Approach and Landing – Performance Effect of:

- Wind
- Wind Gradient
- Wind Shear
- Use of Flaps
- Ground Effect

Weight and Balance:

- Limitations on Aircraft Weight
- Limitations in Relation to Aircraft Balance
- Weight and Centre of Gravity Calculations

The Propeller:

- Construction and Shape
- Maintenance and checks
- Balancing

– **AVIATION LAW**

The Air Navigation Order:

- Classification of Aircraft

Aircraft Documentation:

- Certificate of Registration
- Permit to Fly/Exemption Certificate
- Noise Certificate
- Flight Manual/Maintenance Schedules/Pilot's Operating Handbook
- Airframe and Engine Logbook and Pilot's responsibility to maintain and Record: Aircraft hours, inspections, defects, repairs, maintenance, and modifications (mandatory and otherwise)

Permits To Fly:

- BMAA 'Guide to Airworthiness' Document
- Non-expiring Permit to Fly and Certificate of Validity
- Conditions applying to Permit to Fly
- Failure to Comply with the Requirements or Conditions of the Permit to Fly or Exemption Certificate

- Application of Flight/Owner's Manual and Pilot's Operating Handbooks to the Permit to Fly
- Requirements for Maintenance and Inspections
- Overhaul, Repair, Replacement and Modifications to Aircraft or Equipment

Aircraft Equipment:

- ANO As detailed in applicable Schedule
- Equipment Required in Relation to the Circumstances of Flight

Aircraft Radio Equipment:

- ANO As detailed in applicable Schedule
- Certificate of Approval of Aircraft Radio Installation
- Flight Radio Operators Licence

Aircraft Weight Schedule:

- Legal Requirements in Relation to the Permit to Fly

Grant and Renewal of Licences to Members of Flight Crew:

- Conditions of issue

Privileges of the National Private Pilot's Licence:

- Student Pilot Privileges
- Medical Certification
- Ground Examinations and Flight Test
- Medical Certificate - Renewal
- Private Pilot Privileges ('With and Without Operational Limitations)
- Minimum Weather Provisions

Ratings – Conditions of Issue:

- Privileges of the Aircraft Rating
- Additional Ratings

Licences and Ratings – Renewal:

- Certificate of Revalidation achieved by Test or Experience
- Period of Validity
- Flying Hour Requirements

Personal Flying Log:

- Requirements to Maintain
- Personal Details
- Particulars of Flight
- Recording of Dual, Solo, Cross-Country Flight Times

- Recording of Flight Tests
- Instructor's Endorsements of Flight Times

Instruction in Flying:

- Definition of Flying Instruction
- Requirement for Flying Instruction to be given

Responsibilities of the Pilot in Command (PIC):

Obligations of the PIC.

Dropping of Persons or Articles:

Carriage of Munitions:

Carriage of Dangerous Goods:

Endangering Safety of Aircraft:

Endangering Safety of Persons or Property:

- By intent
- By Neglect

Drunkenness in Aircraft:

- Application to Passengers
- Application to Flight Crew. Legal maximum alcohol levels

Smoking in Aircraft:

- Notices in Aircraft

Exhibitions of Flying:

- Public Displays
- Private Events

Documents to be Carried:

- On Domestic Flights
- On International Flights

Production of Documents and Records:

- Requirements of Commander
- Requirements of Operator
- Requirements of Flight Crew
- Personal Flying Logbooks

Revocation, Suspension or Variation of Certificates, Licences, or other Documents:

- Whilst Pending Enquiry or After Enquiry

- Surrender of Documents
- Invalidation of Documents Due to Breach of Conditions

Offences in Relation to Documents and Records:

- Unauthorised use of Documents
- Alteration, Mutilation, or Destruction of Documents or Records
- Entries in Logbooks or Records
- Incorrect Entries - Wilfully or Negligently
- Unauthorised Issue of Certificates

Aerodromes – Instruction in Flying:

- Operating minima
- Permission and Purpose of Use

Power to Prevent Aircraft Flying:

Air Traffic Rules and Services:

Division of Airspace in the UK:

- Flight Information Regions (FIR)
- Controlled Airspace
- Control Zones (CTR)
- Control Areas (CTA)
- Terminal Manoeuvring Area (TMA)
- Military Aerodrome Traffic Zones
- Civil Aerodrome Traffic Zones
- Radio Mandatory Zone (RMZ)
- Transponder Mandatory Zones (TMZ)

Classification of Airspace:

- The seven classes of airspace

VMC, IMC and Notification:

- Conditions for VFR Flight (VMC)
- Conditions for IFR Flight (IMC)
- VFR cruising levels
- Special VFR Flight

Types of Air Traffic Service Units:

- Flight Information Service

- Air Ground Communication Service (AGCS)
- Air Traffic Service
- Automatic Terminal Information Service (ATIS)Frequency Monitoring Code (FMC)Distress and Diversion Cell.
- Lower Airspace Radar Service (LARS)

Altimeter Setting Procedures:

- Terrain Clearance
- Flight Separation
- Flight Levels
- Transition Level
- Transition Layer
- Transition Altitude

Flight at Aerodromes:

- Aerodrome Traffic Zone
- Lights and Pyrotechnic Signals
- Ground Signals Used at Civil Aerodromes
- Marshalling Signals

Flight Plans:

Flight Information Regions and Services:

Flight within Controlled airspace.

Avoiding airspace infringements:

AIRPROX Reporting Procedures:

Airspace Restrictions and Hazards:

- Danger Areas (Danger Area Crossing Service (DACS))
- Prohibited and Restricted Areas
- Military Flight Training Areas or Area of Intense Aerial Activity (AIAA)
- Bird Sanctuaries
- High Intensity Radio Transmission Areas
- Additional Hazards to Aircraft in Flight
- Gliding Sites/Hang Gliding Sites
- Free Fall Parachute Areas
- Flying Displays, Air Races, Etc.
- Navigational Obstructions

- Restricted Airspace (Temporary) RA(T)

Aerodromes AIS Information:

- Civil Aerodromes
- Military Aerodromes
- Aerodrome Ground Lights
- Identification Beacons
- Aerodrome Beacons
- Times of Operation

Meteorology:

- Source of Information
- Requests for Route Forecasts

Facilitation – Customs and Public Health:

- Arrival, Departure, and Transit of Civil Aircraft on International Flights
- Customs Aerodromes
- Private Flights - Documentary Requirements
- Customs Requirements
- Public Health Requirements

Search and Rescue:

- Responsibility and Organisation
- Aircraft not Equipped with Radio
- Visual Distress and Urgency Signals
- Procedures and Signals Employed by Rescue Aircraft
- Search and Rescue Regions and Facilities

Warning Signals to Aircraft in Flight:

Standardised Rules of the Air

- Interpretation
- Application of Rules to Aircraft
- Reporting Hazardous Conditions
- Low Flying
- Simulated Instrument Flight
- Lights or Other Signals to be shown or made by Aircraft
- Display of Lights by Aircraft
- Failure of Navigation Lights

General Flight Rules:

- Weather Reports and Forecasts
- Rules for Avoiding Aerial Collisions
- Aerobatic Manoeuvres
- Right Hand Traffic Rule
- Notification of Arrival
- Flight in Notified Airspace

Aerodrome Traffic Rules:

- Application
- Visual Signals
- Access to and Movement on the Manoeuvring Area
- Right of Way on the Ground
- Dropping of Tow Ropes
- Aerodromes not having ATC Units
- Special Rules for Certain Aerodromes
- Wake Turbulence Separation

Flight Safety and Accident/incident Reporting:

Extracts from:

The Civil Aviation (Investigation of Air Accidents) Regulations:

The Civil Navigation (Investigation of Air Accidents Involving Civil and Military or Installations) Regulations:

- Reporting accidents;
- Reporting incidents and occurrences;
- BMAA Safety and Accident Investigation Handbook
- Flight Safety Issued Quarterly by the General Aviation Safety Council (GASCo)
- AAIB Bulletins
- Aeronautical Information Circulars (AIC)

– **NAVIGATION**

Form of the Earth:

- Meridians of Longitude
- Parallels of Latitude
- Rhumb Lines Magnetic Variation:

Compass Deviation:

Principles of Navigation:

- IAS, Wind, Heading, Groundspeed
- The Triangle of Velocities
- Flight computers

Maps and Charts:

- Practical Use of 1:500,000 and 1:250,000 Series
- Importance of using Current Charts
- Chart Scale
- Measurement of Distance and Heights
- Units of Distance
- Units of Height
- Conversion of Units (Distance and Height)
- Measurement of Angles, Tracks and Bearings
- Relationship to True, Magnetic and Compass North

Map Reference Information:

- Latitude and Longitude
- Isogonals
- Topography
- Relief
- Hydrographical Features
- Cultural Features
- Aeronautical Symbols
- Aeronautical Information

Map Reading:

- Map Analysis
- Permanent Features
- Relief
- Line Features
- Spot Features
- Unique or Special Features
- Features Subject to Change
- Water
- Other

- Effects of Seasons

Preparation:

- Checkpoint Features and Selection
- Folding the Map for use

Methods of Map Reading:

- Map Orientation
- Anticipation of Checkpoints
- With Continuous Visual Contact
- With Restricted Visual Contact
- When Uncertain of Position

Flight Planning:

- Selection of Charts
- Plotting the Route
- Selection of Altitude/s and Safety Altitude
- Use of the Chart of UK Airspace Restrictions
- Danger Areas
- Prohibited/Restricted Areas
- Military Flight Training Areas
- Bird Sanctuaries
- High Intensity Radio Transmission Areas
- Additional Hazards to Aircraft in Flight
- NOTAMs and Aeronautical Information Bulletins
- Civil Aeronautical information circulars
- Local Time / Greenwich Mean Time / UTC

Weather Forecasts and Reports:

- Minimum Weather Conditions Acceptable to Safety
- General Aviation Visual Flight Forecast Service
- Aerodrome Forecasts and Reports
- Local Telephone General Weather Forecast
- Local Radio/TV General Weather Forecast
- Web-based applications and aviation weather software

Practical Navigation:

- Compilation of the Flight Log
- Measurement of Tracks

- Determining Safety Altitude
- Calculating Heading, True and Magnetic, Groundspeed, Distance, Time, Fuel Consumption, Fuel Required
- Departure Procedures
- Booking Out
- Estimated Time of Arrival
- Setting heading Procedures
- Altimeter Setting Procedures
- Maintenance of Altitude and Heading
- Establishing Position
- Revisions to Heading
- The “1:60” and “Closing Angle” Methods of Heading Correction
- The use of Drift Lines
- En Route Checks
- Uncertainty of Position Procedure
- Lost Procedures
- Arrival Procedures
- Altimeter Setting Procedures
- Booking in

VFR moving map devices

Portable or panel mounted

Locating portable device

Charging and ensuring the device does not overheat

Ensuring aeronautical database is up to date

Methods for data entry and checking

Interrogation and overview of planned route

Managing downloadable data and connectivity

Prevention of failure of device

Failure modes and notification

– **AVIATION METEOROLOGY**

The Atmosphere:

- Composition and Structure
- Air density

Pressure:

- Air has weight
- Effect of altitude
- Effect on density
- Measurement
- Barometers. Aneroid and Mercurial
- Mean Seal Level (MSL)-Conversion for height
- Isobars
- Pressure systems - Depression - Trough - Col - Anticyclone - Ridge

The Altimeter:

- Principle
- Pressure settings (QNH, QFE, Regional PS, Standard)

Wind:

- Horizontal motion of the atmosphere
- Effect of Earth's rotation
- Relation of wind to isobars. Surface friction. Geostrophic
- Local winds. Sea breeze, offshore
- Thermal winds
- Katabatic/Anabatic
- Effect of terrain. Surface geography, Surface objects, Rotor
- Standing waves
- Wind gradient
- Wind shear

Temperature:

- Source of Earth's heat
- Effect on density
- Adiabatic cooling/heating
- Lapse rates.
- Environmental ELR
- Adiabatic - dry and wet (saturated)
- Effect of height on saturated adiabatic lapse rate

Humidity:

- Water vapour
- Moisture content
- Relative Humidity
- Effect of temperature
- Dew point temperature
- Effect on density

Air Masses:

- Source and types
- Transformation
- Fronts
- Warm
- Cold
- Occlusion

Clouds:

- Classification of Clouds. High/Medium/Low
- Types of Clouds. Stratiform, Cumuliform
- Names of Clouds

Formation of Cloud:

- Air cooling to Dew Point
- Mixing – vertical motion of atmosphere
- Convection – stability and instability
- Orographic
- Frontal

Precipitation:

- Rain/drizzle/hail/sleet/snow

Depressions:

- Origin
- Development
- Frontal depression

Visibility:

- Measurement
- Haze
- Mist

- Fog - Radiation/Advection

Ice Accretion on Aircraft:

- Conditions required for ice formation
- Types of airframe icing
- Hoar frost
- Rime ice
- Clear ice
- Effects of icing on aircraft performance
- Carburettor icing

Effects of Weather on Flight:

- Effect on an altimeter en route in proximity to a depression
- Effect of turbulence – low level – under cumulus
- Hazards of flight through depressions and fronts
- Hazards of flight in reduced visibility – haze – precipitation
- Effect on visibility related to the sun's position ahead or behind
- Flight in proximity of large Cu and Cb Cloud – line squalls
- Effect on surface wind direction of large Cu and Cb cloud
- Potential hazard of a snow/ice coating on a parked aeroplane
- Potential hazard of a clear evening sky in autumn/winter – fog, frost

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– **AIRFRAMES AND ENGINES**

Aircraft Structure:

- Airframe
- Wing
- The Controls
- The Trimming System
- Tuning
- Aircraft Tyres. Wear, Bulges, Cuts, Scores
- Aircraft Seats
- Baggage
- Stowage Position
- Maximum Weights allowed

Engine:

- Principles of two stroke cycle

- Principles of four stroke cycle

Engine Ignition System:

- Principles
- The Ignition Switch/es
- Use of Correct Spark Plugs
- Spark Gap
- Replacement Intervals
- Spark Plug Security

Carburettors:

- Principles
- Setting for the Correct Mixture
- Recognising the Wrong Mixture

Exhaust Systems:

- Difference between Two-stroke and Four-stroke systems
- Checks for security, cracks, and internal integrity

Servicing:

- Intervals

Oil System:

- Correct mixing of Two-stroke Oil/Petrol
- Four stroke oil system

Fuel System:

- Fuel Pump
- Fuel Filters
- Fuel Grade
- Water in Fuel

Electrical System:

- Generators
- Batteries

Propeller:

- Defects
- Balancing

Reduction Drive:

- Belt Tension

- Alignment
- Defects
- Maintenance procedures

Aircraft Instruments:

Airspeed Indicator:

- Position Errors

Altimeter:

Magnetic Compass:

- Precautions when carrying Ferrous Objects
- Turning, acceleration, Deceleration errors

Engine Instruments:

- Temperature Gauges - CHT - EGT - Water
- RPM Counter

– FIRE, FIRST AID, AND SAFETY EQUIPMENT

Fire, Dangers and Precautions:

- Fire Extinguishers
- Fire in Flight
- Fire on the Ground
- Fuel Storage, Fuel Mixing, Refuelling
- Smoking

First Aid:

- Procedures following an accident
- Fractured or Broken Limbs
- Severe Bleeding
- Head Injuries
- Severe Shock
- Burns
- First Aid Kits - Stowage

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– **HUMAN PERFORMANCE LIMITATIONS**

Introduction:

- Reasons for Knowledge of HPL

Oxygen:

- Relation – to the atmosphere, to altitude
- Effects of reduced intake

Hypoxia:

- Location
- Timing
- Effects and acceleration of same

Hyperventilation:

- Causes and effects
- Avoidance

Barotrauma:

- Causes and effects
- Avoidance

Common Ailments:

- Effects
- Medication

Decompression:

- Underwater effects
- Relationship to flying

Air Sickness:

- Causes
- Medication
- Environment

Hearing:

- Noise limits
- Effects
- Precautions

Sight:

- Correction of defects

Toxic Hazards:

- Sources
- Effects
- Smoking

Blood Pressure:

- Control

Alcohol/Drugs:

- Problems
- Effects
- Control
- Legal Limits

Knowledge and the Senses:

- Knowledge
- Perception
- Action
- Environment

Disorientation:

- Causes
- Effect
- Result

Avoiding the AIRPROX:

- Assessment
- Relative speeds
- ‘Look-out’
- Actions
- Problems

Stress:

- Forms
- The individual
- Outside influences
- Fatigue
- Hydration and nutrition

Management of Stress:

- Danger of drugs
- Mutual discussion
- Experience

Social Psychology:

- The Ego factor
- Potential reactions

- Management of conditions
- Mental heath

Hypothermia:

- Causes
- Recognition
- Preparation for eventuality

End